

# Opasraportti

## FMed - Medicine (2019 - 2020)

### CURRICULUM FOR THE DEGREE PROGRAMME IN MEDICINE 2019-2020

#### Objective of the degree programme

A graduate from the University of Oulu is able to work independently in the medical doctor's profession in primary healthcare level tasks and diverse on-call duties, and has capabilities for continuing professional training and research.

After completing the Licentiate of Medicine degree programme, the student will have attained the following learning outcomes:

#### Doctor as a professional

- knows how to interpret key professional values in his or her work, including prioritisation of the patient's best interest, integrity, respect and confidentiality
- knows how to make conclusions based on the principles of professional ethics
- knows how to plan and deliver treatment following recommendations and approved treatment methods
- knows how to make conclusions as a member of a healthcare team
- is able to plan his or her personal competence development and the activities of his or her work community as well as responsibly engage in health promotion work together with patients, other healthcare professionals and society

#### Scientific knowledge in doctor's profession

- knows how to acquire and combine key clinical and scientific knowledge and skills
- is able to adjust scientific methods for the purposes of patient work
- is convincing as an expert and a developer of his or her field
- is able to evaluate information critically and interpret it while working in different healthcare roles

#### Interaction in doctor's profession

- is able to communicate productively with patients and their family members, behaves with consideration and sympathy, and knows how to terminate communication with a patient if necessary
- in interaction and treatment, is able to take into account the religious and cultural background and social circumstances of patients and their families
- knows how to communicate orally and in writing with other healthcare professionals and supervise students in different teaching situations

#### Clinical problem-solving in doctor's profession

- knows how to plan individual treatment that takes the patient's personal needs and preferences into account as well as prepare treatment plans for acute and chronic illnesses for patients of different ages
- knows how to make diagnoses analytically and based on research data
- is capable of differential diagnostic thinking in his or her work

- is able to assess the significance of the healthcare system structure and financial impacts of healthcare on activities with patients
- is able to assess the significance of the coordination of healthcare and its stakeholders for securing the continuity, safety and reliability of treatment

### Doctor's role in supporting patients and the community

- knows how to promote comprehensive and high-quality treatment and rehabilitation of patients regardless of their culture, language, ethnic background or social status
- is able to evaluate the importance of health promotion for society
- is able to plan projects that improve the population's well-being and promote the use of healthcare service organisations and society's resources in order to increase well-being

### Doctor as a human being

- recognises his or her own motives, values and restrictions and obtains proposals from others to develop his or her activities
- recognises his or her reactions in difficult situations and strives to find means for staying in control in upsetting situations
- is able to assess the impacts of these reactions on his or her life and work and strives to find an appropriate work-life balance
- knows how to process medical errors and learn from them

## The extent of the Licentiate of Medicine degree

The education is based on the Government Decree on University degrees ([794/2004](#)). The minimum extent of the Licentiate of Medicine degree is 360 credits. One Finnish credit equals to one ECTS credit. The average input of 1600 working hours needed for studies of one academic year is equivalent to 60 credits. The language of instruction is Finnish. The degree programme consists of general, basic, intermediate and advanced studies, language studies and compulsory practical training. Studies are carried out as contact teaching. Medical studies are pre-scheduled and organized according the order presented in curriculum. The education is organized in so that with full-time attendance the degree can be taken in six years.

The preclinical stage lasts for two years (Semesters 1-4) and consists of general and basic studies. The completion of clinical studies takes four years (Semesters 5-12). During this phase students focus on the occurrence, onset, diagnostics, treatment and prevention of various diseases. Bed-side teaching is part of students' daily routine. Some clinical studies are integrated in preclinical stage of studies.

### General studies (total 23 ECTS)

043001Y	Introduction to medical profession 4 ECTS
043002Y	Knowledge and research I: Scientific writing 3 ECTS
043003Y	Knowledge and research I : Literature retrieval 2 ECTS
043004Y	Knowledge and research II: Scientific communication 5 ECTS
043005Y	Knowledge and Research III: Data-analysis 3 ECTS

### Language studies

902155Y	Medical English 3 ECTS
901036Y	Second Official Language (Swedish), Written Skills 1,5 ECTS
901037Y	Second Official Language (Swedish), Oral Skills 1,5 ECTS

### Basic studies (total 91 ECTS)

A540141	Anatomy and Medical cell and developmental biology 21 ECTS
A540142	Medical Biochemistry and Molecular Biology 13 ECTS
043026P	Genomic medicine I 2 ECTS
043027P	Psychology for Medical Students 4 ECTS
A540143	Physiology 15 ECTS
043037P	Public health 6 ECTS
043038P	Radiation Safety in Medicine 2 ECTS

A540144	Microbiology and immunology 10 ECTS
A540145	Pharmacology and toxicology 10 ECTS
043052P	General Pathology 5 ECTS
043053P	Basic skills in doctor-patient relationship 3 ECTS

### Intermediate studies (total 161 ECTS )

083000A	Basic clinical skills and tools in physician's work I 5 ECTS
A540146	Pathology and diagnostics 10 ECTS
083010A	Acute medicine I 7 ECTS
083011A	Cardiology 6 ECTS
083012A	Gastrointestinal diseases 8 ECTS
083013A	Hematology and Endocrinology 5 ECTS
083014A	Nephrology/Urology 6 ECTS
083015A	Patient care and prevention 5 ECTS
083001A	Basic clinical skills and tools in physician's work II 2 ECTS
083021A	Forensic Medicine 4 ECTS
A540147	Diseases of the musculoskeletal system 12 ECTS
083030A	Infections and respiratory diseases 5 ECTS
083031A	Otorhinolaryngology 7 ECTS
083032A	Neurology and Neurosurgery 9 ECTS
083033A	Psychiatry and mental health 10 ECTS
083034A	General practice 5 ECTS
083040A	Pathology and diagnostics II 4 ECTS
A540148	Pediatrics 17 ECT
083050A	Ophthalmology 4 ECTS
083051A	Dermatology and Venereology 5 ECTS
083052A	Obstetrics and Gynecology 10 ECTS
083002A	Basic clinical skills and tools in physician's work III 4 ECTS
083054A	Genomic medicine II 3 ECTS
083060A	Oncology and palliative care 4 ECTS
083061A	Geriatrics 4 ECTS

### Advanced studies (total 61 ECTS)

044000S	Clinical patient work 5 ECTS
A540149	Measures and support for functioning 12 ECTS
044030S	Physician, health and society 7 ECTS
083062A	Acute medicine II 8 ECTS
	Optional studies 9 ECTS
A540150	Thesis 20 ECTS

### Practice (24 ECTS)

044001S	Practice 24 ECTS
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### Total 360 ECTS

The degree structure of each semester (2019)

#### 1. Semester (C1 and C2) total 60 ECTS

043001Y	Introduction to medical profession 4 ECTS
043002Y	Knowledge and research I: Scientific writing 3 ECTS
043003Y	Knowledge and research I : Literature retrieval 2 ECTS
043004Y	Knowledge and research II: Scientific communication 5 ECTS
902155Y	Medical English 3 ECTS
901036Y	Second Official Language (Swedish), Written Skills 1,5 ECTS
901037Y	Second Official Language (Swedish), Oral Skills 1,5 ECTS
A540141	Anatomy and Medical cell and developmental biology 21 ECTS
A540142	Medical Biochemistry and Molecular Biology 13 ECTS
043026P	Genomic medicine I 2 ECTS
043027P	Psychology for Medical Students 4 ECTS

### 1. Semester (C3 and C4) total 60 ECTS

A540143	Physiology 15 ECTS
043037P	Public health 6 ECTS
043038P	Radiation Safety in Medicine 2 ECTS
A540144	Microbiology and immunology 10 ECTS
A540145	Pharmacology and toxicology 10 ECTS
043052P	General Pathology 5 ECTS
043005Y	Knowledge and Research II: Data-analysis 3 ECTS
043053P	Basic skills in doctor-patient relationship 3 ECTS
Optional studies 6 ECTS	

### 1. Semester (C5 and C6) total 60 ECTS

083000A	Basic clinical skills and tools in physician's work I 5 ECTS
A540146	Pathology and diagnostics 10 ECTS
083010A	Acute medicine I 7 ECTS
083011A	Cardiology 6 ECTS
083012A	Gastrointestinal diseases 8 ECTS
083013A	Hematology and Endocrinology 5 ECTS
083014A	Nephrology/Urology 6 ECTS
083015A	Patient care and prevention 5 ECTS
044000S	Clinical patient work 5 ECTS
044001S	Practice 3 ECTS

### 1. Semester (C7 and C8) total 60 ECTS

083001A	Basic clinical skills and tools in physician's work II 2 ECTS
083021A	Forensic Medicine 4 ECTS
A540147	Diseases of the musculoskeletal system 12 ECTS
083030A	Infections and respiratory diseases 5 ECTS
083031A	Otorhinolaryngology 7 ECTS
083032A	Neurology and Neurosurgery 9 ECTS
083033A	Psychiatry and mental health 10 ECTS
083034A	General practice 5 ECTS
044001S	Practice 6 ECTS

### 1. Semester (C9 and C10) total 60 ECTS

083040A	Pathology and diagnostics II 4 ECTS
A540148	Pediatrics 17 ECTS
083050A	Ophthalmology 4 ECTS
083051A	Dermatology and Venereology 5 ECTS
083052A	Obstetrics and Gynecology 10 ECTS
083002A	Basic clinical skills and tools in physician's work III 4 ECTS
083054A	Genomic medicine II 3 ECTS
044010S	Thesis, study plan 4 ECTS
044001S	Practice 6 ECTS
Optional studies 3 ECTS	

### 1. Semester (C11 and C12) 60 ECTS

A540149	Measures and support for functioning 12 ECTS
044030S	Physician, health and society 7 ECTS
083060A	Oncology and palliative care 4 ECTS
083061A	Geriatrics 4 ECTS
083062A	Acute medicine II 8 ECTS
A540150	Thesis and maturity exam 16 ECTS
044001S	Practice 9 ECTS

## Licentiate of Medicine

Tutkintorakenteen tila: published

Lukuvuosi: 2019-20

Lukuvuoden alkamispäivämäärä: 01.08.2019

### General Studies

- 043001Y: Introduction to medical profession, 4 op
- 043003Y: Knowledge and Research I: Literature retrieval, 2 op
- 043002Y: Knowledge and Research I: Scientific writing, 3 op
- 043004Y: Knowledge and Research II: Scientific communication, 5 op
- 043005Y: Knowledge and Research III: Data analysis, 3 op

### Language and Communication Studies

- 902155Y: Medical English, 3 op
- 901037Y: Second Official Language (Swedish), Oral Skills, 2 op
- 901036Y: Second Official Language (Swedish), Written Skills, 1 op

### Basic studies

- A540141: Anatomy and Medical cell and developmental biology, 21 op
  - Compulsory*
  - 043010P: Anatomy: Medical cell and developmental biology, 7 op
  - 043011P: Anatomy: Musculoskeletal system, 3 op
  - 043012P: Anatomy: Organ systems, 3 op
  - 043013P: Anatomy: Neuroanatomy, 3 op
  - 043014P: Anatomy: Histology exercise, 2 op
  - 043015P: Anatomy: Macroscopic anatomy exercise, 3 op
- 043053P: Basic skills in doctor-patient relationship, 3 op
- 043052P: General Pathology, 5 op
- 043026P: Genomic Medicine I, 2 op
- A540142: Medical Biochemistry and Molecular Biology, 13 op
  - Compulsory*
  - 043020P: Medical Biochemistry and Molecular Biology: Basics of the molecular biology, 2 op
  - 043021P: Medical Biochemistry and Molecular Biology: Basics of the metabolism, 3 op
  - 043022P: Medical Biochemistry and Molecular Biology: Hormones and biochemistry of tissues, 2 op
  - 043023P: Seminars and exercises of Medical Biochemistry and Molecular Biology, 2 op
  - 043024P: Practical laboratory working in Medical Biochemistry and Molecular Biology, 2 op
  - 043025P: Final exam of Medical Biochemistry and Molecular Medicine, 2 op
- A540144: Microbiology and immunology, 10 op
  - Compulsory*
  - 043040P: Immunology, 4 op
  - 043041P: Microbiology, 6 op
- A540145: Pharmacology and toxicology, 10 op
  - Compulsory*
  - 043045P: Pharmacology and toxicology PART I, 4 op
  - 043046P: Pharmacology and toxicology PART II, 5 op
  - 043047P: Pharmacology and toxicology PART III, 1 op
- A540143: Physiology, 15 op
  - Compulsory*
  - 043030P: Physiology, term paper, 2 op
  - 043031P: Physiology interim exam, 5 op
  - 043032P: Physiology group works, 2 op
  - 043033P: Physiology final examination, 6 op

- 043027P: Psychology for Medical Students, 4 op  
 043037P: Public Health, 6 op  
 043038P: Radiation Safety in Medicine, 2 op

## Intermediate Studies

- 083010A: Acute medicine I, 7 op  
 083062A: Acute medicine II, 8 op  
 083000A: Basic clinical skills and tools in physician's work I, 5 op  
 083001A: Basic clinical skills and tools in physician's work II, 2 op  
 083002A: Basic clinical skills and tools in physician's work III, 4 op  
 083011A: Cardiology, 6 op  
 083051A: Dermatology and venereology, 5 op  
 A540147: Diseases of the musculoskeletal system, 12 op  
   *Compulsory*  
     083022A: Diseases of the musculoskeletal system I: Surgery, 6 op  
     083023A: Diseases of the musculoskeletal system II: Surgery, 3 op  
     083024A: Diseases of the musculoskeletal system III: Physiatry and rheumatology, 3 op  
 083021A: Forensic Medicine, 4 op  
 083012A: Gastrointestinal diseases, 8 op  
 083034A: General practice, 5 op  
 083054A: Genomic Medicine II, 3 op  
 083061A: Geriatrics, 4 op  
 083013A: Hematology and Endocrinology, 5 op  
 083030A: Infections and respiratory diseases, 5 op  
 083014A: Nephrology/Urology, 6 op  
 083032A: Neurology and Neurosurgery, 9 op  
 083052A: Obstetrics and gynecology, 10 op  
 083060A: Oncology and palliative care, 4 op  
 083050A: Ophthalmology, 4 op  
 083031A: Otorhinolaryngology, 7 op  
 A540146: Pathology and diagnostics I, 10 op  
   *Compulsory*  
     083003A: Pathology and diagnostics I: Laboratory medicine, 1 op  
     083004A: Pathology and diagnostics II: Organ pathology, 6 op  
     083005A: Pathology and diagnostics III Radiology and safe practice in radiology, 3 op  
 083040A: Pathology and diagnostics II, 4 op  
 083015A: Patient care and prevention, 5 op  
 A540148: Pediatrics, 17 op  
   *Compulsory*  
     083041A: Pediatrics PART I (pediatrics), 14 op  
     083042A: Pediatrics PART II (child psychiatry), 3 op  
 083033A: Psychiatry and mental health, 10 op

## Advanced Studies

Check the correct amount of ECTS credits for courses that have empty box on the scheduling tab.

- 044000S: Clinical patient work, 5 op  
 A540149: Measures and support for functioning, 12 op  
   *Compulsory*  
     044020S: General practice, 7 op  
     044021S: Physical and rehabilitation medicine, 3 op  
     044022S: Occupational health, 2 op  
 044030S: Physician, health and society, 7 op  
 044001S: Practical Training 1, 3 - 18 op  
 A540150: Thesis, 20 op  
   *Compulsory*  
     044010S: Thesis, Study plan, 4 op  
     044011S: Thesis, 16 op  
     044012S: Maturity exam (native language), 0 op

## Optional studies (vähintään 9 op)

Optional studies 9 ECTS credits

Optional studies will be done so that the total extent of the degree is at least 360 credits. Optional studies can be chosen from courses organized by the Degree Programme in Medicine and from other courses organized by the university that clearly support the degree. In addition, studies done during students exchange, voluntary practices, and participation to national and international seminars or conferences can be accepted to optional studies. In the case of optional studies, if necessary, the student must agree with the organizing department for the participation for the course. Recommended optional courses organized by the Degree Programme in Medicine are:

2nd study year (6 ECTS credits):

- [044102S](#) Dissection, 2 credits
- [044103S](#) Medical Physics, 3 credits
- [044111S](#) Basics of cell culture, 3 credits
- [044113S](#) Basics in eHealth for Medical Students, 3 credits
- [902156Y](#) English Scientific and Medical Writing, 3 credits
- [044104S](#) Evidence-based Medicine Toolkit, 1 credits
- [044114S](#) Searching skills, finding the evidence, 1 credits
- [044115S](#) Diagnostics Tests, 1 credits
- [044116S](#) Statistics toolkit, 1 credits
- [044117S](#) Users' guides to the medical literature, 2 credits
- [044120S](#) Dental and oral health, 2 credits

5th study year (3 ECTS credit):

- [044109S](#) Military medicin, the basics of the field and catastrophe medicin, 2 credits
- [044201S](#) Ultrasound course, 1 credits
- [044203S](#) Dermatology: from basics to clinic, 1 credits
- [044205S](#) Elective course of surgery, 1 credits
- [044206S](#) Adolescent medicine, 4 credits
- [044208S](#) Surgical hand-skills -optional course, 2 credits
- [044210S](#) Connected Health/ Medical ICT innovations, 3credits
- [044110S](#) Acutology advanced course, 4 credits
- [044227S](#) Patient cases in internal medicines, 1 credits
- [044220S](#) General practioner's essentials in internal medicine and pulmology: Gastroenterology, 1,5 credits
- [044221S](#) General practioner's essentials in internal medicine and pulmology: Pulmonary Diseases, 1,5 credits
- [044222S](#) General practioner's essentials in internal medicine and pulmology: Endocrinology, 1,5 credits
- [044223S](#) General practioner's essentials in internal medicine and pulmology: Hematology and Infectious Diseases, 1,5 credits
- [044224S](#) General practioner's essentials in internal medicine and pulmology: Rheumatology and nephrology, 1,5 credits
- [044225S](#) General practioner's essentials in internal medicine and pulmology: Cardiology, 1,5 credits
- [044226S](#) General practioner's essentials in internal medicine and pulmology: Acutology, 1,5 credits

## Opintojaksojen kuvaukset

## Tutkintorakenteisiin kuuluvien opintokohteiden kuvaukset

### 043001Y: Introduction to medical profession, 4 op

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** General Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Petri Kulmala

**Opintokohteen kielet:** Finnish

**Leikkaavuudet:**

ay043001Y Introduction to Medicine (OPEN UNI) 2.0 op

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

4 ECTS

**Language of instruction:**

Finnish

**Timing:**

1st year

**Learning outcomes:**

Upon completion of the course, the student:

- Is oriented to studying at the university (medicine or dentistry)
- Has time management skills
- Is aware of various roles of medical doctor and dentist in work life
- Understands the significance of professionalism and collegialism in studies and in work life
- Knows the specific features and principles of medical ethics
- Perceives the structure and function of health care system
- Understands the significance of interactive skills in studies and in the medical profession
- Is able to name the factors that effect the successful resuscitation and the risk factors related to resuscitation
- Is able to identify situations where immediate help or resuscitation is needed, and can prevent further progression of injuries and with simple procedures maintain life support
- Recognizes heart failure patient and is able to apply given treatment recommendation to the treatment of the patient, including cardiac massage and defibrillation
- Is motivated to maintain and practice resuscitation skills

**Contents:**

043001Y-01 Orientation for new students: curriculum, studying medicine, study-culture matters

043001Y-02 Medical profession: professionalism, various roles of a medical doctor, how to become a doctor?, collegialism, management of time and work

043001Y-03 Introduction to health services

043001Y-04 Basic life support

**Mode of delivery:**

The course is carried out as blended, multiform teaching

**Learning activities and teaching methods:**

Lectures: 38 h

Group work 60 h

Self study: 10 h

total. 108 h

**Target group:**

First year medical and dentistry students.

**Prerequisites and co-requisites:**



There is not any prerequisites for the course.

**Recommended optional programme components:**

-

**Recommended or required reading:**

All the material will be provided during the course.

**Assessment methods and criteria:**

Attending lectures, group work and practice; personal written tasks.

**Grading:**

The course utilizes verbal grading scale pass / fail.

**Person responsible:**

Petri Kulmala, Director of the medical curriculum.

**Working life cooperation:**

Part of the course is carried out at the local health care centers, in authentic work environment.

**Other information:**

043001Y-01 Orientation for new students: Petri Kulmala

043001Y-02 The Practice of Medicine: Petri Kulmala

043001Y-03 Introduction to health services: Markku Timonen

043001Y-04 Basic life support: Seppo Alahuhta

## **043003Y: Knowledge and Research I: Literature retrieval, 2 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** General Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Grekula, Sirpa Birgitta, Mimmi Tolvanen

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

2 ECTS

**Language of instruction:**

Finnish

**Timing:**

1st year

**Learning outcomes:**

The student will be able to search research articles using basic literature retrieval methods and to use bibliographic databases available at the Medical Faculty.

**Contents:**

Library information systems, medical and dental publications, scientific online journals, Medline, Medic, Scopus, Cochrane Library, electronic books, reference management software.

**Mode of delivery:**

Blended teaching

**Target group:**

Medical and dental students

**Prerequisites and co-requisites:**

None.

**Recommended optional programme components:**

-

**Recommended or required reading:**

Material in lessons small group lessons

**Assessment methods and criteria:**

Completion of practical project

**Grading:**

Pass/Fail

**Person responsible:**

Associate professor Pentti Nieminen

**Working life cooperation:**

-

**Other information:**

-

## **043002Y: Knowledge and Research I: Scientific writing, 3 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** General Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

3 ECTS

**Language of instruction:**

Finnish

**Timing:**

1st year

**Learning outcomes:**

By the end of the course the student has practiced the following skills: using information and communication technology resources in the University of Oulu, using workstations available in the Medical Faculty, applying basic software necessary in the studies. The student knows basics in scientific writing.

**Contents:**

Information and communication technology:

Workstations, information security and confidentiality, networks, and office software.

Guidelines for written assignments and word processing:

Structure of assignments and thesis, reporting of findings, tables and figures, citing and references.

**Mode of delivery:**

Blended teaching

**Target group:**

Medical and dental students

**Prerequisites and co-requisites:**

None.

**Recommended or required reading:**

Material in lessons and small group lessons

**Person responsible:**

Pentti Nieminen

**Working life cooperation:**

-

**Other information:**

-

## **043004Y: Knowledge and Research II: Scientific communication, 5 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** General Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

5 ECTS

**Language of instruction:**

Finnish

**Timing:**

1st year

**Learning outcomes:**

The student is familiar with the research process and with the characteristics of scientific information including an ability to obtain and process scientific information, and to report and apply the results especially in the fields of medicine, dentistry and health sciences.

The student knows the role of scientific publications, can use and evaluate information sources critically. The student will be able to search research articles using basic literature retrieval methods and to use bibliographic databases available at the Medical Faculty.

The student knows basic principles in research ethics and good scientific practice.

**Contents:**

Guidelines for written assignments and word processing:

Structure of assignments and thesis, reporting of findings, tables and figures, citing and references.

Scientific information:

Principles of scientific research, ethics in research, research methods in the main disciplines (clinical medicine, epidemiology, biomedicine and health sciences).

Scientific communication:

Scientific journals, research articles, critical evaluation of research findings, ethics in scientific publication and bibliometrics.

Special issues in medical research:

Ethics in research, regulations in clinical research and use of animals in scientific research, research groups.

**Mode of delivery:**

Blended teaching

**Learning activities and teaching methods:**

040024Y (4 ECTS) Knowledge Management and Research II

**Target group:**

Medical, dental, health sciences and medical wellness technology students

**Prerequisites and co-requisites:**

None

**Recommended optional programme components:**

-

**Recommended or required reading:**

Material in lessons and small group lessons

**Assessment methods and criteria:**

Regular and active participation in the small group lessons, readiness tests and completion of practical projects.

**Grading:**

1 - 5, fail

**Person responsible:**

Associate professor Pentti Nieminen

**Working life cooperation:**

-

**Other information:**

-

## 043005Y: Knowledge and Research III: Data analysis, 3 op

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** General Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

3 ECTS

**Language of instruction:**

Finnish

**Timing:**

2nd year

**Learning outcomes:**

The student is familiar with statistical computing in the fields of medicine, dentistry and health sciences. Further, the student is able to analyze data with basic statistical methods, use basic statistical significance tests and inference methods, and evaluate critically scientific research reports.

**Contents:**

Aims and phases of statistical research, planning statistical research, obtaining data, variable distributions (frequencies, graphs and statistics), basics in statistical inference and methods (estimates, significance tests and confidence limits), basic methods in comparing groups and estimating associations between variables, specific methods applied in medical research.

**Mode of delivery:**

Blended teaching

**Target group:**

Medical and dental students

**Prerequisites and co-requisites:**

No

**Recommended or required reading:**

Material in lessons and small group lessons.

**Assessment methods and criteria:**

Exam

**Grading:**

1 - 5, fail

**Person responsible:**

Pentti Nieminen

**Working life cooperation:**

The course does not contain working life cooperation.

## 902155Y: Medical English, 3 op

**Voimassaolo:** 01.01.2017 -

**Opiskelumuoto:** Language and Communication Studies

**Laji:** Course

**Vastuuyksikkö:** Languages and Communication

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Eva Braidwood

**Opintokohteen kielet:** English

**Leikkaavuudet:**

ay902155Y Medical English (OPEN UNI) 3.0 op

**Proficiency level:**

B2-C1

**Status:**

This course is compulsory for students of medicine and dentistry. It is recommended for 1<sup>st</sup> year students.

**Required proficiency level:**

Students are expected to have had English as their A1 or A2 language at school or have acquired equivalent skills.

**ECTS Credits:**

3 op /ECTS = 80 hrs

**Language of instruction:**

English

**Timing:**

The course consists of 3 modules. Module 1 is held in the autumn semester, during period I & II. Groups in Module 2 are held in periods II and III, and Module 3 is held in period IV.

**Learning outcomes:**

Having completed the course successfully, students will be able to:

- understand and use basic medical terminology appropriately, and learn strategies for expanding your own medical vocabulary (MODULES 1 & 2);
- understand medical case reports related to specific body systems (MODULE 2);
- demonstrate your ability to communicate effectively with patients (patient-centred interviewing), and discuss cases with medical professionals using professional medical English (MODULE 2);
- discuss and present topics of interest in clinical psychology (MODULE 3);
- follow the conventions of scientific communication and general medical practice (MODULE 2);
- produce specific text types in English (scientific summary and scientific poster) (MODULES 1 & 3).

**Contents:**

The course consists of three modules.

Module 1 is integrated with the Cell Biology course. Students learn the structure, rules and conventions of appropriate language use in scientific reports. This module is scheduled for Year 1 Period I (autumn semester in the first year).

Module 2 focuses on medical terminology and anatomy. Students learn the basics of medical terminology, and develop their own strategy for mastering English medical terms related to the body systems and their functions. Students will read case reports and learn about effective doctor-patient and doctor-doctor communication. This module is scheduled in Year 1 Period II-IV.

Module 3 is integrated with the course in clinical psychology. Students will report about the case studies they analyse and discuss in the Clinical Psychology course. To this end, they will work in teams and prepare a scientific abstract and an e-poster in English, which they will present in a mini-conference at the end of the term. This module is scheduled in Year 1 Period IV.

**Mode of delivery:**

Module 1: lectures supported by web-based practice and tutorials (writing clinic)

Module 2: contact teaching with online elements and web-based practice

Module 3: small group sessions with online support (the same groups as in the Clinical psychology course).

**Learning activities and teaching methods:**

**Module 1: 20 hrs = 0.75 ECTS**

10 hrs of guided teaching in the form of 3 lectures and 2 compulsory tutorials, 10 hrs independent work, team work.

**Module 2: 40 hrs = 1,5 ECTS**

20 hrs guided teaching and 20 hrs independent work – Alternatively, students with C1 language skills can complete the course by participating in 10 hrs contact lessons and 30 hrs self-study and team work.

**Module 3: 20 hrs = 0.75 ECTS credits**

14 hrs guided teaching, online learning and team work, 6 hrs participating in mini-conference.

**Target group:**

Students studying medicine and dentistry; in the first year of their studies at the Faculty of Medicine.

**Prerequisites and co-requisites:**

Students taking the course should have studied English as their first foreign language and should have B1-B2-level language skills (CEFR scale).

**Recommended optional programme components:**

The course is integrated with Cell biology and Clinical psychology.

**Recommended or required reading:**

The course material is based on scientific texts and publications in leading medical journals. The selection of texts varies every year depending on the leading themes in the field (cell biology, clinical psychology). Module 2 is based on common medical terminology material and anatomy and physiology texts as well as case reports published in leading medical journals. The selection of material and sources are available for students in the university's electronic learning platform (Moodle) and through the university library.

**Assessment methods and criteria:**

This course utilises continuous assessment. During the three modules students will be compiling a learning journal with glossary. The journal contains the texts students produce in Module 1 and Module 3, the glossary of medical terms they compile in Module 2 and additional learning material they use and produce for doctor-patient communication (sample dialogues, extracts from case reports). Peer-feedback will also be utilised and counted in the final assessment. The assessment criteria and matrix will be available in Moodle.

**Grading:**

The course uses continuous assessment and numerical grading scale 1-5.

**Person responsible:**

Eva Braidwood

**Working life cooperation:**

The course includes guest lectures as and when available.

**Other information:**

Students with advanced (C1) language skills can complete the alternative version of Module 2 (less contact hrs and more independent/team work).

## 901037Y: Second Official Language (Swedish), Oral Skills, 2 op

**Voimassaolo:** 01.08.2014 -

**Opiskelumuoto:** Language and Communication Studies

**Laji:** Course

**Vastuuyksikkö:** Languages and Communication

**Opettajat:** Liisa Niemi

**Opintokohteen kielet:** Swedish

**Leikkaavuudet:**

ay901037Y Second Official Language (Swedish), Oral Skills (OPEN UNI) 2.0 op

Ei opintojaksokuvauksia.

## 901036Y: Second Official Language (Swedish), Written Skills, 1 op

**Voimassaolo:** 01.08.2014 -

**Opiskelumuoto:** Language and Communication Studies

**Laji:** Course

**Vastuuyksikkö:** Languages and Communication

**Opettajat:** Liisa Niemi

**Opintokohteen kielet:** Swedish

**Leikkaavuudet:**

ay901036Y Second Official Language (Swedish), Written Skills (OPEN UNI) 1.0 op

## A540141: Anatomy and Medical cell and developmental biology, 21 op

**Voimassaolo:** 01.08.2017 -

**Opiskelumuoto:** Basic Studies

**Laji:** Study module

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Tuukkanen, Kaarlo Juha Kullervo, Lehenkari, Petri Pauli

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

21 ECTS credits / 567 hours of work

**Language of instruction:**

Finnish

**Timing:**

The course unit is held in the autumn semester. The course is recommended to complete mainly at the first autumn semester of medical or dental studies.

**Learning outcomes:**

Upon completion of the course the student should be able to:

- understand the structure, development and function of the human body in order to manage the rest of the preclinical and clinical studies
- identify and describe the structures essential for all medical doctors in diagnostics and treatment, especially for first aid.
- demonstrate common anatomical knowledge for understanding medical theory and research and for dealing with evidence based medicine.

Upon completion of the medical cell and developmental biology part of the course the student should be able to:

- describe the structure of various cell types (especially mammalian cells) and the structure and function of cell organelles
- describe cell growth and cell division
- present the principles of the regulation of cell function and genetic regulation
- list the common research techniques in cell biology
- display an understanding of gametogenesis, fertilization, embryonal development (0-40days) and its regulation as well as the development of embryonal malformations.
- display an understanding of human growth and development.
- identify and describe the basic tissues of the human body and the microscopic structure of the tissues for understanding their normal and pathological function

Upon completion of the anatomy part of the course the student should be able to

- describe the structure of the organs and their topography in the body as well as surface projections of the internal organs.
- understand the main principles of the embryonal development.
- recognize the main histological structures that are important for the function of the organs as well as structures which are important for pathological processes.
- demonstrate the organs in living body, in preparations of the cadavers, anatomical models, X-ray images, diagrammatic drawing and in manual examination.

**Contents:**

- 043010P Anatomy: Medical cell and developmental biology 7 ECTS
- 043011P Anatomy: Musculoskeletal system 3 ECTS
- 043012P Anatomy: Organ systems 3 ECTS
- 043013P Anatomy: Neuroanatomy 3 ECTS
- 043014P Anatomy: Histology exercise 2 ECTS
- 043015P Anatomy: Macroscopic anatomy exercise 3 ECTS

**Mode of delivery:**

Face-to-face teaching.

**Learning activities and teaching methods:**

Lectures 140h / small group exercise 75h / Self-study 352 h (includes essay). Small group teaching will be provided in 2-4 h exercises. Each student will have 1-2 exercise sessions per week. Writing an essay in cell and developmental biology. In addition the dental students have at the 2nd term tooth development, histology and morphology given by the department of Dentistry. Anatomy study module includes an optional course of the anatomical dissection (2 ECTS credits)

**Target group:**

First year medical and dental students.

**Prerequisites and co-requisites:**

-

**Recommended optional programme components:**

The course must be completed during the preclinical stage of studies.

**Recommended or required reading:**

Anatomy

Textbooks:

R.L. Drake, A.W. Vogl, A.W.M. Mitchell: Gray's Anatomy for students. Elsevier Churchill Livingstone (latest edition) or K.L. Moore: Clinically oriented Anatomy, Williams & Wilkins co (latest edition)

Atlas:

R. Putz, R. Pabst: Sobotta, Atlas of human anatomy, Vols I-II. Elsevier Urban&Fischer, München (latest edition) or F. H. Netter: Atlas of human anatomy or Thieme Atlas of Anatomy, Latin Nomenclature.

Pocket atlas:

H. Feneis: "Pocket Atlas of Human Anatomy, G. Thieme Pub. Stuttgart, (latest edition) (Thieme Flexibook) or Dorland's/Gray's Pocket Atlas of Anatomy Richard L. Drake, A. Wayne Vogl,

Neuroanatomy

W. Kahle, H. Leonhardt, W. Platzer: "Color Atlas and Textbook of Human Anatomy" Vol. 3: Central Nervous System and Sensory Organs (W. Kahle)

G. Thieme Pub. Stuttgart, (latest edition) (Thieme Flexibook)

Embryology:

T.W. Sadler: Langman's Medical Embryology. Williams&Wilkins co, Baltimore or

Cell Biology:

A.L. Kierszenbaum: Histology and Cell Biology: an introduction to pathology. Mosby, St Louis, (latest edition).

Additional material: H.Lodish, A.Berk, C.A.Kaiser, M.Krieger, M.P.Scott, A.Bretscher, H.Ploegh: Molecular Cell Biology. W.H.Freeman and Co, New York (latest edition).

Histology:

A.L. Kierszenbaum: Histology and Cell Biology: an introduction to pathology. Mosby, St Louis, (latest edition) or B.

Young, J.S. Lowe, A. Stevens, J.W. Heath: Wheater's Functional Histology, A Text and Colour Atlas. Elsevier, Churchill Livingstone

Histology atlas can be found also in Thiemen e-books. (Color Atlas of Cytology, Histology and Microscopic Anatomy, 4th edition).

Web material:

<http://herkules.oulu.fi/isbn9789514293238/> collection of essays written by students from previous courses of Medical cell and developmental biology.

**Assessment methods and criteria:**

-

**Grading:**

The course unit utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail. The final grading includes final examination and the assessment of the essay writing.

**Person responsible:**

Professor Juha Tuukkanen ja Petri Lehenkari

**Other information:**

Evaluation of the course as total is obligatory.

*Compulsory*

#### **043010P: Anatomy: Medical cell and developmental biology, 7 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Lehenkari, Petri Pauli

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

7 ECTS credits / 189 hours of work

**Language of instruction:**

Finnish, some material in English



**Timing:**

The course is held in the first autumn semester in the curriculum of medical and dental studies.

**Learning outcomes:**

The course is specifically designed to enable future clinical work of a medical or dentistry licentiate. Upon completion of the medical cell and developmental biology course the student

- is able to describe the structure of various cell types (especially mammalian cells) and the structure and function of cell organelles.
- can describe cell growth and cell division, present the principles of the regulation of cell function and genetic regulation and list the common research techniques in cell biology.
- can understand gametogenesis, fertilization and embryonal development (0-40days) and its regulation as well as human growth and development including the development of embryonal malformations
- can identify and describe the basic tissues of the human body and the microscopic structure of the tissues for understanding their normal and pathological function
- knows how to find original publications and evaluate them critically.
- knows how to use scientific information and the principles of scientific work in the form of the essay, which is integrated with English and Knowledge and research I studies.

**Contents:**

Cell Biology: Cell Evolution and Human Origin, Cell Types and Cell Research Methods, Cell Structures, Genes, and Expression of Genetic Information, Regulating Cell Functioning and Differentiation

Basics of histology and cell function at tissue level: epithelial tissue, connective tissue, nerve tissue, special cellular structures, cancer cells, and cellular dysfunction

Basics of Developmental Biology: Gender Cells and Their Activity, Fertilization, Human development at 2-4. week, placenta, developmental abnormalities, the developmental biology of various organs from week 4 to adult

**Mode of delivery:**

Blended teaching, consisting of lectures and tuition for essays.

**Learning activities and teaching methods:**

Lectures 56 h / self-study 189 h (includes essay). The essay is done in collaboration with English and Knowledge and research I: Scientific writing course.

**Target group:**

First year medical and dental students.

**Prerequisites and co-requisites:**

High school biology

**Recommended optional programme components:**

The anatomy course (A540141) consists of medical cell and developmental biology, musculoskeletal, organ and neuroanatomy sections, as well as macroscopic anatomy and histology practicals, all of which are integrated and taught partially overlapping, especially developmental biology is taught for each organ in the context of the macroscopic anatomy.

**Recommended or required reading:**

In cell biology studies we utilise material produced by previous students, (<http://jultika.oulu.fi/files/isbn9789526209296.pdf>), additionally, we use free resources from the internet, a advised during the course and virtual Histology.

To study embryology, we recommend to use the same book as intended for all other anatomy studies: Sobotta Anatomy Textbook: English Edition with Latin Nomenclature, Friedrich Paulsen, Tobias M. Böckers, Jens Waschke, Elsevier Health Sciences, 2.12.2018

As additional material for further studies in cell biology the following book can also be used: A.L. Kierszenbaum: Histology and Cell Biology: an introduction to pathology. Mosby, St Louis

**Assessment methods and criteria:**

As a part of this course, the students will be compiling an essay, which will be assessed. The assessment of the whole course consists also of final examination.

**Grading:**

The course unit utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail. The final grading includes final examination and the assessment of the essay writing.

**Person responsible:**

Professor Petri Lehenkari

**Working life cooperation:**

-

**Other information:**

-

**043011P: Anatomy: Musculoskeletal system, 3 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Lehenkari, Petri Pauli

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

3 ECTS credits / 81 hours of work

**Language of instruction:**

Finnish

**Timing:**

The course unit is held in the autumn semester. The course is recommended to complete at the first autumn semester of medical or dental studies.

**Learning outcomes:**

After the course student:

- Is familiar with the structure and function of the skeleton, muscles, nerve tissue and blood vessels of the head, spine, hips and limbs, and the lymphatic system, so that is able to embrace other preclinical and clinical training and make use of these skills and knowledge of human anatomy in clinical work and in the medical and dental profession.
- Understands the basics of musculoskeletal functions and interrelation and the basics of biomechanics
- Is able to perceive and recognize the three-dimensional structures and biomechanics of the musculoskeletal system in a living person, in tissue models, in imaging, such as x-rays and in diagrams

**Contents:**

Skull, limbs, spinal and pelvic bones, muscles, tendons, ligaments, lymphatic, vascular and nerve anatomy, musculoskeletal function and basics of clinical musculoskeletal assessment and imaging.

**Mode of delivery:**

Lectures and macroscopic anatomy practicals (043015P).

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**Learning activities and teaching methods:**

Lectures 22 h, exam 2 h, self-study 57 h.

**Target group:**

First year medical and dental students.

**Prerequisites and co-requisites:**

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**Recommended optional programme components:**

The anatomy course consists of medical cell and developmental biology, musculoskeletal, organ and neuroanatomy sections, as well as macroscopic anatomy and histology practicals, all of which are integrated and taught partially overlapping, especially developmental biology is taught for each organ in the context of the macroscopic anatomy.

**Recommended or required reading:**

Sobotta Anatomy Textbook: English Edition with Latin Nomenclature Edited by Friedrich Paulsen, Tobias M. Böckers, Jens Waschke ISBN 978-3-437-44080-9 Elsevier GmbH, Munich, Germany 1<sup>st</sup> edition, 2019

**Assessment methods and criteria:**

The course unit utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail

**Grading:**

The course unit utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Professor Petri Lehenkari

**Working life cooperation:**

Some of the lecturers are clinicians, the clinical assessment of students and possibly demonstrations with patients are used in the teaching

**Other information:**

Study entities completed in other medical faculty with same content and, extent may be accepted as compensatory credits

**043012P: Anatomy: Organ systems, 3 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Tuukkanen, Kaarlo Juha Kullervo

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

3 ECTS credits / 81 hours of work

**Language of instruction:**

Finnish

**Timing:**

The course unit is held in the autumn semester. The course is recommended to complete at the first autumn semester of medical or dental studies.

**Learning outcomes:**

Upon completion of the organ anatomy part of the course the student

- is able to describe the structure of the organs and their topography in the body as well as surface projections of the internal organs.
- understands the main principles of the embryonal development.
- is able to demonstrate the organs in living body, in preparations of the cadavers, anatomical models, X-ray images, diagrammatic drawings and in manual examination and understands the principles of topographic anatomy and projection of structures in various imaging techniques.
- can recognize normal structures in manual examination and understands the principles of anatomical variation.
- understands the normal function of the organ systems.
- is able to acquire other preclinical and clinical studies and use the knowledge of anatomy in clinical work in the medical and dental profession

**Contents:**

Systemic anatomy: cardiovascular system and lymphatic system, thorax and respiratory system, abdomen and alimentary system, integument, pelvis, urinary system, genital systems, and endocrine system. Regional anatomy and topographical anatomy, organ development and histology integrated with the previous titles. Examples of the applications of the anatomical knowledge in clinical cases and manual palpation of main organs and structures.

**Mode of delivery:**

Lectures and macroscopic anatomy practicals (043015P).

**Learning activities and teaching methods:**

Lectures 32 h / self-study 118 h

**Target group:**

First year medical and dental students.

**Prerequisites and co-requisites:**

-

**Recommended optional programme components:**

The anatomy course consists of medical cell and developmental biology, musculoskeletal, organ and neuroanatomy sections, as well as macroscopic anatomy and histology practicals, all of which are integrated and partially overlapping. The course is intended to be completed during the preclinical studies.

**Recommended or required reading:**

Textbooks

To study anatomy, we recommend to use the same integrated book as intended for all other anatomy studies:

Sobotta Anatomy Textbook: English Edition with Latin Nomenclature. Edited by Friedrich Paulsen, Tobias M. Böckers, Jens Waschke. Elsevier GmbH, Munich, Germany 1st edition, 2019 (ISBN 978-3-437-44080-9)

**Assessment methods and criteria:**

After the course an exam where material from anatomy practicals (043015P) and neuroanatomy lectures is assessed.

**Grading:**

The course unit utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Professor Juha Tuukkanen

**Working life cooperation:**

Some of the lecturers are clinicians and the clinical methods of assessment in demonstrations with students are used in the teaching

**Other information:**

Study entities completed in other medical faculty with same content and, extent may be accepted as compensatory credits

### 043013P: Anatomy: Neuroanatomy, 3 op

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Tuukkanen, Kaarlo Juha Kullervo

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

3 ECTS credits / 81 hours of work

**Language of instruction:**

Finnish

**Timing:**

The course unit is held in the autumn semester. The course is recommended to complete at the first autumn semester of medical or dental studies.

**Learning outcomes:**

Upon completion of the neuroanatomy course the student:

- is able to describe the structure and location of the central nervous system and the somatic and autonomous divisions of the peripheral nervous system and the principles of their embryologic development
- knows the structures that surround the central nervous system, the meninges and the formation and circulation of the cerebrospinal fluid
- understands the blood supply of the central nervous system and the symptoms related to circulatory diseases.
- can describe cranial nerves, main motor and sensory pathways and the structure and function of visual, hearing and balance systems
- can describe the structure of limbic system and the main principles of its functions
- can localize the structures in a living body, cadaver, anatomical models, x-ray (CT/MRI) images and drawings
- is able to acquire other preclinical and clinical studies and use the knowledge of neuroanatomy in clinical work in the medical and dental profession

-

**Contents:**

- Cerebral structure and the functional cortical areas
- Spinal cord
- Brainstem
- Cerebellum
- Diencephalon
- Telencephalon
- Cerebral vessels
- Meninges
- Ventricular system and adjacent structures
- Cranial nerves

- Peripheral and autonomic nervous systems
- Somatic motor and somatosensory systems
- Limbic system
- Sensory organs eye and ear and auditory, vestibular and visual systems

**Mode of delivery:**

Lectures and macroscopic anatomy practicals (043015P)

.

**Learning activities and teaching methods:**

Lectures 24 h, exam 2 h, self-study 55 h.

**Target group:**

First year medical and dental students.

**Prerequisites and co-requisites:**

-

**Recommended optional programme components:**

The anatomy course consists of medical cell and developmental biology, musculoskeletal, organ and neuroanatomy sections, as well as macroscopic anatomy and histology practicals, all of which are integrated and partially overlapping.

**Recommended or required reading:**

*Textbooks*

To study neuroanatomy, we recommend to use the same integrated book as intended for all other anatomy studies:

Sobotta Anatomy Textbook: English Edition with Latin Nomenclature. Edited by Friedrich Paulsen, Tobias M. Böckers, Jens Waschke. Elsevier GmbH, Munich, Germany 1st edition, 2019 (ISBN 978-3-437-44080-9)

**Assessment methods and criteria:**

After the course an exam where material from anatomy practicals (043015P) and neuroanatomy lectures is assessed

**Grading:**

The course unit utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Professor Juha Tuukkanen

**Working life cooperation:**

Some of the lecturers are clinicians and the clinical methods of assessment in demonstrations with students are used in the teaching

**Other information:**

Study entities completed in other medical faculty with same content and, extent may be accepted as compensatory credits

**043014P: Anatomy: Histology exercise, 2 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Lehenkari, Petri Pauli, Sanna Palosaari

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

2 ECTS credits / 54 hours of work

**Language of instruction:**

Finnish and some material in English

**Timing:**

The course is scheduled in the first autumn semester of medicine and dentistry curriculum.

**Learning outcomes:**

Upon completion of the small group exercises of histology the student

- learns how to use a light microscope, knows other microscopy techniques and common staining and sample preparation methods.
- can identify the normal cells and structures in each organ systems in microscope preparations and virtual microscopy images
- has sufficient grounds of healthy tissue for understanding pathological changes in pathology and other clinical courses

-

**Contents:**

Use of a microscope, histological techniques, histology of basic tissues and normal histology of organs. In exercises H2-H6 is learn learned to recognize the type of tissue and its cells and special structures. In exercises H7-H14 we is learned how to identify organs on the basis of histological structures, the special structures of the organs, and how the structure is related to the function.

**Mode of delivery:**

Teaching is carried out in a multidisciplinary form, and approved completion requires attendance in all contact classes or appropriate compensatory measures. The students familiarize themselves with the subject in advance using provided material and electronic preliminary exercises. Learning will be deepened in classroom teaching. Cell biology is a prerequisite for understanding histology. Histology deepens the understanding of macroscopic anatomy but also requires knowledge of anatomy. The histology practical exercises are scheduled to proceed consistently with cell biology and anatomy lectures

**Learning activities and teaching methods:**

Small group exercise 30 h / Self-study 24 h. Small group teaching will be provided in 2-4 h exercises, where the students practice microscopic anatomy by studying histological preparations themselves by microscopy and virtual microscopy. There is a test during exercise and attendance of 100% at the course is required. Group change is allowed between students.

**Target group:**

First year medical and dental students.

**Prerequisites and co-requisites:**

Preparatory part for histology is included in the lectures of cell and developmental biology and anatomy. In addition, students are expected familiarizing to the subject of each exercise in advance with provided material and electronic preliminary exercises

**Recommended optional programme components:**

The course must be completed during the preclinical stage of medical and dentistry studies and is a prerequisite for understanding physiology and acquiring other clinical knowledge. Histology practical exercises aim at deepening the understanding of macroscopic anatomy in the scale of microscopic structures and expanding cell biological understanding to the structure and function of macroscopic organ.

**Recommended or required reading:**

Textbooks:

A.L. Kierszenbaum: Histology and Cell Biology: an introduction to pathology. Mosby, St Louis (latest ed.) <https://ebookcentral.proquest.com/lib/oulu-ebooks/detail.action?docID=2074641> or B. Young, J.S. Lowe, A. Stevens, J.W. Heath: Wheater's Functional Histology, A Text and Colour Atlas. Elsevier, Churchill Livingstone (latest ed.)

Open textbook of Anatomy and Physiology (<https://opentextbc.ca/anatomyandphysiology/>)  
 In addition to textbooks, preliminary material for each exercise is provided in Moodle or Optima learning environment. Virtual histology teaching material is operated on open source virtual microscopy program QuPath (<https://qupath.github.io/>)

**Assessment methods and criteria:**

This course unit utilizes continuous assessment. During the course unit, there are short tests on each topic (14 tests), each topic forms one group practical session. At least half of the tests should be passed.

**Grading:**

Individual small exams (21) are graded pass / fail. The numerical grading scale 1-5 is based on the number of passed individual small group assessments. At least half of the exams has to be passed to get the lowest grade 1.

**Person responsible:**

PhD Sanna Turunen, Professor Petri Lehenkari

**Working life cooperation:**

Anatomy teaching is closely connected to clinical practice and organized in co-operation with hospital staff

**Other information:**

Study entities completed in other medical faculty with same content and, extent may be accepted as compensatory credits

**043015P: Anatomy: Macroscopic anatomy exercise, 3 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Antti Koskela, Tuukkanen, Kaarlo Juha Kullervo

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

3 ECTS credits / 81 hours of work.

**Language of instruction:**

Finnish

**Timing:**

The course is scheduled in the first autumn semester of medicine and dentistry curriculum.

**Learning outcomes:**

Upon completion of the small group exercises of macroscopic anatomy the student is able to

- describe the structure of the organs and their topography in the body as well as surface projections of the internal organs
- demonstrate the organs in living body, in preparations of the cadavers, anatomical models, X-ray images, CT / MR imaging, ultrasound imaging, diagrammatic drawings and in manual examination

**Contents:**



Systemic anatomy: cardiovascular system and lymphatic system, thorax and respiratory system, abdomen and alimentary system, integument, pelvis, urinary system, genital systems, and endocrine system. Regional anatomy and topographical anatomy, organ development and histology integrated with the previous titles. Examples of the applications of the anatomical knowledge in clinical cases and manual palpation of main organs and structures.

**Mode of delivery:**

Teaching is carried out in a multidisciplinary form, and approved completion requires attendance in all contact classes or appropriate compensatory measures. The students familiarize themselves with the subject in advance using provided material and preliminary exercises. The practical exercises are scheduled to proceed consistently with anatomy lectures

**Learning activities and teaching methods:**

Small group exercise 57 h / Self-study 81 h (includes self-study of the introductory exercise followed by examination). Small group teaching will be provided in 2-4 h exercises, where the student practice macroscopic anatomy with bones, anatomical models and palpation and x-ray images. There is an examination after each exercise and attendance of 100% at the course is required.

**Target group:**

First year medical and dental students.

**Prerequisites and co-requisites:**

Studying the exercise document and answering the preliminary questions before the small group exercise.

**Recommended optional programme components:**

The course must be completed during the preclinical stage of studies.

**Recommended or required reading:**

Textbooks

To study anatomy, we recommend to use the same integrated book as intended for all other anatomy studies:

Sobotta Anatomy Textbook: English Edition with Latin Nomenclature. Edited by Friedrich Paulsen, Tobias M. Böckers, Jens Waschke. Elsevier GmbH, Munich, Germany 1st edition, 2019 (ISBN 978-3-437-44080-9)

**Assessment methods and criteria:**

This course unit utilizes continuous assessment. During the course unit, there are small exams during each of the 21 group practical (pass / fail). The first orienting exercise is a terminology examination of the introductory document. The course is organized in blocks and at least half of the exams in each block should be passed.

**Grading:**

Individual small exams (21) are graded pass / fail. The numerical grading scale 1-5 is based on the number of passed individual small group assessments. At least half of the exams has to be passed to get the lowest grade 1

**Person responsible:**

Professor Juha Tuukkanen, MD, PhD Antti Koskela

**Working life cooperation:**

Some of the tutors are clinicians and the clinical methods of assessment in demonstrations with students are used in the teaching

**Other information:**

Study entities completed in other medical faculty with same content and, extent may be accepted as compensatory credits

**043053P: Basic skills in doctor-patient relationship, 3 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Juha Auvinen

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

3 ECTS /81 hours of work

**Language of instruction:**

Finnish

**Timing:**

The second year (C4), spring semester

**Learning outcomes:**

Upon completion of the course, the student is able to:

- distinguish the basic concepts of doctor-centered and patient-centered communication;
- describe the term "reflection" and know the different definitions of "reflection"
- describe the interprofessional team-work in the physician's as well as the dentist's work

**Contents:**

The course includes introduction to basic concepts of doctor-centered and patient-centered communication. In addition, students will write reflection diary about their feelings concerning practical training in health centers and small group training

**Mode of delivery:**

Face-to-face teaching

**Learning activities and teaching methods:**

Lectures 4 h, introductory seminar 2 h, small group teaching 4 h, exercise session for doctor-patient communication 4h, practical period in health care center (3 days = 24 h), and closing work-shop. Writing reflection diary. Independent work 43 h.

**Target group:**

The students from medicine and dentistry

**Prerequisites and co-requisites:**

C1

**Recommended optional programme components:**

The course has to be completed during preclinical period (the first two years) of medical and dental studies.

**Recommended or required reading:**

Kumpusalo E, Ahto M, Eskola K, Keinänen-Kiukaanniemi S, Kosunen E, Kunnamo I, Lohi J (toim.): Yleislääketiede, Kustannus Oy Duodecim, Karisto Oy, Hämeenlinna 2005. Sivut 93-104, 105-115 ja 116-123.

Campbell, T.L. & Larivaara, P. 2004. Working with Families in primary care. Teoksessa: Jones R & ym. (toim.). Oxford Textbook of Primary Medical Care. Oxford University Press, 2004 s. 299-303.

Larivaara, P, & Taanila, A. Towards interprofessional family-oriented teamwork in primary services: evaluation of an education programme. Journal of Interprofessional Care, 2004, 18/2:153-163.

Mustajoki, P., Saha, H. & Sane, T. (toim.): Potilaan tutkiminen. Kustannus Oy Duodecim, Saarijärvi 2009.

**Assessment methods and criteria:**

Participation in the introductory seminar, small group teaching, exercise session for doctor-patient communication, practical period in health care center, and in closing work-shop. Writing the reflection diary.

**Grading:**

Pass/fail

**Person responsible:**

Juha Auvinen

**Working life cooperation:**

The course includes training in health centers, where students follow and interview doctors.

## 043052P: General Pathology, 5 op

**Voimassaolo:** 01.08.2016 -

**Opiskelumoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Vesa-Matti Pohjanen, Mäkinen, Markus Juhana

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

5 ECTS

**Language of instruction:**

Finnish

**Timing:**2<sup>nd</sup> year, autumn (C3/DC3)**Learning outcomes:**

The course is designed to provide medical and dental students with the principles underlying the etiology, mechanisms and development of disease. It aims to prepare the students to identify and evaluate the morphological changes caused by various diseases as well as to understand the functional and clinical significance of these changes.

Upon completion the student will be expected to have acquired the knowledge of the basic disease mechanisms (etiology and pathogenesis), their basic morphological, functional and clinical characteristics, and the terminology related with diseases. The student should have acquired the skills to recognize the most common macroscopic and microscopic features of diseases and be able to reason the relationship between these features and the clinical manifestations of diseases.

**Contents:**

Cellular adaptation; cell and tissue injury; healing; infections and immunological mechanisms in disease; genetic and environmental causes of disease; inflammation; storage diseases; disorders of fluid balance and circulation; basic pathology of neoplastic diseases; diagnostic pathology; principles of cytology; cardiovascular pathology.

**Mode of delivery:**

Multifaceted teaching.

**Learning activities and teaching methods:**

Lectures 34 hours, small group teaching 15 hours. Self-study 82 hours. Written examinations 2 hours.

**Target group:**

Medical and dental students.

**Prerequisites and co-requisites:**

Preliminary examination. Previous documented completion of the courses of anatomy and physiology is recommended.

**Recommended optional programme components:**

The course has to be completed during the preclinical period of medical and dental studies.

**Recommended or required reading:**

Textbooks: Cross SS: Underwood's Pathology, a clinical approach (6th ed. 2013 or newer; sections: Basic pathology and General disease mechanisms); or: Underwood JCE: General and systematic pathology (5th ed. 2009; sections: Basic pathology and General disease mechanisms); or Kumar V. et al.: Robbins Basic Pathology, (9th ed. 2013 or newer), Alternatives: Kumar V. et al.: Robbins and Cotran, Pathologic basis of disease (8th ed. 2010 or newer). In Finnish: Mäkinen M. et al. Patologia, Duodecim, 2012.

Material provided during the course: lecture handouts; guidebook for virtual microscopy demonstrations; guidebook for autopsy demonstrations.

**Assessment methods and criteria:**

Participation in the compulsory demonstrations and passing in the end-of-course examination.

**Grading:**

1-5/fail.

**Person responsible:**

Professor Markus Mäkinen

**Working life cooperation:**

Clinical demonstrations and teaching related to medical autopsies is organised in collaboration with the Department of Pathology, Oulu University Hospital.

**Other information:**

Only medical and dental students participate in autopsy and other clinical demonstrations.

**043026P: Genomic Medicine I, 2 op**

Voimassaolo: 01.08.2016 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Faculty of Biochemistry and Molecular Medicine, Medicine

Arvostelu: 1 - 5, pass, fail

Opettajat: Jukka Moilanen, Karppinen, Peppi Leena Elina, Joni Mäki

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

2 ECTS credits / 54 hours of work

**Language of instruction:**

Finnish

**Timing:**

The course unit is held in the spring semester of the 1st year.

**Learning outcomes:**

Upon completion of the course , the student

- understand major principles of the inheritance of man
- is capable to analyse the central characteristics and ethical issues of inherited diseases.
- will explore the usage of biobanks
- understands basics of the modern techniques in medical genetics.

**Contents:**

Basics of inheritance of man, selected basic methodology used in medical genetics, bioinformatics, biobanks, ethical aspects of genomics.

**Mode of delivery:**

Lectures, exercises and exam.

**Learning activities and teaching methods:**

18 hours of lectures, 4 hours of exercises, 2 hours exam and 30 hours of independent work.

**Target group:**

Major students.

**Prerequisites and co-requisites:**

Recommended course to be taken simultaneously:

- 043020P Basics of the Molecular Biology 2 ECTS

**Recommended optional programme components:**

-

**Recommended or required reading:**

Aittomäki, Moilanen ja Perola, 2016: Lääketieteellinen genetiikka. Duodecim.

**Assessment methods and criteria:**

Exam

**Grading:**

The course utilizes a numerical grading scale 1-5. Zero stands for a fail.

**Person responsible:**

Peppi Karppinen (implemetation of teaching and practical matters), Jukka Moilanen (responsible person of Genomic medicine I and II)

**Working life cooperation:**

-

**Other information:**

-

## **A540142: Medical Biochemistry and Molecular Biology, 13 op**

**Voimassaolo:** 01.08.2017 -

**Opiskelumuoto:** Basic Studies

**Laji:** Study module

**Vastuuyksikkö:** Faculty of Biochemistry and Molecular Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Karppinen, Peppi Leena Elina

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

13 ECTS / 351 hours of work.

**Language of instruction:**

Finnish

**Timing:**

The course unit is held in the spring semester.

**Learning outcomes:**

Upon completion of the course, the student will be able to:

- explain genes structure, function and regulation both in normal physiology and diseases
- know what proteins are, how they are produced and what are their functions
- understand the nature of the mutations in genes, both in DNA and protein level
- recognize the central DNA-related techniques used currently in medicine, and understand their central applications
- recognize the sources of errors in diagnostic laboratory techniques
- know how to classify the enzymes and understand their functions in cellular systems, and understand principles of their use in diagnostics
- identify and name fundamental molecules in metabolism (carbohydrates, lipids, amino acids, nucleotides) and understand their relationships to the medicine
- name the most fundamental metabolic pathways and their metabolites, and understand the common regulation of the various metabolic pathways
- interpret the changes in metabolism of the diseases or other conditions
- classify and name the main hormones
- explain most common effects of the hormones on their target cells and tissues
- interpret the effects of abnormal hormonal regulation
- name the basic components of the extracellular matrix and connective tissue, and identify their specific functions in organs and medical relevance
- understand the general systemic roles of blood, its composition and clotting
- understand the role of hypoxia regulation in tissues, and its applications in medicine

**Contents:**

-043020P Basics of the Molecular Biology 2 op

-043021P Basics of the metabolism 3 op

-043022P Hormones and biochemistry of tissues 2 op

-043023P Seminars and exercises of Medical Biochemistry and Molecular Biology 2 op

- 043024P Practical laboratory working in Medical Biochemistry and Molecular Biology 2 op

-043025P Final exam of Medical Biochemistry and Molecular Biology 2 op

**Mode of delivery:**

Lectures. laboratory work including tutorial teaching and verbal evaluation, tutorial teaching, theme day containing preliminary preparations, exams.

**Learning activities and teaching methods:**

Lectures 95 h, laboratory work including tutorial teaching and verbal evaluation 54 h, tutorial teaching 3 t, theme day containing preliminary preparations 8 h, remote educational tasks, exams 14 h. Independent work 177 h.

**Target group:**

Major students.

**Prerequisites and co-requisites:**

-

**Recommended optional programme components:**

-

**Recommended or required reading:**

Rodwell, Bender, Botham, Kennelly, Weil (eds.): Harper's Illustrated Biochemistry, 31st edition, 2018

**Assessment methods and criteria:**

Medical biochemistry and molecular biology course includes 3 different intermediate exams which will be graded 1-5 (4 questions). Final exam consist of 5 essays, and will be graded 1-5. All the intermediate exams (043020P, 043021P, 043022P) should be passed before participation in final exam.

**Grading:**

The course unit utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Peppi Karppinen, substitute Joni Mäki.

**Working life cooperation:**

-

**Other information:**

-

*Compulsory*

**043020P: Medical Biochemistry and Molecular Biology: Basics of the molecular biology, 2 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Faculty of Biochemistry and Molecular Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Karppinen, Peppi Leena Elina, Joni Mäki

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

2 ECTS/54 hours of work

**Language of instruction:**

Finnish

**Timing:**

The course unit is held in the spring semester.

**Learning outcomes:**

Upon completion of the course, the student will be able to:

- explain genes structure, function and regulation both in normal physiology and diseases
- know what proteins are, how they are produced and what are their functions
- understand the nature of the mutations in genes, both in DNA and protein level
- recognize the central DNA-related techniques used currently in medicine, and understand their central applications
- recognize the sources of errors in diagnostic laboratory techniques
- know how to classify the enzymes and understand their functions in cellular systems, and understand principles of their use in diagnostics

**Contents:**

The structure, function and regulation of the genes; genetic code, mutations in genes and their affects on gene functions; DNA repairing mechanisms; proto-oncogenes, oncogenes, tumour suppressors, growth factors and cytokines; basics of DNA technology; properties of proteins and protein synthesis; classification and function of the enzymes; hypoxia response of the cells.

**Mode of delivery:**

Lectures and exam.

**Learning activities and teaching methods:**

26 hours of lectures and 3 hours exam and 25 hours independant work.

**Target group:**

Major students.

**Prerequisites and co-requisites:**

-

**Recommended optional programme components:**

These courses are recommended to be completed in same Spring semester:

-043021P Basics of the metabolism 3 ECTS

-043022P Hormones and biochemistry of tissues 2 ECTS

-043023P Seminars and exercises of Medical biochemistry and Molecular Biology 2 ECTS

-043024P Practical laboratory working in Medical Biochemistry and Molecular Biology 2 ECTS

-043025P Final exam of Medical Biochemistry and Molecular Biology 2 ECTS

**Recommended or required reading:**

Rodwell, Bender, Botham, Kennelly, Weil (eds.): Harper's Illustrated Biochemistry, 31st edition, 2018.

**Assessment methods and criteria:**

Exam

**Grading:**

The exam will be graded 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Peppi Karppinen, substitute Joni Mäki.

**Working life cooperation:**

-

**Other information:**

-

**043021P: Medical Biochemistry and Molecular Biology: Basics of the metabolism, 3 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Faculty of Biochemistry and Molecular Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Karppinen, Peppi Leena Elina, Joni Mäki

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

3 ECTS credits / 81 hours of work.

**Language of instruction:**

Finnish

**Timing:**

1st spring semester.

**Learning outcomes:**

Upon completion of the course, the student will be able to:

- identify and name fundamental molecules in metabolism (carbohydrates, lipids, amino acids, nucleotides) and understand their relationships to the medicine
- name the most fundamental metabolic pathways and their metabolites, and understand the common regulation of the various metabolic pathways
- interpret the changes in metabolism of the diseases or other conditions

-

**Contents:**

Metabolism and catabolism of the carbohydrates, lipids, amino acids and nucleotides, and the integration of whole metabolism; biological oxidations and energy metabolism; cholesterol and lipoproteins.

**Mode of delivery:**

Lectures, exam.

**Learning activities and teaching methods:**

33 hours of lectures, 3 hours exam and 45 hours independent work.

**Target group:**

Major students.

**Prerequisites and co-requisites:**

The recommended prerequisite is the completion of the following course:  
-043020P Basics of the Molecular Biology 2 ECTS

**Recommended optional programme components:**

These courses are recommended to be completed in same spring semester:

-043020P Basics of the Molecular Biology 2 ECTS

-043022P Hormones and biochemistry of tissues 2 ECTS

-043023P Seminars and exercises of Medical Biochemistry and Molecular Biology 2 ECTS

-043024P Practical laboratory working in Medical Biochemistry and Molecular Biology 2 ECTS

-043025P Final exam of Medical Biochemistry and Molecular Biology 2 ECTS

**Recommended or required reading:**

Rodwell, Bender, Botham, Kennelly, Weil (eds.): Harper's Illustrated Biochemistry, 31st edition, 2018

**Assessment methods and criteria:**

Lectures, exam.

**Grading:**

The exam will be graded 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Peppi Karppinen, substitute Joni Mäki.

**Working life cooperation:**

-

**Other information:**

-

**043022P: Medical Biochemistry and Molecular Biology: Hormones and biochemistry of tissues, 2 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Faculty of Biochemistry and Molecular Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Joni Mäki, Karppinen, Peppi Leena Elina

**Opintokohteen kielet:** Finnish



**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

2 ECTS credits / 54 hours of work.

**Language of instruction:**

Finnish

**Timing:**

1st Spring semester.

**Learning outcomes:**

Upon completion of the course, the student will be able to:

- classify and name the main hormones
- explain most common effects of the hormones on their target cells and tissues
- interpret the effects of abnormal hormonal regulation
- name the basic components of the extracellular matrix and connective tissue, and identify their specific functions in organs and medical relevance
- understand the general systemic roles of blood, its composition and clotting
- understand the role of hypoxia regulation in tissues, and its applications in medicine

**Contents:**

Classification, function and regulation of the hormones; eicosanoids; biochemistry of connective tissue; composition and properties of the blood; porphyrins and bile pigments.

**Mode of delivery:**

Lectures, exam.

**Learning activities and teaching methods:**

Lectures 36 hours, 3 hours exam and 15 hours independent work.

**Target group:**

Major students.

**Prerequisites and co-requisites:**

-

**Recommended optional programme components:**

The recommended prerequisite is the completion of the following course:

- 043020P Basics of the Molecular Biology 2 ECTS
- 043021P Basics of the metabolism 3 ECTS

**Recommended or required reading:**

Rodwell, Bender, Botham, Kennelly, Weil (eds.): Harper's Illustrated Biochemistry, 31st edition, 2018

**Assessment methods and criteria:**

Lectures, exam.

**Grading:**

The exam will be graded 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Peppi Karppinen, substitute Joni Mäki.

**Working life cooperation:**

-

**Other information:**

**043023P: Seminars and exercises of Medical Biochemistry and Molecular Biology, 2 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Faculty of Biochemistry and Molecular Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Joni Mäki, Karppinen, Peppi Leena Elina

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

2 ECTS credits / 54 hours of work.

**Language of instruction:**

Finnish

**Timing:**

1st Spring semester.

**Learning outcomes:**

Upon completion of the course, the student will be able to:

- popularize scientific and medicine related data that is connected to the medical biochemistry and molecular biology
- give oral presentations and act as an opponent
- ask relevant questions concerning the presentations and his/her own knowledge about the biochemistry
- explain and analyze biochemical relationships in pathological conditions and nutritional cases
- learn general knowledge about different topics in medicine besides of their association to the biochemistry
- know generally what causes the diabetes and how it is related to metabolism
- solve selected exercises based on anamnesis, status and laboratory tests

**Contents:**

Themes can vary annually.

**Mode of delivery:**

Lectures (themeday), seminars, remote exercises.

**Learning activities and teaching methods:**

Lectures 8 t, seminars with panelists 3 t, remote exercises and independent work by student 43 hours.

**Target group:**

Major students.

**Prerequisites and co-requisites:**

Recommended courses during the same Spring:

-043020P Basics of the Molecular Biology 2 ECTS

-043021P Basics of the metabolism 3 ECTS

-043022P Hormones and biochemistry of tissues 2 ECTS

-043024P Practical laboratory working in Medical Biochemistry and Molecular Biology 2 ECTS

**Recommended optional programme components:**

Recommended courses during the same Spring:

- 043020P Basics of the Molecular Biology 2 ECTS
- 043021P Basics of the metabolism 3 ECTS
- 043022P Hormones and biochemistry of tissues 2 ECTS
- 043024P Practical laboratory working in Medical Biochemistry and Molecular Biology 2 ECTS

**Recommended or required reading:**

-

**Assessment methods and criteria:**

Obligator presence in lectures and in seminars, returned assignments.

**Grading:**

Passed/Fail.

**Person responsible:**

Peppi Karppinen, substitute Joni Mäki.

**Working life cooperation:**

-

**Other information:**

-

**043024P: Practical laboratory working in Medical Biochemistry and Molecular Biology, 2 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Faculty of Biochemistry and Molecular Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Joni Mäki, Karppinen, Peppi Leena Elina

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

2 ECTS credits / 54 hours of work

**Language of instruction:**

Finnish

**Timing:**

1st Spring semester.

**Learning outcomes:**

Upon completion of the course, the student will be able to:

- recognize the central DNA- and protein related techniques used currently in medicine, and understand their central applications and has practical experience on their implementation
- work in laboratory
- recognize the sources of errors in diagnostic laboratory techniques

**Contents:**

Cloning of DNA-fragments; The expression of recombinant proteins in bacterial cells; Diagnostics of AGU-disease with PCR; Kinetics of enzymatic reactions.

**Mode of delivery:**

Laboratory course.

**Learning activities and teaching methods:**

Practical working in laboratory, preparing casebook and oral exam 54 hours.

**Target group:**

Major students.

**Prerequisites and co-requisites:**

The recommended prerequisite is the completion of the following course:  
-043020P Basics of the Molecular Biology 2 ECTS

**Recommended optional programme components:**

These courses are recommended to be completed in same spring semester:  
-043020P Basics of the Molecular Biology 2 ECTS

**Recommended or required reading:**

Laboratory handout.

**Assessment methods and criteria:**

Attendance at laboratory is compulsory. Pass/Fail.

**Grading:**

Pass/Fail.

**Person responsible:**

Peppi Karppinen, substitute Joni Mäki.

**Working life cooperation:**

-

**Other information:**

Attendance at laboratory is compulsory.

**043025P: Final exam of Medical Biochemistry and Molecular Medicine, 2 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Faculty of Biochemistry and Molecular Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Karppinen, Peppi Leena Elina, Joni Mäki

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

2 ECTS credits / 54 hours of work.

**Language of instruction:**

Finnish

**Timing:**

1st Spring semester.

**Learning outcomes:**

Upon completion of the course, the student will be able to:

- explain genes structure, function and regulation both in normal physiology and diseases
- know what proteins are, how they are produced and what are their functions
- understand the nature of the mutations in genes, both in DNA and protein level
- recognize the central DNA-related techniques used currently in medicine, and understand their central applications
- recognize the sources of errors in diagnostic laboratory techniques
- know how to classify the enzymes and understand their functions in cellular systems, and understand principles of their use in diagnostics
- identify and name fundamental molecules in metabolism (carbohydrates, lipids, amino acids, nucleotides) and understand their relationships to the medicine
- name the most fundamental metabolic pathways and their metabolites, and understand the common regulation of the various metabolic pathways
- interpret the changes in metabolism of the diseases or other conditions
- classify and name the main hormones
- explain most common effects of the hormones on their target cells and tissues
- interpret the effects of abnormal hormonal regulation
- name the basic components of the extracellular matrix and connective tissue, and identify their specific functions in organs and medical relevance
- understand the general systemic roles of blood, its composition and clotting
- understand the role of hypoxia regulation in tissues, and its applications in medicine

### **Contents:**

The basic concepts of medical biochemistry and molecular biology:

The structure, function and regulation of the genes; genetic code, mutations in genes and their effects on gene functions; DNA repairing mechanisms; proto-oncogenes, oncogenes, tumour suppressors, growth factors and cytokines; basics of DNA technology; properties of proteins and protein synthesis; classification and function of the enzymes; hypoxia response of the cells; metabolism and catabolism of the carbohydrates, lipids, amino acids and nucleotides, and the integration of whole metabolism; biological oxidations and energy metabolism; cholesterol and lipoproteins; classification, function and regulation of the hormones; eicosanoids; biochemistry of connective tissue; composition and properties of the blood; porphyrins and bile pigments.

### **Mode of delivery:**

Final exam.

### **Learning activities and teaching methods:**

Independent work 49 h ja 5 h exam.

### **Target group:**

Major students.

### **Prerequisites and co-requisites:**

Courses that has to be passed prior to participation final exam:

- 043020P Basics of the Molecular Biology 2 ECTS
- 043021P Basics of the metabolism 3 ECTS
- 043022P Hormones and biochemistry of tissues 2 ECTS

### **Recommended optional programme components:**

Recommended courses prior participating the final exam:

- 043024P Practical laboratory working in Medical Biochemistry and Molecular Biology 2 ECTS
- 043023P Seminars and exercises of Medical Biochemistry and Molecular Biology 2 ECTS

### **Recommended or required reading:**

Lectures and book:

Rodwell, Bender, Botham, Kennelly, Weil (eds.): Harper's Illustrated Biochemistry, 31st edition, 2018

.

### **Assessment methods and criteria:**

Medical biochemistry and molecular biology course includes 3 different intermediate exams which will be graded 1-5 (4 questions). Final exam consist of 5 essays, and will be graded 1-5. All the intermediate exams should be passed before participation in final exam.

**Grading:**

The course unit utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Peppi Karppinen, substitute Joni Mäki.

**Working life cooperation:**

-

**Other information:**

-

## A540144: Microbiology and immunology, 10 op

**Voimassaolo:** 01.08.2017 -

**Opiskelumuoto:** Basic Studies

**Laji:** Study module

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Timo Hautala

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

10 ECTS credits / 270 hours of work

**Language of instruction:**

Finnish, some lectures given in English

**Timing:**

The course starts autumn period continuing to spring. Second year, C3 and C4.

**Learning outcomes:**

Upon completion of the study module, the student will be able to explain the basic structure, function and regulation of immune defense systems in humans. The student masters the ways that immune defense system can discriminate the foreign and self structures, how are the different defense responses generated and regulated; what is immune tolerance and how is the immunological memory formed. The student masters also the clinical outcomes of malfunctional immune system.

During the study module the student gets familiar with the essential pathogens and knows their most important properties, can associate the common diseases with the pathogens, and knows the basics of antimicrobial treatment and the prevention of the diseases. The student also masters the suitable diagnostic methods and their limitations in the detection of the pathogens.

In this study module, the student will gain skills of working as a member of expert group. The group work strengthens the student in scientific communication and teaches to carry responsibility of collaboratively produced knowledge.

The student will learn skills to give feedback to peers and appreciate the feedback obtained in the group work.

**Contents:**

Immunology:

Innate immunity, antigen capture and presentation to lymphocytes, antigen recognition in the adaptive immune system, T-cell mediated immunity, effector mechanisms of T-cell mediated immunity, humoral immune responses, effector functions of humoral immunity, immunological tolerance and autoimmunity, immune responses to tumors and transplants, hypersensitivity

Microbiology:

introduction to bacteriology and virology, microbiological samples and obtaining the samples, basic diagnostics in microbiology, the most important bacteria and viruses in respiratory infections, the infections of alimentary canal, urinary tract and sexually transmitted infections, skin infections, zoonotic infections, sepsis and difficult infections, infections in primary health care, resistance to antimicrobial agents, anaerobic bacteria, mechanisms of pathogenesis in infectious diseases.

**Mode of delivery:**

Mainly face-to-face teaching. Collaborative learning objectives are issued via e-learning platform.

**Learning activities and teaching methods:**

Immunology:

14h lectures  
 30h self-study for group work  
 15h group work  
 2h immunology examination  
 47h independent work

**Microbiology:**

14h lectures  
 30h self-study for group work  
 12h group work  
 3h laboratory practice  
 2h preparing the presentation  
 2h microbiology examination  
 99h independent work

**Target group:**

Medicine and dentistry students

**Prerequisites and co-requisites:**

No prerequisites.

**Recommended optional programme components:**

The course has to be completed during the first two years of medical and dental studies.

**Recommended or required reading:**

Abbas, Lichtman & Pillai: Basic Immunology: 5th ed.

Murray et al. Medical Microbiology, 8th ed.

**Assessment methods and criteria:**

The assessment of the course is based on the learning outcomes of the course. This course utilizes shared expertise and collaborative learning methods. Attendance, preparation and participation in the group work is mandatory for the completion of the study module. The student will get feedback from the peers about the expert role in discussions.

The immunology and microbiology parts are evaluated separately and both parts have to be passed. Passed examination is more than 60% of the total points.

The student has a possibility to complete the immunology examination in the mid-course after the immunology entity or in combination with the final examination.

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

The group-work is evaluated by pass/fail scale

**Person responsible:**

Professor of medical microbiology and immunology.

**Working life cooperation:**

Clinical introductory lectures are given by the lecturers from the local primary health care units, hospitals and diagnostic companies.

*Compulsory*

**043040P: Immunology, 4 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Timo Hautala, Antti Nissinen

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

4 ECTS credits / 108 hours of work

**Language of instruction:**

Finnish, some lectures given in English

**Timing:**

The course is held in the autumn semester. Second year, C3.

**Learning outcomes:**

Upon completion of the study module, the student will be able to explain the basic structure, function and regulation of immune defense systems in humans. The student masters the ways that immune defense system can discriminate the foreign and self structures, how are the different defense responses generated and regulated; what is immune tolerance and how is the immunological memory formed. The student masters also the clinical outcomes of malfunctional immune system.

The student will gain skills of working as a member of expert group by group-work in this study module. The group work also guides the student in scientific communication and carrying the responsibility of building collaborative knowledge. The student will learn skills to give feedback to peers and appreciate the feedback obtained in the group work.

**Contents:**

Immunology:

Innate immunity, antigen capture and presentation to lymphocytes, antigen recognition in the adaptive immune system, T-cell mediated immunity, effector mechanisms of T-cell mediated immunity, humoral immune responses, effector functions of humoral immunity, immunological tolerance and autoimmunity, immune responses to tumors and transplants, hypersensitivity

**Mode of delivery:**

Mainly face-to-face teaching. Collaborative learning objectives are issued via e-learning platform.

**Learning activities and teaching methods:**

Immunology:

14h lectures

30h self study for group work

15h group work

2h immunology examination

47h independent work

**Target group:**

Medicine and dentistry students

**Prerequisites and co-requisites:**

No prerequisites.

**Recommended optional programme components:**

The course has to be completed during the first two years of medical and dental studies.

**Recommended or required reading:**

Abbas, Lichtman & Pillai: Basic Immunology: 5th ed.

**Assessment methods and criteria:**

The assessment of the course is based on the learning outcomes of the course. This course utilizes shared expertise and collaborative learning methods. Attendance, preparation and participation in the group work is mandatory for the completion of the study module. The student will get feedback from the peers about the expert role in discussions.

Examination will held at the end of the immunology course or together with the microbiology examination. Passed examination is more than 60% of the total points.

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

The group-work is evaluated by pass/fail scale

**Person responsible:**

Professor of medical microbiology and immunology.

**Working life cooperation:**

Clinical introductory lectures are given by the lecturers from the local primary health care units, hospitals and diagnostic companies.

**043041P: Microbiology, 6 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine



**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Antti Nissinen, Timo Hautala

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

6 ECTS credits / 162 hours of work

**Language of instruction:**

Finnish, some lectures given in English

**Timing:**

The course will be held spring-semester. Second year, C4.

**Learning outcomes:**

During the study module the student focuses on the pathogens that are important in the Finnish health care system. Student knows the properties, the diseases, the antimicrobial treatment and the prevention of the essential pathogens. The student also masters the suitable diagnostic methods and their limitations in the detection of the pathogens.

The student will gain skills of working as a member of expert group by group-work in this study module.

The group work also guides the student in scientific communication and carrying the responsibility of building collaborative knowledge. The student will learn skills to give feedback to peers and appreciate the feedback obtained in the group work.

**Contents:**

Microbiology:

introduction to bacteriology and virology, microbiological samples and obtaining the samples, basic diagnostics in microbiology, the most important bacteria and viruses in respiratory infections, the infections of alimentary canal, urinary tract and sexually transmitted infections, skin infections, zoonotic infections, sepsis and difficult infections, infections in primary health care, resistance to antimicrobial agents, anaerobic bacteria, mechanisms of pathogenesis in infectious diseases.

**Mode of delivery:**

Mainly face-to-face teaching. Collaborative learning objectives are issued via e-learning platform.

**Learning activities and teaching methods:**

Microbiology:

14h lectures

30h self-study for group work

15h group work

2h laboratory practice

2h preparing the presentation

2h microbiology examination

97h independent work

**Target group:**

Medicine and dentistry students

**Prerequisites and co-requisites:**

No prerequisites.

**Recommended optional programme components:**

The course has to be completed during the first two years of medical and dental studies.

**Recommended or required reading:**

Murray et al. Medical Microbiology, 8th ed.

**Assessment methods and criteria:**

The assessment of the course is based on the learning outcomes of the course. This course utilizes shared expertise and collaborative learning methods. Attendance, preparation and participation in the group work is mandatory for the completion of the study module. The student will get feedback from the peers about the expert role in discussions.

The microbiology part is evaluated in final examination. Passed examination is more than 60% of the total points.

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail. The group-work is evaluated by pass/fail scale.

**Person responsible:**

Professor of medical microbiology and immunology

**Working life cooperation:**

Clinical introductory lectures are given by the lecturers from the local primary health care units, hospitals and diagnostic companies.

**A540145: Pharmacology and toxicology, 10 op**

**Voimassaolo:** 01.08.2017 -

**Opiskelumuoto:** Basic Studies

**Laji:** Study module

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Risto Kerkelä

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

10 ECTS credits/ 270 hours of work.

**Language of instruction:**

Finnish

**Timing:**

The course is held during the spring semester in the second study year (C4 / DC4).

**Learning outcomes:**

After passing the courses, the student has ability to carry out safe and efficient drug therapy. Upon completion of the courses, the student:

- is able to explain pharmacokinetics of a specific drug after administration
- is able to explain physiologic effects of drugs and their mechanisms of action
- is familiar with major drug classes and their role in the treatment of diseases.
- understands the basis of individualized drug therapy.
- understands the basics of toxicology

In addition, the student will learn team working skills and presentation skills.

**Contents:****043045P Pharmacology and toxicology PART I 4 ECTS:**

The basic terminology of pharmacology: pharmacodynamics and pharmacokinetics. Systematic review of major classes of drugs: drugs affecting cardiovascular system, anti-diabetic medications, drugs affecting the respiratory tract, antimicrobial agents.

**043046P Pharmacology and toxicology PART II 5 ECTS:**

Systematic review of major classes of drugs: drugs affecting gastrointestinal drugs, drug treatment of pain, psychiatric medications, neurological drugs. Toxicology: the basics of toxicology, the most common poisonings and fundamentals of toxicological risk assessment.

**043047P Pharmacology and toxicology PART III 1 ECTS:**

Systematic review of major classes of drugs and basics of toxicology.

**Mode of delivery:**

Face-to-face teaching

**Learning activities and teaching methods:****043045P Pharmacology and toxicology PART I 4 ECTS:**

Lectures 34h / tutorials 6-8h / Self-study 66-68h. The tutorials are completed as small group work.

**043046P Pharmacology and toxicology PART II 5 ECTS:**

Lectures 40h / tutorials 10-12h / Self-study 83-85h. The tutorials are completed as small group work.

**043047P Pharmacology and toxicology PART III 1 ECTS:**

Exam 4 h, self-study 27 h

**Target group:**

Medical and dental students. Also other students can be admitted to the course.

**Recommended or required reading:**

Recommended or required reading: Ruskoaho H., Hakkola J., et al: Lääketieteellinen farmakologia ja toksikologia (Kustannus Oy Duodecim, latest edition, 2019). The electronic version of the book can be found in "oppiportti" and in "Duodecim lääketietokanta". Other textbooks that can be used are "Farmakologia ja Toksikologia" edited by Markku Koulu and Eero Mervaala (10th ed. 2018) or Rang, Ritter, Flower, Henderson: Rang & Dale's Pharmacology, Churchill Livingstone (latest edition). In addition, Duodecim and Suomen lääkäri-lehti publish articles of current advances in drug therapy.

**Assessment methods and criteria:**

**043045P Pharmacology and toxicology PART I 4 ECTS:**

Lectures. Active participation in tutorials that are mandatory. At the beginning of the course students study independently for an exam evaluating the required level of knowledge of basic pharmacokinetics and pharmacodynamics. In addition, an exam is given for the entire contents of the course. The exam is graded on a pass/fail basis.

**043046P Pharmacology and toxicology PART II 5 ECTS:**

Lectures. Active participation in tutorials that are mandatory. At the beginning of the course students study independently for an exam evaluating the required level of knowledge of basic pharmacokinetics and pharmacodynamics. In addition, an exam is given. The exam is graded on a pass/fail basis.

**043047P Pharmacology and toxicology PART III 1 ECTS:**

The course includes an exam. Two failed answers in final exam result in failing of the exam.

**Grading:**

**043045P: Pharmacology and toxicology:**

Two exams with the grading scale pass/fail.

**043046P Pharmacology and toxicology PART II:**

Exam with the grading scale pass/fail.

**043047P Pharmacology and toxicology PART III:**

Exam. Two failed answers in final exam result in failing of the exam. The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Professor Risto Kerkelä

**Working life cooperation:**

The course includes guest lectures from specialists from Oulu University Hospital.

*Compulsory*

**043045P: Pharmacology and toxicology PART I, 4 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Risto Kerkelä

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

4 ECTS credits/ 108 hours of work.

**Language of instruction:**

Finnish

**Timing:**

The course is held during the spring semester in the second study year (C4 / DC4).

**Learning outcomes:**

After passing the course, the student has ability to carry out safe and efficient drug therapy. Upon completion of the course, the student:

- is able to explain pharmacokinetics of a specific drug after administration
- is able to explain physiologic effects of drugs and their mechanisms of action
- is familiar with major drug classes and their role in the treatment of diseases.

In addition, the student will learn team working skills and presentation skills.

**Contents:**

The basic terminology of pharmacology: pharmacodynamics and pharmacokinetics. Systematic review of major classes of drugs: drugs affecting cardiovascular system, anti-diabetic medications, drugs affecting the respiratory tract, antimicrobial agents.

**Mode of delivery:**

Face-to-face teaching

**Learning activities and teaching methods:**

Lectures 34h / tutorials 6-8h / Self-study 66-68h. The tutorials are completed as small group work.

**Target group:**

Medical and dental students. Also other students can be admitted to the course.

**Recommended or required reading:**

Recommended or required reading: Ruskoaho H., Hakkola J., et al: Lääketieteellinen farmakologia ja toksikologia (Kustannus Oy Duodecim, latest edition, 2019). The electronic version of the book can be found in "oppiportti" and in "Duodecim lääketietokanta". Other textbooks that can be used are "Farmakologia ja Toksikologia" edited by Markku Koulu and Eero Mervaala (10th ed. 2018) or Rang, Ritter, Flower, Henderson: Rang & Dale's Pharmacology, Churchill Livingstone (latest edition). In addition, Duodecim and Suomen lääkärilehti publish articles of current advances in drug therapy.

**Assessment methods and criteria:**

Lectures. Active participation in tutorials that are mandatory. At the beginning of the course students study independently for an exam evaluating the required level of knowledge of basic pharmacokinetics and pharmacodynamics. In addition, an exam is given. The exam is graded on a pass/fail basis.

**Grading:**

The grading scale for the course is pass/fail.

**Person responsible:**

Professor Risto Kerkelä

**Working life cooperation:**

No

**043046P: Pharmacology and toxicology PART II, 5 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Risto Kerkelä

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

5 ECTS credits / 135 hours of work

**Language of instruction:**

Finnish

**Timing:**

The course is held during the spring semester in the second study year (C4 / DC4).

**Learning outcomes:**

After passing the course, the student has ability to carry out safe and efficient drug therapy. Upon completion of the course, the student:

- is able to explain pharmacokinetics of a specific drug after administration
- is able to explain physiologic effects of drugs and their mechanisms of action
- is familiar with major drug classes and their role in the treatment of diseases.
- understands the basis of individualized drug therapy.
- understands the basics of toxicology

In addition, the student will learn team working skills and presentation skills.

**Contents:**

Systematic review of major classes of drugs: drugs affecting gastrointestinal drugs, drug treatment of pain, psychiatric medications, neurological drugs.

Toxicology: the basics of toxicology, the most common poisonings and fundamentals of toxicological risk assessment.

**Mode of delivery:**

Face-to-face teaching

**Learning activities and teaching methods:**

Lectures 40h / tutorials 10-12h / Self-study 83-85h. The tutorials are completed as small group work.

**Target group:**

Medical and dental students. Also other students can be admitted to the course.

**Recommended or required reading:**

Recommended or required reading: Ruskoaho H., Hakkola J., et al: Lääketieteellinen farmakologia ja toksikologia (Kustannus Oy Duodecim, latest edition, 2019). The electronic version of the book can be found in "oppiportti" and in "Duodecim lääketietokanta". Other textbooks that can be used are "Farmakologia ja Toksikologia" edited by Markku Koulu and Eero Mervaala (10th ed. 2018) or Rang, Ritter, Flower, Henderson: Rang & Dale's Pharmacology, Churchill Livingstone (latest edition). In addition, Duodecim and Suomen lääkärilehti publish articles of current advances in drug therapy.

**Assessment methods and criteria:**

Lectures. Active participation in tutorials that are mandatory. At the beginning of the course students study independently for an exam evaluating the required level of knowledge of basic pharmacokinetics and pharmacodynamics. In addition, an exam is given. The exam is graded on a pass/fail basis.

**Grading:**

The grading scale for the course is pass/fail.

**Person responsible:**

Professor Risto Kerkelä

**Working life cooperation:**

The course includes guest lectures from specialists from Oulu University Hospital.

**043047P: Pharmacology and toxicology PART III, 1 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Risto Kerkelä

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

1 ECTS credit / 27 hours of work

**Language of instruction:**

Finnish

**Timing:**

The course is held during the spring semester in the second study year (C4 / DC4).

**Learning outcomes:**

After passing the course, the student has ability to carry out safe and efficient drug therapy. Upon completion of the course, the student:

- is able to explain pharmacokinetics of a specific drug after administration
- is able to explain physiologic effects of drugs and their mechanisms of action
- is familiar with major drug classes and their role in the treatment of diseases.
- understands the basis of individualized drug therapy.
- understands the basics of toxicology

**Contents:**

Systematic review of major classes of drugs and basics of toxicology.

**Mode of delivery:**

Self-study, exam.

**Learning activities and teaching methods:**

Self-study 19 h, exam 4 h.

**Target group:**

Medical and dental students. Also other students can be admitted to the course.

**Prerequisites and co-requisites:**

The required prerequisite is the completion of the following courses prior to enrolling for the course: 043045P Pharmacology and toxicology, part 1 and 043046P Pharmacology and toxicology, part 2.

**Recommended or required reading:**

Recommended or required reading: Ruskoaho H., Hakkola J., et al: Lääketieteellinen farmakologia ja toksikologia (Kustannus Oy Duodecim, latest edition, 2019). The electronic version of the book can be found in "oppiportti" and in "Duodecim lääketietokanta". Other textbooks that can be used are "Farmakologia ja Toksikologia" edited by Markku Koulu and Eero Mervaala (10th ed. 2018) or Rang, Ritter, Flower, Henderson: Rang & Dale's Pharmacology, Churchill Livingstone (latest edition). In addition, Duodecim and Suomen lääkäri-lehti publish articles of current advances in drug therapy

**Assessment methods and criteria:**

The course includes an exam. Two failed answers in final exam result in failing of the exam.

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Professor Risto Kerkelä

## A540143: Physiology, 15 op

**Voimassaolo:** 01.08.2017 -

**Opiskelumuoto:** Basic Studies

**Laji:** Study module

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Kari Mäkelä, Karl-Heinz Herzig

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

15 ECTS credits / 405 hours of work.

**Language of instruction:**

Finnish. Some lectures, practicals and term papers in English.

**Timing:**

The course unit is held in the autumn semester. The course must be completed during the first two years of the Medical School curriculum.

**Learning outcomes:**

After completion of the course the student:

- knows the principles of the function, regulation, and interrelations of the cells, tissues and organ systems of the healthy human being, as required for independent work as a physician or dentist
- is able to evaluate the knowledge and apply it for investigations of clinical physiological problems and mechanisms of diseases
- is able to follow and evaluate the development of medical physiology as a science, and maintain and improve knowledge in it
- is able to apply knowledge in physiology for acquiring, evaluating and reporting scientific medical and dental information

After reaching the learning aims the student has sufficient knowledge and skills in physiology for studies leading to the degrees of Licentiate of Medicine and Licentiate of Dentistry, and for continuous learning.

**Contents:**

Includes courses 043030P Physiology, term paper 2 credits, 043031P Physiology interim exam 5 credits, 043032P Physiology group works 2 credits and 043033P Physiology final examination 6 credits covering:

1. Cell physiology
2. Fundamentals of biophysics
3. Physiological functions of the body
4. Clinical chemistry
5. Physiological regulation and integrative physiology
6. Applied physiology

**Mode of delivery:**

Face-to-face teaching

**Learning activities and teaching methods:**

Guidance and tutorial, lectures, practicals, term paper, interim and final examinations, independent study.

**Target group:**

Second year medical and dental students.

**Prerequisites and co-requisites:**

The student should have completed the courses of Anatomy and Medical Cell and Developmental Biology (A540141), and Medical Biochemistry and Molecular Biology (A540142).

**Recommended or required reading:**

- Ganong's Review of Medical Physiology (most recent edition).
- Practicals Textbook (in Finnish): Fysiologian harjoitustyöt (Oulun yliopiston oppimateriaalia-sarja, Lääketiede D, most recent edition).
- Lecture notes can be found in the Optima.

**Assessment methods and criteria:**

At the beginning of the course there is an examination on the subject of the practicals, which has to be passed. In the middle of the course there is an interim examination on the course contents 1 to 3, and at the end the final examination. The student has to obtain one third of the maximum points to pass these examinations. In addition, in the final examination only one answer may be under the pass limit (one third of the maximum points) though not zero. Detailed requirements are provided during the course period.

**Grading:**

Graded 1-5 or fail.

**Person responsible:**

Professor Karl-Heinz Herzig

**Working life cooperation:**

No

*Compulsory*

**043030P: Physiology, term paper, 2 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Karl-Heinz Herzig, Kari Mäkelä

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

2 ECTS credits /54 hours of work

**Language of instruction:**

Finnish. Some term paper subjects, tutorial and feedback sessions in English.

**Timing:**

Autumn semester. The term paper must be written during the first two years of the Medical School curriculum.

**Learning outcomes:**

After completion of the course the student:

- can better find and combine fundamental scientific and clinical knowledge and skills
- can evaluate critically new knowledge according to the EBM principles, and apply it in clinical work
- can better apply medical research in diagnosing diseases
- can better follow and evaluate medical knowledge, and maintain and develop the knowledge both in Finnish and English
- can apply knowledge in physiology for acquiring, evaluating and reporting scientific medical information
- can better serve as an authority in the medical field
- can better communicate medical knowledge both to professionals and laymen

**Contents:**

1. Term paper subject (choice from 8-10 titles)
2. Tutorial session (obligatory)
3. Obtaining and perusing the literature
4. Writing and submitting (via Urkund) the term paper
5. Feedback briefing session (obligatory)

**Mode of delivery:**

Face-to-face teaching and independent study

**Learning activities and teaching methods:**

Guidance and tutoring (1 h), writing and submitting the term paper (52 h), feedback session (1 h).

**Target group:**

Second year medical and dental students.

**Prerequisites and co-requisites:**

The student should have completed the courses of Anatomy and Medical Cell and Developmental Biology (A540141), and Medical Biochemistry and Molecular Biology (A540142).

**Recommended or required reading:**

- Literature search according to the subject matter. International peer-reviewed medical/dental literature (original publications and reviews).

**Assessment methods and criteria:**

Familiarising with the subject matter and writing the term paper. Detailed instructions can be found during the course period in the Moodle system (<https://moodle oulu.fi>).

**Grading:**

Graded 1-5 or fail.

**Person responsible:**

Professor Karl-Heinz Herzig

**Working life cooperation:**

No

**043031P: Physiology interim exam, 5 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Karl-Heinz Herzig, Kari Mäkelä

**Opintokohteen kielet:** Finnish



**ECTS Credits:**

5 ECTS credits /135 hours of work

**Language of instruction:**

Finnish. Some lectures in English.

**Timing:**

The course unit is held in the autumn semester. The course must be completed during the first two years of the Medical School curriculum

**Learning outcomes:**

After completion of the course the student:

- knows the basic principles of the function, regulation, and interrelations of the cells, tissues and organ systems of the healthy human being, as required for independent work as a physician or dentist
- is able to critically evaluate the knowledge and apply it for investigations of clinical physiological problems and mechanisms of diseases
- is able to follow and evaluate the development of medical physiology as a science, and independently maintain and improve knowledge in it
- is able to creatively apply knowledge in basic physiology for acquiring, evaluating and reporting scientific medical and dental information

After reaching the learning aims the student has sufficient knowledge, skills and ability of basic physiology to apply them in further studies leading to the degrees of Licentiate of Medicine and Licentiate of Dentistry, and for continuous learning.

**Contents:**

1. Cell physiology
2. Fundamentals of biophysics
3. Physiological maintenance functions of the body
4. Clinical chemistry

**Mode of delivery:**

Face-to-face teaching

**Learning activities and teaching methods:**

Lectures (58 h), independent study (77 h).

**Target group:**

Second year medical and dental students.

**Prerequisites and co-requisites:**

The student should have completed the courses of Anatomy and Medical Cell and Developmental Biology (A540141), and Medical Biochemistry and Molecular Biology (A540142).

**Recommended or required reading:**

- Ganong's Review of Medical Physiology (most recent edition).
- Lecture notes can be found in the Moodle system (<https://moodle oulu.fi>).

**Assessment methods and criteria:**

Written examination. The student has to obtain one third of the maximum points to pass. Detailed requirements can be found during the course period in the Optima.

**Grading:**

Graded 1-5 or fail.

**Person responsible:**

Professor Karl-Heinz Herzig

**Working life cooperation:**

No

**043032P: Physiology group works, 2 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Karl-Heinz Herzig, Kari Mäkelä

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

2 ECTS credits /54 hours of work

**Language of instruction:**

Finnish and English.

**Timing:**

Autumn semester. The term paper must be written during the first two years of the Medical School curriculum.

**Learning outcomes:**

After completion of the course the student:

- can better find and combine fundamental scientific and clinical knowledge and skills
- can function as member of a team when performing medical procedures
- can make diagnostic decisions as a member of a team
- can apply medical knowledge to medical skills and procedures
- can better make diagnostic decisions based on firsthand empirical evidence
- can better apply differential diagnostics thinking in medical work
- can better handle errors in medical workup and learn from them

**Contents:**

1. Entry examination on the Physiology Practicals workbook (obligatory)
2. Seven practicals in clinically applied physiology (obligatory)
3. Two group sessions on medical biophysics (obligatory)

**Mode of delivery:**

Face-to-face teaching and independent study

**Learning activities and teaching methods:**

Entry examination (1 h), practicals and group sessions (34 h), independent study (19 h).

**Target group:**

Second year medical and dental students.

**Prerequisites and co-requisites:**

The student should have completed the courses of Anatomy and Medical Cell and Developmental Biology (A540141), and Medical Biochemistry and Molecular Biology (A540142).

**Recommended or required reading:**

- Practicals Textbook (in Finnish): Fysiologian harjoitustyöt (Oulun yliopiston oppimateriaalia-sarja, Lääketiede D, most recent edition).
- Ganong's Review of Medical Physiology (most recent edition).

**Assessment methods and criteria:**

Entry examination (multiple choice, pass/fail). Active participation in the practicals and the group sessions. Detailed instructions can be found during the course period in the Optima.

**Grading:**

Pass/fail.

**Person responsible:**

Professor Karl-Heinz Herzig

**Working life cooperation:**

No

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Kari Mäkelä, Karl-Heinz Herzig

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

6 ECTS credits / 162 hours of work.

**Language of instruction:**

Finnish. Some lectures in English.

**Timing:**

The course unit is held in the autumn semester. The course must be completed during the first two years of the Medical School curriculum

**Learning outcomes:**

After completion of the course the student:

- knows the principles of the function, regulation, and interrelations of the cells, tissues and organ systems of the healthy human being, as required for independent work as a physician or dentist
- is able to evaluate the knowledge and apply it for investigations of clinical physiological problems and mechanisms of diseases
- is able to follow and evaluate the development of medical physiology as a science, and maintain and improve knowledge in it
- is able to apply knowledge in physiology for acquiring, evaluating and reporting scientific medical and dental information

After reaching the learning aims the student has sufficient knowledge and skills in physiology for studies leading to the degrees of Licentiate of Medicine and Licentiate of Dentistry, and for continuous learning.

**Contents:**

1. Cell physiology
2. Fundamentals of biophysics
3. Physiological functions of the body
4. Clinical chemistry
5. Physiological regulation and integrative physiology
6. Applied physiology

**Mode of delivery:**

Face-to-face teaching

**Learning activities and teaching methods:**

Lectures (52 h), independent study (110 h).

**Target group:**

Second year medical and dental students.

**Prerequisites and co-requisites:**

The student should have completed the courses of Anatomy and Medical Cell and Developmental Biology (A540141), and Medical Biochemistry and Molecular Biology (A540142).

**Recommended or required reading:**

- Ganong's Review of Medical Physiology (most recent edition).
- Lecture notes can be found in the Optima.

**Assessment methods and criteria:**

Final examination can be done when the physiology term paper, interim exam, group works and exam on the subjects of practical has been done.. The student has to obtain one third of the maximum points to pass final examination. In addition, a maximum of one answer may be under the pass limit (one third of the maximum points) though not zero. Detailed requirements can be found during the course period in the Optima.

**Grading:**

Graded 1-5 or fail.

**Person responsible:**

Professor Karl-Heinz Herzig

**Working life cooperation:**

No

**043027P: Psychology for Medical Students, 4 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Tuula Hurtig

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

4 ECTS credits/108 hours of work

**Language of instruction:**

Finnish

**Timing:**

The course is held in spring semester, during periods III and IV

**Learning outcomes:****A student**

- learns to see a human and human development in lifespan
- finds ways to observe and to influence on patients and their behaviour using psychological knowledge.

Furthermore, an objective is to help future medical doctors and dentists to observe their influence on the behavior of patients, and to the health care system. Finally, a goal is to develop interactional skills of future doctors and to promote their wellbeing as students and doctors.

**Contents:**

Human psychological development from the perspective of developmental psychology, human behaviour from the perspective of social psychology, and motivation in health behaviour from the perspective of health psychology.

**Mode of delivery:**

The tuition will be implemented as contact teaching and web-based teaching.

**Learning activities and teaching methods:**

Lectures 24 hours, pre-course material 5 hours, group teaching 10 hours, group work 5 hours, individual work 59 hours, web-based group discussion 5 hours.

**Target group:**

The course is compulsory for 1st year students of medicine and dentistry.

**Prerequisites and co-requisites:**

-

**Recommended optional programme components:**

The course is integrated with English Module III.

**Recommended or required reading:**

Contents of the lectures, pre-course material in Optima.

**Assessment methods and criteria:**

Participation to lectures (at least 80 %), individual scientific essay, web-based discussion.

**Grading:**

The course utilizes verbal grading scale Pass/Fail

**Person responsible:**

University Lecturer Tuula Hurtig

**Working life cooperation:**

-

**Other information:**

-

**043037P: Public Health, 6 op**

Voimassaolo: 01.08.2016 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Medicine

Arvostelu: 1 - 5, pass, fail

Opettajat: Taina Lajunen, Timo Hugg

Opintokohteen kielet: Finnish

**ECTS Credits:**

6 ECTS credits / 162 hours of work

**Language of instruction:**

Finnish/English

**Timing:**The course is held at the 2<sup>nd</sup> spring semester (C4).**Learning outcomes:**

Upon completion of the course, the student will:

- understand the essential challenges of public health
- identify the common chronic diseases and their risk factors
- understand the structure and function of Finnish health care system
- be aware of the importance of assessment and surveillance of health status and promotion among population, and as an expert in health care sector he/she is able to put it into practice
- understand the system and the function of environmental health
- identify the most harmful environmental factors and the health risks associated with those
- understand the role of doctor in the field of environmental health
- understand the basic epidemiologic thinking, is able to define the basic concepts of epidemiology, is able to identify the central types of epidemiologic studies and know how to apply epidemiological methods in public health

**Contents:**

## 1. Basics of public health

- Prevalence and incidence of population health in different phase of life
- Lifestyle, behavior and health
- Socioeconomic factors and health
- Finnish health care system
- Assessment and surveillance of health status among population
- Health promotion
- Global public health

## 2. Epidemiology

- Causal thinking in epidemiology
- Measures of disease occurrence and effect
- Types of epidemiologic studies: cohort studies and case-control studies
- Data analysis and reasoning

## 3. Environmental health

- Environment and health
- Risk factors in outdoor and indoor environments and their health effects
- Climate change, temperature and health
- Environmental radiation and noise
- Microbiological and chemical risks of drinking water and food
- Municipal environmental health control and exceptional situations related to environmental health
- Role of doctor in environmental health

**Mode of delivery:**

Face-to-face teaching and web-based teaching

**Learning activities and teaching methods:**

Lectures 18 h, group work 15 h, seminars 20 h, exams 6 h and independent work 106 h. Independent work includes preparation for the exams and producing the written works and presentations for the seminars. Written works, as population profile and health promotion, will be broken down in group meetings. Essay and presentation for the public health seminar are produced of the common chronic diseases as a group work. Environmental health part of the course will be covered during four half-day seminars. Epidemiology exercises will be performed as a group work. The course includes three mid exams.

**Target group:**

The students from medicine and dentistry

**Recommended optional programme components:**

The course has to be completed during preclinical period of medical and dental studies. The course is linked to Advanced course in public health sciences (040116A, C11) –course.

**Recommended or required reading:**

Required: Lecture material and exercise material.

Recommended literature:

Kansanterveystied. Kauhanen J, Erkkilä A, Korhonen M, Myllykangas M, Pekkanen J. Sanoma Pro Oy, 2013.

Rothman KJ. Epidemiology: and introduction. 2nd edition. Oxford University Press, New York, 2012.

Mussalo-Rauhamaa, Pekkanen, Tuomisto, Vuorinen. Ympäristöterveys. Duodecim, 2nd edition 2019, 300 pages. (in Finnish)

**Assessment methods and criteria:**

Participation to the mandatory teaching as well as passing the written works, presentations and exams. The assessment criteria are based on the learning outcomes of the course.

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Aino Rantala (Taina Lajunen ja Timo Hugg)

**Working life cooperation:**

Population profile and lifestyle guidance will be implemented during the practical training in health centers which is carried out during or before the course. The course includes the guest lectures of the environmental health.

**043038P: Radiation Safety in Medicine, 2 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Meri Ojakangas, Miika Nieminen

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

2 ECTS/53 hours of work

**Language of instruction:**

Finnish

**Timing:**

2nd autumn semester

**Learning outcomes:**

After the course the student can describe different forms of radiation and their application in medicine, explain the biological effects and mechanisms of radiation, define the decrees pertaining to the use of radiation and describe the radiation safety measures in the hospital working environment. The student can apply knowledge in practice and guide others to safe working practices.

**Contents:**

Basics of radiation physics, basics of radiation biology, decree of radiation protection, radiation safety procedures in working environment, the use of radiation in medicine.

**Mode of delivery:**

Face-to-face teaching

**Learning activities and teaching methods:**

Lectures 16h, feedback session for teamwork/ independently performed assignments 4h, independent studying 32h.  
Final exam 2h.

**Target group:**

Students of medicine and dental medicine

**Recommended optional programme components:**

The course is an independent entity and does not require additional studies carried out at the same time.  
Nonetheless, the course relates to tuition of imaging diagnostics and oncology

**Recommended or required reading:**

Säteily ja sen havaitseminen, Tarja K. Ikäheimonen (toim). Säteily- ja ydinturvallisuus –kirjasarja. STUK, 2002

Säteilyn terveysvaikutukset, Wendla Paile (toim). Säteily- ja ydinturvallisuus –kirjasarja. STUK, 2002

Säteilyn käyttö, Olavi Pukkila (toim), Säteily- ja ydinturvallisuus –kirjasarja. STUK, 2004

Kliininen radiologia, Roberto Blanco Sequeiros ym (toim), Duodecim, 2016

**Assessment methods and criteria:**

Mandatory parts of the course: Participation to session for reviewing study assignments/teamworks and final exam in Optima-environment.

**Grading:**

Pass/fail

**Person responsible:**

Professor Miika Nieminen

**Working life cooperation:**

Lecturers are experts in clinical use of radiation.

**Other information:**

The course is statutory radiation protection education in medical training.

## 083010A: Acute medicine I, 7 op

**Voimassaolo:** 01.08.2017 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Janne Liisanantti

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

7 ETCS, out of which traumatology covers 2.3 ETCS

**Language of instruction:**

The course can be completed in English as a book examination associated with clinical training

**Timing:**

The course will be held for the first time during the period 2019-2020

**Learning outcomes:**

Student is able to treat the most common musculoskeletal disorders and injured patients at the level of the primary health care.

Furthermore student is able to evaluate when to refer the patient with the injury or musculoskeletal disorder to the specialized medical care for the examination and treatment

**Mode of delivery:**

Face to face teaching

**Prerequisites and co-requisites:**

Pre-clinical studies

**Person responsible:**

Professor Seppo Alahuhta

## 083062A: Acute medicine II, 8 op

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

8 ECTS credits

**Language of instruction:**

Finnish

**Timing:**

Sixth year

**Learning outcomes:**

The students will be motivated to refresh his or her knowledge in recognition, diagnostic and initial management of the critically ill patient.

The student knows the basics of the patient triage and is motivated to continuous learning and training in emergency medicine.

The student refreshes his or her knowledge on patient safety issues

The students will be motivated to refresh his or her skills in communication, team working, leadership, hand-over, treatment of the critically ill patient in a multidisciplinary environment, and knowledge in trauma psychotherapy and patient safety.

The student knows the basics of the EMS system and organisation

The student refreshes his/her skills on acute medicine

The student refreshes his/her skills on acute surgery

**Contents:**

Recognition, assessment and treatment of critically ill patient. Triage, leadership, situation awareness, communication, hand-over patient data, patient safety and trauma psychotherapy.

**Mode of delivery:**

Blended teaching

**Learning activities and teaching methods:**

Multidisciplinary simulation teaching for small groups including web-based pre-exam

Lectures

Two-day sessions in small groups focusing specific issues on acute medicine and critical care including OSCE-exam

**Target group:**

Students of the sixth year

**Prerequisites and co-requisites:**

The required prerequisite is the completion of the following courses prior to enrolling for the course unit:

Anesthesiology 1

**Recommended optional programme components:**

-

**Recommended or required reading:**

Given during the course

**Assessment methods and criteria:**

Multidisciplinary simulation teaching for small groups including web-based pre-exam

Lectures

Two-day sessions in small groups focusing specific issues on acute medicine and critical care including OSCE-exam

**Grading:**

Pass/fail

**Person responsible:**

Clinical lecturer Janne Liisanantti

**Working life cooperation:**

-

**Other information:**

-



## 083000A: Basic clinical skills and tools in physician's work I, 5 op

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Hannuksela, Jokke Mikael, Olavi Ukkola

**Opintokohteen kielet:** Finnish

### **ECTS Credits:**

5 ECTS

### **Language of instruction:**

Finnish

### **Learning outcomes:**

- Guided familiarization to anamnesis in the field of internal medicine and demonstration of conventional clinical examination (somatic status) methods. Allows separation of normal and abnormal status findings. The student acquires basic skills for combining somatic findings with the patient's pre-information and diagnosis of clinical symptoms or disease.

-Learning about hospital and health center patient information systems, ordering of diagnostic examinations, and become familiar with data protection

-The student knows the ethical principles that affect patient work.

-Learn about the differential diagnosis process and how a physician finds solution for a key problem.

### **Contents:**

#### **Patient Interview and Examination:**

Online examination

Lectures (7):

-Anamnesis, status

-Musculoskeletal status, heart, neurological status, abdomen, lungs

Group teaching (4 times / student)

#### **Ethics of Patient Work: Rights and Obligations of a Doctor and a Patient.**

1 group teaching per student (about 16 student group)

Network Task.

#### **Patient Information Systems: Lectures and Practical Training**

Lectures:

- Privacy in healthcare

- Securing information in ppsph

-ESKO training

Group teaching

#### **Differential Diagnostic Process**

- 1 lecture

#### **Mode of delivery:**

The course is arranged as a contact lesson.

#### **Learning activities and teaching methods:**

The course is carried out as lectures and group lessons. The cycle includes the practice of patient encounter and physical examination. In addition to the lectures, practical training is provided in the teaching of patient information systems.

#### **Target group:**

Medical doctor degree students, 3<sup>rd</sup> year

#### **Prerequisites and co-requisites:**

Patient Examination, Saha et al. 2009 "- Related Topics. Before the patient's interview and examination, the student completes an Online examination. The performance of the assignment is judged by the rejected - approved principle. First year course on ethics.

#### **Recommended optional programme components:**

The course is linked to other internal courses on internal medicine in the third academic year.

#### **Recommended or required reading:**

From the book "Examining a Patient" by Saha et al. 2009" related issues.

Finnish Medical Association (2013): Medical Ethics.

#### **Assessment methods and criteria:**

Before the patient's interview and examination, the student completes an Online exam.

**Grading:**

The performance of the assignment is judged by the rejected - approved principle.

**Person responsible:**

Olavi Ukkola, Jokke Hannuksela.

**Working life cooperation:**

Some of the teaching is done in an authentic clinical setting, in a hospital.

**Other information:**

The course is included in the new curriculum starting in 2019 for the Medical Degree Program. The first year of the course is described in "TIME"- section.

## 083001A: Basic clinical skills and tools in physician's work II, 2 op

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Essi Varkki

**Opintokohteen kielet:** Finnish

**Status:**

This course is compulsory to all students of medicine (MD degree)

**ECTS Credits:**

2 ECTS credits / 53 hours of work

**Language of instruction:**

This course is available only in Finnish

**Timing:**

The course is completed during the 4th year of studies

**Learning outcomes:**

After completion of the course students are able to:

- describe the principles of social and insurance medicine and systems and bring these principles to practice including different medical statements.
- understand an appropriate way to write prescriptions. The student knows authoritative regulations and restrictions concerning the prescription and delivery of pharmaceuticals.
- know the most essential patient recording systems used in primary health care.
- understand the concept of patient safety, and how promoting patient safety can prevent risk events and improve the effectiveness of care.
- understand the concept of human factor in health care and its significance to patient safety

**Contents:**

Health care and social security legislation and medical statements.

The most essential patient recording systems used in primary health care.

Laws and rules regarding prescribing. The construction of a prescription. The information to be entered to the prescription. The authoritative regulations concerning the prescription and delivery of pharmaceuticals. The role of pharmacy in drug delivery, pharmaceutical forms, the quality control and storage of pharmaceuticals.

Principles of patient safety.

**Mode of delivery:**

The tuition will be arranged as face-to-face teaching

**Learning activities and teaching methods:**

Lectures 14 hours

Prescription demonstration 2 hours

Small group teaching 4 hours

**Target group:**

Target group is medical students.

**Prerequisites and co-requisites:**

Completion of the course "Basic clinical skills and tools in physician's work 1"

**Recommended optional programme components:**

This course is in connection with "Basic clinical skills and tools in physician's work 1 ja 3"

**Recommended or required reading:**

Terveysportti: (<http://www.terveysportti.fi>)

The National Archive of Health Information www-pages (<http://kanta.fi/en>)

National legislation and guidance regarding prescribing ([www.finlex.fi](http://www.finlex.fi))

**Assessment methods and criteria:**

Small group teaching sessions are obligatory, and a written examination

**Grading:**

pass/ fail

**Person responsible:**

Professor of General Medicine

**Working life cooperation:**

Lectures lectured by a medical advisor from KELA (National social insurance institution)

**083002A: Basic clinical skills and tools in physician's work III, 4 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Juha Auvinen

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

4 ECTS / 108 hours of work.

**Language of instruction:**

Finnish

**Timing:**

The course is held during the 5th year of the curriculum, from 2021-2022 onwards.

**Learning outcomes:**

Upon completion of the course, the student:

- is familiar with the main examination and management strategies used in general practice, and understands the role which the probability of disease has for the selection of a management strategy
- gains experience in: management of a range of clinical problems which present to primary care; coordination and organization of treatment; and working using a patient-centered approach
- gains insight into: disease prevention and health promotion in paediatric, antenatal-care and school-based health care settings; main examination and treatment strategies in general practice; issuing expert statements in matters of social security system, rehabilitation and employment; time management and coordination of clinical work in primary care; multidisciplinary team work
- have ability to safe, efficient and cost effective drug therapy
- understand the basis for drug therapy from the point of view of general practitioner and the treatment of most common intoxications.

**Contents:**

The course includes theoretical learning of the key principles of general practice and practical training in different areas of general practice: scheduled and acute appointment at the health centre; antenatal- and maternity-, paediatric-, family-planning- and school-services, inpatient care on the health care centre wards, and inpatient care on long-term wards, community care. In addition factors affecting drug selection, dosage and therapy will be discussed applying knowledge of basic pharmacology. Furthermore, the common problem cases of drug therapy will be discussed. Use of major classes of drugs, special treatment situations and most common intoxications will also be discussed.

**Mode of delivery:**

Blended teaching

**Learning activities and teaching methods:**

The course includes lectures 3x90 min, teaching in study group 12x90 min and 2 weeks training in health centers.

**Target group:**

Course is targeted to 5th year medical students.

**Prerequisites and co-requisites:**

The earlier studies in the curriculum of medical education.

**Recommended optional programme components:**

The course integrates teaching of clinical pharmacology and general practice.

**Recommended or required reading:**

Text books of General Practice (Duodecim) and Clinical pharmacology (Kandidaattikustannus Oy) and course materials.

**Assessment methods and criteria:**

The quality the course, student must participate to lectures, group teaching and practical training.

**Grading:**

Pass/fail

**Person responsible:**

Juha Auvinen

**Working life cooperation:**

Part of the course will take place at primary care.

## 083011A: Cardiology, 6 op

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Juha Perkiömäki

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

6 credit points

**Language of instruction:**

Finnish

**Timing:**

The course will be delivered during the 3<sup>rd</sup> year medical studies (M.D. degree students)

**Learning outcomes:**

After completion of a course a student can.

- Knows how to examine a cardiological patient.
- Understands the principles of diagnostics, treatment and follow-up of coronary artery disease.
- Is able to recognize the different types of acute coronary syndrome, knows their acute and long-term treatment.
- Knows the etiology of heart failure, its diagnostics, treatment and follow-up.
- Understands the principles of diagnostics, follow-up and treatment of valvular diseases.
- Knows the etiological factgrs of myocarditis and the most common cardiomyopathies and their diagnostics and the principles of treatment
- Understands the general principles of the follow-up of the most common congenital heart diseases in adults.
- Knows the significance of cardiac premature depolarizations in different conditions, is able to adjust the needed further examinations in different situations and is able to assess, if the cardiac premature depolarizations need any specific
- Knows the most important risk factors of atrial fibrillation, is able to recognize atrial fibrillation, knows its classification, the strategies of rhythm and rate control, the indications and contraindications of anticoagulant treatment in different situations as well as the general principles of medical and electrical cardioversion. Knows the drugs used in the anticoagulant treatment.
- Is able to recognize supraventricular tachycardias, is ware of the principles of their acute and long-term treatment. Is also able to recognize WPW syndrome from an electrocardiogram during sinus rhythm.
- Is able to recognize ventricular tachyarrhythmias: ventricular fibrillation, sustained and nonsustained ventricular tachycardia. Knows their acute treatment and understands the principles of their long-term treatment. Understands in general the electrocardiographic and etiological differences of monomorphic, polymorphic and torsades de pointes ventricular tachycardias.
- Knows the factors which may cause cardiogenic syncope and knows the principles of their treatment.
- Is able to recognize pacemaker rhythm. Knows the general indications and basic treatment principles of pacemakers, implantable cardioverter-defibrillators and cardiac resynchronization therapy.
- Can measure QT interval from ECG and correct it for heart rate. Knows when one should suspect congenital or acquired (e. g., caused by drugs) long QT syndrome and how to manage with them.
- Understands the genesis of different waves and intervals of ECG in normal and pathological conditions. Can interpret normal ECG and understands when there is something abnormal. Knows how to register ECG.
- Particularly, is able to recognize the ECG abnormalities in acute coronary syndrome (ST elevation myocardial infarction, non-ST elevation myocardial infarction, unstable angina pectoris) and knows the differential diagnostics of these changes.
- Is able to recognize left ventricular hypertrophy and atrial load from ECG.
- Is able to recognize bundle branch blocks and hemiblocks from ECG.

- Can recognize the different degrees of the disturbances of atrial-ventricular conduction from ECG, understands the significance and possible need for treatment of these changes. Can also suspect sick sinus syndrome as a cause of bradycardia.
- Knows the basic principles of specific cardiological examinations, such as echocardiography, bicycle ergometer stress test, 24-hour electrocardiographic recording, coronary angiography and electrophysiological examinations.
- Knows the basic principles of specific cardiological treatments, such as percutaneous coronary intervention (PCI), the catheter ablation of arrhythmias and the implantation of pacemakers.
- Knows the basic principles of cardiac surgery, particularly coronary artery bypass grafting and heart valve surgery as well as the principles of extracorporeal circulation.
- Can recognize the major complications occurring after cardiac surgery.
- Knows the pathophysiology and treatment of chest injuries.
- Be able to insert a pleural drainage.
- Can recognize and treat pneumothorax.
- Can recognize and treat pericardial tamponade.
- Can make a diagnosis of acute lower limb ischemia, rupture of the abdominal aorta and aortic dissection and know the basic principles of treatment of these vascular emergencies
- Knows the basic principle of treatment of vascular disease.
- Knows the main diseases of the chest as well as general thoracic surgery procedures

### **Contents:**

Clinical examination of a cardiological patient (anamnesis, status).

Diagnostics, treatment and follow-up of coronary artery disease.

The different types of acute coronary syndrome, acute treatment and the principles of long-term treatment.

Etiology, diagnostics, treatment and follow-up of heart failure.

Diagnostics, follow-up and treatment of valvular diseases.

Etiology, diagnostics and treatment of myocarditis and the most common cardiomyopathies.

Diagnostics and treatment of cardiac arrhythmias:

-Significance, evaluation and possible treatment of premature depolarizations

-Evaluation and general treatment principles of atrial fibrillation

-Evaluation and treatment of supraventricular tachycardias

-Significance and treatment of ventricular tachyarrhythmias

-Bradyarrhythmias, atrio-ventricular conduction disturbances, sick sinus syndrome

Interpretation of ECG: \_

-Normal ECG

-Myocardial infarction, ischemia and differential diagnostic aspects

-Hypertrophy and bundle branch blocks

-Tachyarrhythmias

-Disturbances of atrio-ventricular conduction

-Sick sinus syndrome

-Evaluation of QT interval

- Clinical evaluation of patients with chest trauma

- Clinical evaluation of patients with vascular diseases

- Clinical evaluation of patients with vascular emergencies (lower limb ischemia, rupture of the abdominal aortic aneurysm)

- Indications for coronary artery bypass grafting

- Indications for heart valve surgery

- Diagnosis of complications occurring after cardiac surgery

- Diagnosis of the causes of acute chest pain and/or dyspnea requiring cardiothoracic surgery.

### **Mode of delivery:**

The course is implemented as face-to-face teaching.

### **Learning activities and teaching methods:**

The course contains:

Small group teaching, theme day(s), lectures.

### **Target group:**

Medical degree (M.D.) students of 3<sup>rd</sup> year.

### **Prerequisites and co-requisites:**

Qualification of candidate of medicine

### **Recommended optional programme components:**

The course is an independent unity.

### **Recommended or required reading:**

Recommended textbooks:

Heikkilä J, Mäkijärvi M. EKG (viimeisin painos). Kustannus Oy Duodecim.

Heikkilä J, Kupari M, Airaksinen J, Huikuri H, Nieminen MS, Peuhkurinen K, Kardiologia (viimeisin painos). Kustannus Oy Duodecim.

Mäkijärvi M, Parikka H, Raatikainen P, Heikkilä J. EKG-tulkinnan työkirja (2006). Kustannus Oy Duodecim.

Thaler M. The only ECG book you'll ever need. The latest edition. Lippincott Williams & Wilkins.

Braunwald's Heart Disease, A Textbook of Cardiovascular Medicine (the latest edition).

**Assessment methods and criteria:**

There are examinations in the connection of cardiological small group teaching. This facilitates learning and the evaluation of learning. Dealing with and discussing about patient cases interactively helps to monitor students' progress in learning. Polling equipments are used during the theme days to resolve patient cases, which also facilitates the evaluation of students learning.

Interaction and use of polling equipments during lectures also facilitates the evaluation of students' learning. Group teaching sessions on wards provides good opportunities for more learning. At the same time, the students' learning can be monitored. At the end of the cardiological course, there is an examination, which evaluates cardiological knowledge widely.

**Grading:**

Numeric scale from 1 to 5 is used in the evaluation in the cardiological course. Score 0 corresponds a failed examination.

**Person responsible:**

Person in charge of the course: Juha Perkiömäki, Professor

**Working life cooperation:**

Part of the teaching will be delivered in an authentic clinical working environment

### **083051A: Dermatology and venereology, 5 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Kaisa Tasanen-Määttä, Laura Huilaja

**Opintokohteen kielet:** Finnish

Ei opintojaksokuvauksia.

### **A540147: Diseases of the musculoskeletal system, 12 op**

**Voimassaolo:** 01.08.2017 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Study module

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Leppilahti, Juhana Ilmari

**Opintokohteen kielet:** Finnish

Ei opintojaksokuvauksia.

*Compulsory*

### **083022A: Diseases of the musculoskeletal system I: Surgery, 6 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Leppilahti, Juhana Ilmari

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

TULES I 6 ECTS

SURGERY (lectures and exam)

ORTHOPAEDICS AND TRAUMATOLOGY: 3,4 ETCS credits /89 hours of student's work

PLASTIC SURGERY 0.75 CREDITS/16 h

HAND SURGERY: 0.75credits / 16 h

PATHOLOGY: 0.5. credits/ 15 h

CHRONIC PAIN: 1 credits /27 h

**Language of instruction:**

Finnish

**Timing:**

Third and fourth year of medical school

**Learning outcomes:****ORTHOPAEDICS AND TRAUMATOLOGY**

Upon completion of the course the student is able to perform profound clinical musculoskeletal- examination of the patient and is able to evaluate the significance of the findings of the examination and make a diagnosis.

Furthermore student is able to treat the most common musculoskeletal disorders and injured patients at the level of the primary health care.

Furthermore student is able to evaluate when to refer the patient with the injury or musculoskeletal disorder to the specialized medical care for the examinations and treatment.

**PLASTIC SURGERY:**

After completion the course the student

- knows the main features of the plastic surgery and what kind of patients are treated by plastic surgeons
- knows how to study the plastic surgeon patient
- can treat in primary health certain patients (small, superficial burns, dermatologic tumors, subcutaneous tissue tumors, etc.)
- is able to evaluate when to send a plastic surgeon patient to the special health care unit for studies and treatment
- can make an appropriate referral to special health care

**HAND SURGERY:**

Upon completion of the course the student knows the anatomy and biomechanics of the hand, understands how a hand surgical patient is being studied, can identify various types of diseases and injuries in the hand, and can evaluate when to send a patient to a specialist health care unit.

**PATHOLOGY**

Upon completion of the course, the student is able to describe etiology, pathogenesis and basic patterns of progression of diseases and conditions included in the course, is able recognize their most important macroscopical and microscopical features and their association with symptoms and clinical findings, and to use all of this knowledge in clinical diagnostics and selection of treatment. The student is able to use diagnostic pathology services in the clinical work of general practioner, and knows their main limitations and sources of error.

**CHRONIC PAIN**

Upon completion of the course, the student is able to describe the significance of chronic pain in public health and economy, can explain the mechanisms of chronic pain, transmission and regulation in the nervous system and design the treatment of pain.

Student can classify chronic pain, take pain ananmnesis and pain status, can apply chronic pain medicines, and take advantage of multiprofessional vision in the diagnosis and treatment of chronic pain patient.

**Contents:****ORTHOPAEDICS AND TRAUMATOLOGY:**

Musculoskeletal disorders; examination, diagnostics and the treatment.

Traumatology, examination of the single injuries and multi-trauma patient, diagnostics and the treatment

**PLASTIC SURGERY:**

Examination, diagnostics and the treatment.

**HAND SURGERY**

Examination, diagnostics and the treatment.

**PATHOLOGY**

Etiology, pathogenesis and basic patterns of progression of diseases in the course, and most important macroscopical and microscopical features

**CHRONIC PAIN**

Mechanism of chronic pain, transmission and regulation. Examination, diagnostics and treatment

**Mode of delivery:****ORTHOPAEDICS AND TRAUMATOLOGY:**

Face- to- face teaching

PLASTIC SURGERY:

Face- to -face teaching

HAND SURGERY

Face- to- face teaching

PATOLOGY

Face-to-face teaching

CHRONIC PAIN

Multiple teaching

**Learning activities and teaching methods:**

One common exam including the whole course (MUSKE I)

ORTHOPAEDICS:

Lectures 12

TRAUMATOLOGY:

Lectures 7h

PLASTIC SURGERY:

Lectures 8h

Self study 30h

HAND SURGERY:

Lectures 10h

PATHOLOGY:

Lectures 4 h

CHRONIC PAIN:

Lectures 4 h, exam

**Target group:**

Third and [fourth year medical students](#)

**Prerequisites and co-requisites:**

The required prerequisite for the course is the completion of the first and second year`s preclinical studies as well as the online optima course exam of surgery has to be passed.

**Recommended optional programme components:**ORTHOPAEDICS AND TRRAUMATOLOGY:

Musculoskeletal anatomy course from the first year will be a good base for this course. The course of radiology, situated at third year, will be supportive for this course as well.

PLASTIC SURGERY:

Multiprofessionality is emphasized.

Mamma surgery: Co-operation with onkology, radiology and pathology.

Lower limb ulcers; Co-operation with dermatologist, diabetes doctor, vascular surgeon and orthopaedic surgeon.

HAND SURGERY:

Musculoskeletal anatomy course from the first year will be a good base for this course. The course of radiology at third year and pathology will be supportive for this course as well.

PATHOLOGY:

Musculoskeletal anatomy in the first year and radiology in the third year.

CHRONIC PAIN:

The student has completed Acutology I at third year.

**Recommended or required reading:**ORTHOPAEDICS:

Textbook: Orthopaedics, kandidaattikustannus Oy, 2012

TRAUMATOLOGY:

Textbook: Traumatology, *7.renewed edition:Kandidaattikustannus oy 2010*

Current treatment recommendations: Osteoarthritis of hip and knee, Low back pain, Tendinitis of the shoulder

OPTIMA: lecture and group-study materials

PLASTIC SURGERY:

Textbook: SURGERY, Duodecim 2000

Next paragraphs:

1. Wound healing
2. Surgical infections
3. Instruments
4. Wound saturation
5. Dirty and contaminated wounds
6. Small surgical procedures
29. Burn-frostbite injuries\*



- 31. Gas gangrene
- 73. Mammary gland\*
- 74. Plastic Surgeon

Current treatment recommendations:

- Diabetic foot problems 2009
- Chronic lower limb ulcer 2014
- Breast cancer, diagnostics and treatment 2016

Handbook: Breast reconstruction

OPTIMA: Lecture materials

**HAND SURGERY:**

Textbooks: HAND SURGERY, Candidate edition, 2016

Current treatment recommendations: hand and forearm stress disorders, distal radius fractures

OPTIMA: Lecture materials

**PATHOLOGY:**

Textbook: Pathology (Duodecim; in Finnish) or: Kumar: Robbins Basic Pathology, 9<sup>th</sup> ed., section 21, Musculoskeletal system: Joints, Bones, soft tissue tumors.

Lecture notes in Optima; Material for virtual microscopy practicals in PathXL.

**CHRONIC PAIN:**

Basics of anesthesiology and Intensive care (in Finnish), 2016 Kustannus Oy Duodecim.

**Guides:**

- Neuropathic pain treatment (in Finnish): <http://www.suomenkivuntutkimusyhdistys.fi/system/files/files/neuropaattisen%20kivun%20hoito-opas.pdf>
- Cancer pain treatment (in Finnish) <http://www.suomenkivuntutkimusyhdistys.fi/system/files/files/Sy%C3%B6p%C3%A4kivunhoito-opas.pdf>
- Chronic pain treatment ([http://www.suomenkivuntutkimusyhdistys.fi/system/files/files/Kroonisen%20kivun%20hoito-opas\\_final.pdf](http://www.suomenkivuntutkimusyhdistys.fi/system/files/files/Kroonisen%20kivun%20hoito-opas_final.pdf))

**Assessment methods and criteria:**

One common exam including the whole course (MUSKE I). Questions are from all courses

**Grading:**

MUSKE I includes 1 numeric grading (0-5).

**Person responsible:**

Professor Juhana Leppilähti

**Working life cooperation:**

Part of the teaching will take place in authentic hospital and/ or health center environment.

**083023A: Diseases of the musculoskeletal system II: Surgery, 3 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Leppilähti, Juhana Ilmari

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

3 credits points

**Language of instruction:**

Finnish

**Timing:**

Third and fourth year MD students

**Learning outcomes:**

**ORTHPAEDICS AND TRAUMATOLOGY**

Upon completion of the course the student is able to perform profound clinical musculoskeletal- examination of the patient and is able to evaluate the significance of the findings of the examination and make a diagnosis.

Furthermore student is able to treat the most common musculoskeletal disorders and injured patients at the level of the primary health care.

Furthermore student is able to evaluate when to refer the patient with the injury or musculoskeletal disorder to the specialized medical care for the examinations and treatment.

#### PLASTIC SURGERY:

After completion the course the student

- knows the main features of the plastic surgery and what kind of patients are treated by plastic surgeons
- knows how to study the plastic surgeon patient
- can treat in primary health certain patients (small, superficial burns, dermatologic tumors, subcutaneous tissue tumors, etc.)
- is able to evaluate when to send a plastic surgeon patient to the special health care unit for studies and treatment
- can make an appropriate referral to special health care

#### PATHOLOGY

Upon completion of the course, the student is able to describe etiology, pathogenesis and basic patterns of progression of diseases and conditions included in the course, is able recognize their most important macroscopical and microscopical features and their association with symptoms and clinical findings, and to use all of this knowledge in clinical diagnostics and selection of treatment. The student is able to use diagnostic pathology services in the clinical work of general practitioner, and knows their main limitations and sources of error.

#### CHRONIC PAIN

Upon completion of the course, the student is able to describe the significance of chronic pain in public health and economy, explain the mechanisms of chronic pain, transmission and regulation in the nervous system, and design the treatment of pain.

Student can classify chronic pain, take pain anamnesis and pain status, can apply chronic pain medicines, and take advantage of multiprofessional vision in the diagnosis and treatment of chronic pain patient.

#### **Contents:**

##### ORTHOPAEDICS AND TRAUMATOLOGY:

Theme days, seminars and small group teaching.

Musculoskeletal disorders; examination, diagnostics and the treatment.

Traumatology, examination of the single injuries and multi-trauma patient, diagnostics and the treatment

##### PLASTIC SURGERY:

2 theme days

##### PATHOLOGY:

Small group teaching

##### CHRONIC PAIN:

Theme days, seminars, preliminary tasks

#### **Mode of delivery:**

Face-to-face teaching

#### **Learning activities and teaching methods:**

##### ORTHOPAEDICS:

theme day/seminars 9 h, small group teaching 4.5 h

##### TRAUMATOLOGY:

small-group teaching 4.5h

##### PLASTIC SURGERY:

Two theme days 12h

##### PATHOLOGY:

group teaching 2h

##### CHRONIC PAIN:

group teaching 2 h, seminar 6 h, preliminary tasks

#### **Target group:**

Third and fourth year MD students

#### **Prerequisites and co-requisites:**

The first and second year preclinical studies have been successfully completed, as well as the start of the course Optima Network Exam must be completed successfully.

#### **Recommended optional programme components:**

##### ORTHOPAEDICS AND TRRAUMATOLOGY:

Musculoskeletal anatomy course from the first year will be a good base for this course. The course of radiology, situated at third year, will be supportive for this course as well.

##### PLASTIC SURGERY:

Multiprofessionality is emphasized.

Mamma surgery: Co-operation with onkology, radiology and pathology.

Lower limb ulcers; Co-operation with dermatologist, diabetes doctor, vascular surgeon, orthopaedic surgeon and infection doctor.

**PATHOLOGY:**

Musculoskeletal anatomy in the first year and radiology in the third year.

**CHRONIC PAIN:**

The student has completed Acutology I at third year.

**Recommended or required reading:**

**ORTHOPAEDICS:**

Textbook: Orthopaedics, kandidaattikustannus Oy, 2012

**TRAUMATOLOGY:**

Textbook: Traumatology, 7. uusittu painos, Kandidaattikustannus oy 2010

National level treatmentline recommendations: Osteoarthritis of hip and knee, Low back pain, Tendinitis of the shoulder  
OPTIMA: lecture and group-study materials

**PLASTIC SURGERY:**

Textbook: SURGERY, Duodecim 2000

Next chapters (\*important):

3. Wound healing
4. Surgical infections
5. Instruments
6. Wound saturation
7. Dirty and contaminated wounds
8. Small surgical procedures
29. Burn-frostbite injuries\*
31. Gas gangrene
73. Mammary gland\*
74. Plastic Surgery\*

Current treatment recommendations:

- Diabetic foot problems 2009
- Chronic lower limb ulcer 2014
- Breast cancer, diagnostics and treatment 2016

Handbook: Breast reconstruction

OPTIMA: Lecture materials

**PATHOLOGY:**

*PATHOLOGY: Textbook: Patologia (Duodecim; in Finnish) or: Kumar: Robbins Basic Pathology, 9<sup>th</sup> ed., section 21, Musculoskeletal system.*

*Lecture notes in Optima; Material for virtual microscopy practicals in PathXL.*

**CHRONIC PAIN:**

Basics of anesthesiology and Intensive care (in Finnish), 2016 Kustannus Oy Duodeim.

**Guides:**

- Neuropathic pain treatment (in finnish): <http://www.suomenkivuntutkimusyhdistys.fi/system/files/files/neuropaattisen%20kivun%20hoito-opas.pdf>
- Cancer pain treatment (in finnish) <http://www.suomenkivuntutkimusyhdistys.fi/system/files/files/Sy%C3%B6p%C3%A4kivunhoito-opas.pdf>
- Chronic pain treatment (http://www.suomenkivuntutkimusyhdistys.fi/system/files/files/Kroonisen%20kivun%20hoito-opas\_final.pdf)

**Assessment methods and criteria:**

Participation in theme days, seminars and small group teaching

**Grading:**

Pass/ Fail

**Person responsible:**

Professor Juhana Leppilähti

**083024A: Diseases of the musculoskeletal system III: Physiatry and rheumatology, 3 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Karppinen, Jaro Ilari, Karjalainen, Anna Helena

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

MUSKE III: PHYSIATRY and RHEUMATOLOGY 3 ECTS

**Language of instruction:**

Finnish

**Learning outcomes:**

PHYSIATRY:

Upon completion the student understands the principles of diagnostics, differential diagnostics, treatment and evaluation of functional ability of musculoskeletal problems. The student is able to adapt his/her knowledge to primary health care practice.

RHEUMATOLOGY:

After completing the course, the student knows the general diagnosis, treatment and care of arthritis and other rheumatic diseases, identifies the patients who are being sent to special medical care and takes care of further care, knows indications, contraindications, techniques and devices of joint injections, as well as in the required extent immunosuppressive and biological anti-rheumatic drugs and perceives the multiprofessional care of rheumatic diseases

**Contents:**

PHYSIATRY:

The definitions and assessment methods of functional ability during a thematic day in spring (1/2 day)

From Oppiportti webportal (<http://www.oppiportti.fi/op/okk00008>) musculoskeletal disorders part of the clinical physiatry. Two questions & answers sessions of musculoskeletal disorders in autumn.

Clinical examination of a musculoskeletal patient in health care center (together with rheumatology)

**Mode of delivery:**

PHYSIATRY:

Webportal lectures of musculoskeletal disorders and two questions & answers sessions in autumn.

Thematic day (1/2 day) with focus on functional ability.

Clinical examination of musculoskeletal patients in health care center.

RHEUMATOLOGY

Face-to-face teaching.

**Learning activities and teaching methods:**

PHYSIATRY:

Webportal lectures ca. 450 min. Questions and answers sessions of internet lectures 3h

Assessment of a patient with musculoskeletal disorder at the 4<sup>th</sup> study year (2h).

½ thematic day (3h)

RHEUMATLOGY:

Lectures 12h

Group teaching together with physiatry

**Target group:**

PHYSIATRY:

Fourth year medical students

RHEUMATLOGY:

Fourth year medical students

**Prerequisites and co-requisites:**

The required prerequisite for the course is the completion of the first and second years.`s preclinical studie

**Recommended optional programme components:**

PHYSIATRY:

Clinical examination of health care center patient organized together with rheumatology

RHEUMATOLOGY:

**Person responsible:**

PHYSIATRY

Professor Jaro Karppinen.

Professor Mauri Kallinen

## 083021A: Forensic Medicine, 4 op

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Philippe Lunetta

**Opintokohteen kielet:** Finnish

### ECTS Credits:

4 ECTS credits / 90 hours of studies

### Language of instruction:

Finnish

### Timing:

The course is held in the spring semester. It is recommended to complete the course during the spring semester on the 4<sup>th</sup> year of a student studies.

The course will be held for the first time in the academic year 2020-2021

### Learning outcomes:

Once the course has been completed, the student will:

- know the main aspects of the Finnish medico-legal system and the outlines of medical legislation
- be able to detail the legislation concerning the assessment of cause of death and to list the indications for the medico-legal assessment of cause of death and apply them in practice
- be able to specify the main causes of natural, sudden and unexpected death
- recognize primary and secondary post-mortem changes and their value to diagnose death and the time of death
- recognize the different types of physical injuries and be able to assess their mechanisms of production and their age
- manage to use appropriate medico-legal procedures and approaches to determine the cause and manner of death
- manage to perform the main clinical forensic medicine investigations (sexual crimes, toxicological investigations, body packer) according to the current legislation
- manage to compile a certificate of cause of death and write a medico-legal statement in criminal cases, using the current rules and legislation

### Contents:

1. Organization of Forensic Medicine in Finland
2. Investigations into the cause of death and forensic traumatology
  - legislation
  - primary and secondary post-mortem changes
  - assessment of the time of death
  - vital reaction and wound age estimation
  - sudden unexpected natural death
  - injury deaths
  - blunt injuries
  - injuries by sharp instruments
  - gunshot wounds
  - other injuries
  - drowning
  - other asphyxia deaths
  - cadaver's external examination and the related report
3. Clinical forensic medicine
  - sexual crimes
  - crimes against life and healthy
  - body packers
  - driving under the influence of alcohol and drugs
  - medico-legal reports and criminal law
4. Other branches of forensic medicine

- forensic toxicology
- forensic genetic
- forensic odontology

#### 5. Legislation concerning medical activities

- Monitoring medical doctors
- Complaints against medical doctors
- Medical doctor's and patient's legal status

#### 6. Collaboration between medical doctors and authorities

*Further details on the course contents will be provided later*

#### **Mode of delivery:**

Face-to-face teaching

#### **Learning activities and teaching methods:**

Lectures 30 h / Autopsy and external examination, group teaching 10 h / Self-studies 50 h (total 90 h = 4 ECTS credits)

*Further details on learning activities and teaching methods will be provided later*

#### **Target group:**

Medical Degree students, 4<sup>th</sup> year

#### **Prerequisites and co-requisites:**

The courses of the previous academic years must have been passed

#### **Recommended optional programme components:**

*Possible recommended optional programme components will be provided later*

#### **Recommended or required reading:**

Textbook:

Penttilä A, Hirvonen J, Saukko P, Karhunen P. Oikeuslääketiede, Kustannus Oy Duodecim, 2000

Other suggested textbooks:

- Di Maio D, Di Maio VJM. Forensic Pathology, CRC Press, Boca Raton, 2001
- Madea B. Handbook of Forensic Medicine, Wiley-Blackwell, Oxford, 2014
- Saukko P, Knight B. Knight's Forensic Pathology. Edward Arnold, London, 2015

*Further and updated details on recommended or required reading will be provided later*

#### **Assessment methods and criteria:**

Participation to lectures, group-teaching, cadaver's external examination and autopsy.

Participating and passing the final examination

#### **Grading:**

*Details on the grading system will be provided later*

#### **Person responsible:**

Philippe Lunetta, Professor in Forensic Medicine

#### **Working life cooperation:**

The course includes guest lectures or group teaching by specialists in forensic medicine of the National Institute for Health and Welfare (NIHW). The cadaver's external examination and autopsy demonstrations will be held in the autopsy rooms of the NIHW.

#### **Other information:**

The course is included in the medical degree program of the new curriculum starting in 2017. The first year the course will be held is given under the "TIMING" section.

## **083012A: Gastrointestinal diseases, 8 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Jukka Palm, Vasunta, Riitta-Liisa

**Opintokohteen kielet:** Finnish

#### **ECTS Credits:**

8 ECTS credits

#### **Language of instruction:**

Finnish

#### **Timing:**

The course is held during years 3.-6. of medical education, mainly in the 3th year.

**Learning outcomes:**

Gastroenterology: Upon completion of the course the student will be able to

- know the diagnostical criteria of typical gastroenterological and gastrosurgical illnesses, their treatment and situations when senior consultation is needed
- independently diagnose common gastroenterological and gastrosurgical diseases based on the anamnesis, status and clinical findings
- start medication in acute gastroenterological and gastrosurgical situations and recognizes emergency situations when immediate consultation is mandatory
- differentiate gastroenterological and gastrosurgical entities from each other

**Contents:**

The basic concepts of gastroenterological and gastrosurgical diseases and their treatment.

**Mode of delivery:**

Face-to-face-teaching, lectures, seminars, bedside-learning, learning in polyclinic and emergency department, independent learning by literature, task-based learning

**Learning activities and teaching methods:**

Gastroenterology: lectures 12 h, optional lecture 2 h (6<sup>th</sup> year), bedside-learning (2 h), learning practical skills in gastroenterological unit (10-16 students), additional demonstration in enteroscopy (1-2h + 2 h), voluntary participating in patient appointments with gastroenterologist (0-3 h), possibility to produce a limited dissertation in gastroenterology (1-6 students/year). Studying independently 60 h.

Gastrosurgery: lectures 20 h, bedside- and senior guided team learning 8 h. Studying independently 60 h.

Gastroenterology + gastrosurgery: seminarium (2x8h + preparing hours for the preparing student group 15-20 h).

**Target group:**

Medical students (3<sup>th</sup>-6<sup>th</sup> years)

**Prerequisites and co-requisites:**

Years 1.-2. (preclinical years) completed

**Recommended optional programme components:**

The course in an independent entity.

**Recommended or required reading:**

Gastroenterology: Färkkilä et al: Gastroenterologia ja hepatologia. Kustannus Oy Duodecim 2013. Lääkäriin käsikirja (separately specified details). Publications and articles specified separately.

Gastrosurgery: Kirurgia. Kustannus Oy Duodecim. Latest edition.

**Assessment methods and criteria:**

Gastroenterology and gastrosurgery: collaborated exam. Grading system 1-5, zero stands for a fail

**Grading:**

The course utilizes grading scale 1-5. Zero stands for a fail. Students are supposed to read additional specified literature before the lectures and bedside-learning appointments. Learning will be controlled mutually or literally during the course.

**Person responsible:**

Riitta-Liisa Vasunta, clinical teacher

**Working life cooperation:**

Possibility to participate in working life during duty on department.

**Other information:**

The student practises in acute care, polyclinical appointments and patient care at hospital as part of bedside-learning. The student takes part of operations during their on duty at the surgical unit. The on duty period at the internal medicine and gastrosurgical department consists of following the senior round, examining the patient independently and following the examinations ( e.g. endoscopic and radiological examinations).

**083034A: General practice, 5 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Juha Auvinen

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

5 ECTS /132,5 hours of work

**Language of instruction:**

Finnish

**Timing:**

The course is completed during the 4th year of studies

**Learning outcomes:**

After completion of the course students are able to

- use holistic biopsychosocial approach to a patient
- use family-centered approach in clinical practice
- use multidisciplinary team in network meetings while helping patient and his/her family
- use holistic approach to assessment of older adults' special needs during inpatient admission
- diagnose and treat typical acute diseases of older adults'
- understand the main principles in pain relief and palliative care of older adults'
- to write a treatment and rehabilitation plan

**Contents:**

- patient-centered interview
- holistic biopsychosocial approach
- family-centered approach
- multidisciplinary team work
- holistic approach to older adults' diseases
- management of pain relief and palliative care of older adults'
- critical review of medicines
- Treatment and rehabilitation plan

**Mode of delivery:**

The course will be arranged as face-to-face teaching.

**Learning activities and teaching methods:**

Lectures 12 hours, prescription demonstration 2 hours, small group teaching 4 x 4 hours, and one week (5 days \* 8 h = 40 h) practical work in health center wards

**Target group:**

Fourth year medical students

**Prerequisites and co-requisites:**

The earlier courses of general practice

**Recommended optional programme components:**

A part of the continuum of the courses of general practice in basic medical education.

**Recommended or required reading:**

A text book of general practice, Duodecim

A text book of geriatrics, Duodecim

**Grading:**

Pass/Fail

**Person responsible:**

Markku Timonen / Juha Auvinen

## 083054A: Genomic Medicine II, 3 op

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Jukka Moilanen, Karppinen, Peppi Leena Elina

**Opintokohteen kielet:** Finnish

**Leikkaavuudet:**

083056A Medical Genetics II 3.0 op

080505A Clinical genetics 2.0 op

**ECTS Credits:**

3 ECTS / 80 hours of work.

**Language of instruction:**

Finnish.

**Timing:**

The course is held in the autumn semester of the 5th year.

**Learning outcomes:**



Upon completion of the course, the student will be able to:

- identify/suspect a genetic disease in the patient/family
- identify patients who need genetic counselling and refer them further to a clinical genetics unit
- describe the structure of chromosomes and genes and their examination methods
- organize simple diagnostic and pharmacogenetic tests and interpret their results
- explain the recurrence risks in different modes of inheritance and discuss their significance for family members and the possibilities of prenatal diagnostics
- explain the unique spectrum of genetic disease in Finland
- understand the special nature of genetic disease
- recognize the ethical problems related to genetic testing
- recognize the need of special care for families with a child suffering from congenital malformations/genetic disease and adult patients with serious genetic conditions.

**Contents:**

Clinical genetics as a medical speciality. Examination of the patient and family, drawing the pedigree. Modes of inheritance. Chromosomal disorders, principles and indications of chromosome studies. Principles and clinical applications of DNA studies. Population genetics and "Finnish Disease Heritage". Hereditary cancer, diagnosis, examination and counselling. Congenital malformations, basics of dysmorphology and syndrome identification. Prenatal diagnostics, genetic screening and counselling. Genetics of multifactorial diseases. Basics of pharmacogenetics. Genetic ethics. Principles and practice of genetic counselling, genetic services.

**Mode of delivery:**

Blended teaching

**Learning activities and teaching methods:**

Lectures 24 h / small group teaching 2 h. Independent work and online work 54 h.

**Target group:**

Medical student.

**Prerequisites and co-requisites:**

The required prerequisite is the completion of preclinical courses prior to enrolling for the course.

**Recommended optional programme components:**

No alternative courses.

**Recommended or required reading:**

Aittomäki K, Moilanen J, Perola M (eds.): Lääketieteellinen genetiikka. Duodecim, 2016.

**Assessment methods and criteria:**

During the course, the students compile a learning diary, which will be assessed. In addition, the students prepare a written coursework with peer review as the assessment method. Final exam should be passed. Participation in obligatory teaching wvwns is required. The assessment criteria are based on the learning outcomes of the course.

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Jukka Moilanen

**Working life cooperation:**

Most teachers have a position at Oulu University Hospital and have personal experience of the current working life.

## 083061A: Geriatrics, 4 op

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Antikainen, Riitta Liisa

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

5 ECTS credits

**Language of instruction:**

Finnish

**Timing:**

C11

**Learning outcomes:**

-

**Contents:**

-

**Mode of delivery:**

-

**Learning activities and teaching methods:**

-

**Target group:**

-

**Prerequisites and co-requisites:**

-

**Recommended optional programme components:**

-

**Recommended or required reading:**

-

**Assessment methods and criteria:**

-

**Grading:**

-

**Person responsible:**

Professor Riitta Antikainen

**Working life cooperation:**

-

**Other information:**

-

**083013A: Hematology and Endocrinology, 5 op****Voimassaolo:** 01.08.2016 -**Opiskelumuoto:** Intermediate Studies**Laji:** Course**Vastuuyksikkö:** Medicine**Arvostelu:** 1 - 5, pass, fail**Opettajat:** Hannuksela, Jokke Mikael, Olavi Ukkola**Opintokohteen kielet:** Finnish**ECTS Credits:**

5 credit points/135 hours

**Language of instruction:**

Finnish

**Timing:**

The course is conducted in the academic year 3. Teaching is carried out for the first time in the academic year 2019-2020.

**Learning outcomes:**

Students familiarize with the diagnostics and treatment of endocrine and hematologic disorders from primary health care perspective. The goal is to be able to utilize and apply theory in practice. Students learn to solve problems independently and to co-operate with various health care professionals.

**Learning objectives in hematology:**

- interpretation of blood count
- diagnostics, treatment and care chain of anemia
- basics of solving, treatment and care chain of white blood cell and platelet abnormalities
- basics of diagnostics, treatment and care chain of essential hematologic malignancies (acute leukemia, CLL, CML, myeloma, ET, PV, MDS)
- basic principles of autologous and allogenic stem cell transplantation
- blood transfusions in hematological patients
- predisposing factors, diagnostics and treatment of deep vein thrombosis and pulmonary embolism

- detection and basic principles of treatment in bleeding tendencies
- to observe and take (if possible) a bone marrow aspiration

#### **Learning objectives in endocrinology:**

- differential diagnostics, symptoms, treatment and prevention of diabetes mellitus type 1 and 2
  - to measure blood pressure, to examine patient with hypertension, treatment, care chain and complications of hypertension
  - thyroid related disorders (physiologic basics of thyroid gland, examination of thyroid, disorders of thyroid, examination of a lump in thyroid gland, pain in thyroid gland, follow-up of a patient with thyroid cancer in primary health care)
  - endocrine hypertension
  - hyperparathyroidism
  - other disorders of adrenal gland
  - endocrine habitus
  - disorders of pituitary gland
  - disorders of bone, diagnostics, treatment and prevention of osteoporosis, secondary osteoporosis
  - clinical picture, diagnostics, differential diagnostics, treatment and prevention of atherosclerosis
  - diagnostics, differential diagnostics and treatment of dyslipidemia, familial hypercholesterolemia, secondary hyperlipidemias
  - obesity and its etiology, obesity related diseases, treatment of morbid obesity, pharmacological and surgical treatment of obesity, eating disorders
- essential endocrine problems in primary health care

#### **Contents:**

Endocrinology and metabolic disorders  
Hematology including hypoxia section

#### **Mode of delivery:**

Teaching is organized as contact lessons.

#### **Learning activities and teaching methods:**

Teaching methods used in this course are lectures, theme days, group and seminar lessons, outpatient clinic education and exams.

- lectures 12 x 2h
- theme days/seminars 4 x 6h
- group lessons 3 x 2h
- self-directed blood count exercises 6t
- an essay assignment 4t
- a midterm exam x2

#### **Target group:**

Medical doctor degree students, 3 rd academic year

#### **Prerequisites and co-requisites:**

Preclinical studies of 1 st and 2 nd academic years

#### **Recommended optional programme components:**

The course is linked to other courses in the 3 rd academic year. It is an independent course and can be conducted without simultaneous studies.

#### **Recommended or required reading:**

Hematologia: Porkka K, Lassila R, Remes K, Savolainen E-R. Veritaudit (2015) Kustannus Oy Duodecim

Endokrinologia: Välimäki M, Sane T, Dunkel L.: Endokrinologia (2. painos, 2009) Kustannus Oy Duodecim

#### **Assessment methods and criteria:**

The course includes two exams (hematology, endocrinology) and an essay assignment (hypoxia), which have to be passed.

#### **Grading:**

The course is evaluated by numerical scale 0-5 in which zero is rejected.

#### **Person responsible:**

Hematology: M.D., Ph.D. Jokke Hannuksela, Specialist in Internal medicine and hematology

Endocrinology: Professor Olavi Ukkola, Specialist in Internal medicine and endocrinology

#### **Working life cooperation:**

Some of the teaching is organized in an authentic clinical setting in a hospital.

#### **Other information:**

The course is included in the new curriculum starting in 2017 for the Medical Degree Program. The first year of the course is described in "TIMING" section.

## **083030A: Infections and respiratory diseases, 5 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Riitta Kaarteenaho

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

5 ECTS

**Language of instruction:**

Finnish

**Timing:**

The course is held in the autumn and spring semesters, during the 4<sup>th</sup> year (C7-8)

**Learning outcomes:**

Upon completion of the course, the student will be able to diagnose and treat the most common pulmonary and infectious diseases on the level of primary health care. The student also knows how to prevent infectious and pulmonary diseases and is able to identify and deal with emergency situations of these conditions. In addition, the student knows the basic epidemiology of pulmonary and infectious diseases and the main principles of controlling epidemic infections

**Contents:**

The most essential respiratory and infectious diseases, their treatment, prevention and identification of rare, more serious infectious conditions are covered from a general practitioner's point of view.

**Mode of delivery:**

Face-to-face teaching

Lectures

Web-based learning

**Learning activities and teaching methods:**

Various teaching and learning methods are used in the course:

There are lectures, seminars, small group and bedside lessons as well as written exams. Teaching is compulsory apart from lectures.

**Target group:**

Medical degree students, C7-C8

**Prerequisites and co-requisites:**

Student must have completed interviewing and examining patients - course

**Recommended optional programme components:**

The course is performed simultaneously with other studies of the fourth year.

**Recommended or required reading:**

Textbooks:

Kaarteenaho R, Brander P, Halme M, Kinnula V. Keuhkosairaudet – Diagnostiikka ja hoito (Duodecim, in Finnish)

The most essential pages of the following textbooks: Huovinen P, Hedman K, Heikkinen T, Järvinen A, Meri S, Vaara M (toim.) Mikrobiologia, immunologia ja infektiosairaudet, kirjat 1-3 (2011), Duodecim (in Finnish).

Käypä hoito –recommendations, which are applicable for the course (in Finnish)

Separate papers

Web courses

**Assessment methods and criteria:**

Attendance in the compulsory teaching and passing the examinations.

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Professor Riitta Kaarteenaho, docent Timo Hautala

**Working life cooperation:**

Small group classes on the ward and at the outpatient department are to apply the theoretical knowledge to practice in authentic environment.

**083014A: Nephrology/Urology, 6 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Parpala-Spärman, Teija Mirjami

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

*6 ECTS credits*

**Language of instruction:**

Finnish

**Timing:**

The course is held in the autumn and spring semester during the 3th year of studies

**Learning outcomes:**

- The student recognizes and is able to raise conversation with the patient about voiding disorders in the holistic patient care. He/She recognizes treatment requirements of abnormal symptoms and findings.
- The student observes and recognizes common renal and urinary tract symptoms and is able to diagnose these on the primary care level.
- The student is able to treat and follow up e.g. the benign prostatic hyperplasia patient and recognizes the situations, when the patient needs to be examined and treated in specialized care.
- The student understands the principles of cancers of the kidneys and urinary tract.
- The student is able to follow up the urinary tract cancer patients after curative treatment on primary care.
- The student is able to treat emergency situations of the urinary tract and urinary tract trauma on the first aid level in the emergency department.
- Student is able to treat acute urinary retention.
- Student knows the main causes, diagnosis and the treatment of acute kidney injury.
- Student recognizes nephrotic syndrome, knows the etiology and the diagnostic examinations.
- Student knows how to diagnose diabetic nephropathy, knows main principles of the treatment and the follow-up.
- Student knows the most common glomerulonephritis, interstitial nephritis, polycystic kidney disease and renal vasculitis.
- Student recognizes chronic renal insufficiency and knows the management.
- Student is familiar with the renal replacement therapies.

**Contents:**

- Congenital anomalies of the urinary tract.
- Renal tumours and parenchymal diseases – diagnosis and treatment.
- Disseminated kidney cancer treatment in special care.
- Catheterization of urinary bladder.
- Prostatic diseases diagnosis and treatment.
- Hemotamponation of the urinary bladder.
- The diagnosis and treatment of hematuria.
- Urinary tract trauma and emergency care.
- Diagnosis and treatment of urethral diseases.
- Diagnosis and treatment of voiding disorders.
- Evaluation of kidney function and urinary analysis.
- Diagnosis and treatment of the most common renal diseases: diabetic nephropathy, glomerulonephritis, polycystic kidney disease, tubulointerstitial nephritis and renal vasculitis.
- Acute kidney injury: etiology, diagnosis and treatment.
- Chronic renal insufficiency: conservative and active management.

**Mode of delivery:**

Blended teaching.

**Learning activities and teaching methods:**

**Urology:**

Lectures 24h (+ self learning 24h)

Patient centered student group teaching

on the urological ward and outpatient clinic 4h (self learning 8h)

Theme days 12h (+ self learning 12h)

Exam 8h

Final Exam 32h

**Nefrology:**

Lectures 12 h

Patient centered group teaching 2 h

Seminars 4 h

Exam

Final exam

**Target group:**

3rd year medical degree students

**Prerequisites and co-requisites:**

Previous studies completed acceptably.

**Grading:**

Numeric 1-5.

Value 0 stands for fail.

**Person responsible:**

Teija Parpala, clinical teacher

**Working life cooperation:**

Part of the teaching will take place in the clinical hospital environment.

## 083032A: Neurology and Neurosurgery, 9 op

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Majamaa, Kari Gunnar

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

9 ECTS credits

**Language of instruction:**

Finnish

**Timing:**

The course begins in the autumn semester and major part is in the spring semester. The course is available from 2020 – 2021.

**Learning outcomes:**

The course supports the professional growth of students and increases their ability to meet the patients. After the course the students will be able to diagnose and treat neurological and neurosurgical patients as primary health care physician and will be able to work in a multiprofessional work community.

After completion of the course, the student

- masters the basics of neurology and neurosurgery, neuroradiology and clinical neurophysiology at the level required from general practitioner
- is able to perform the neurological examination on a patient and interpret the findings
- understands the most important clinical features and neuropathological changes of neurological and neurosurgical disease progression and major changes in the anatomic structures explaining the manifestations of various symptoms and findings
- is able to evaluate the urgency of neurological and neurosurgical conditions and understands the life-threatening nature of these diseases. The course educates the student to diagnose and give emergency treatment to neurological and neurosurgical acute patients at the hospital ER clinic
- knows the indications of the most common neurophysiological and neuroradiological examinations and is able to interpret their results

**Contents:**

- Course opening and initial information
- Lectures, can be followed online (recorded)
- Seminars, can be followed online (partly recorded)
- The initial exams (neurology and neurosurgery)
- Group teaching of clinical neurological examination
- Contact teaching period (group teaching)
  - at the outpatient clinic
  - at the hospital ward of neurosurgery and in the operating room

- the neurology ward section [spinal tap training with the simulator, attending ward round, teaching session on stroke, examining the patients, teaching session on summary of the section]
- attending emergency clinic work of neurology
  - Exam after the contact teaching period (neurology)
  - Final exam

Exchange students can also earn 3.0 ETCS credits (Neurosurgery) through the Erasmus program clinical elective. This requires full time (8.00 am – 3.45 pm) participation in all clinical activities for minimum of one week and participation in group sessions. For ETCS credits the final examination in neurosurgery section must be passed.

**Learning activities and teaching methods:**

Lectures, small group teaching, clinical studies

**Target group:**

Medical degree students, 4th year.

**Prerequisites and co-requisites:**

Preclinical studies, clinical studies during the 3rd year

**Recommended optional programme components:**

The course is an independent entity and no simultaneous studies are required

**Recommended or required reading:**

Requirements in the final exams include all theory and practice taught during the course and the material used and the corresponding subjects in the textbooks:

-Neurology (Duodecim). Link to the textbook: <http://www.oppiportti.fi/op/neu00001/do>

-Chapter on Neurosurgery in the textbook Surgery (Duodecim). Link to the textbook: <http://www.oppiportti.fi/op/opk04494>

-Chapter on Nervous system and muscle in the textbook Pathology (Duodecim). Link to textbook: <http://www.oppiportti.fi/op/XX>

-Chapter on Neuroradiology in the textbook Radiology (Duodecim). Link to textbook: <http://www.oppiportti.fi/op/XX>

-Clinical Neurophysiology (Duodecim). Link to the textbook: <http://www.oppiportti.fi/op/XX>

For exchange students: Lindsay-Bone: Neurology and Neurosurgery Illustrated, latest edition.

Literature is available in the internet pages of Oppiportti of Duodecim and other study material in the electronic portal of Oulu University (Optima).

The literature of neurosurgery for Erasmus-students is available at the Oulu university library.

**Assessment methods and criteria:**

Exams will be held during the course. The initial exams in neurology and neurosurgery are graded pass/fail.

Neurology exam following the contact teaching period is graded numerically and approved grades must be reached.

These grades contribute to the final grading.

Approved grades must be reached in final exam.

Attendance is compulsory in several teaching sessions during the course.

Read more about assessment criteria at the University of Oulu webpage.

**Grading:**

The initial exams are graded pass/fail. The grade of the exam following the contact teaching period contributes to the final grade. The grade of the final exam is 1-5.

**Person responsible:**

Neurology: Kari Majamaa, professor

Neurosurgery: Ville Leinonen, professor

Neuropathology: Tuomo Karttunen, professor

Neuroradiology: Osmo Tervonen, professor

Clinical Neurophysiology: Mika Kallio, clinical director

**Working life cooperation:**

All clinical phases of the course are conducted in the university hospital. The students meet patients in outpatient clinic appointments and in the ward.

**Other information:**

The course is included in the new curriculum of medical studies from 2017. The course will be carried out for the first time in 2020. The course is conducted by the Research Units of Clinical Neuroscience (neurology, neurosurgery), Cancer and Translational Medicine (pathology), Medical Imaging, Physics and Technology (radiology and clinical neurophysiology)

## 083052A: Obstetrics and gynecology, 10 op

Voimassaolo: 01.08.2016 -

Opiskelumuoto: Intermediate Studies

Laji: Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Hannu Martikainen

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

10 ECTS / 267 hours of work

**Language of instruction:**

Finnish

**Timing:**

C9 and C10

The course units is held in the autumn semester and spring semester.

**Learning outcomes:**

After completing the course Obstetrics and Gynecology the student will have sufficient theoretical and practical knowledge in obstetrics and the most common gynecological illnesses, as well as the diagnostics, treatments and prevention thereof. Furthermore, the student will learn about a normal pregnancy, childbirth and puerperium. The course will provide the student skills required to work in a public health center as a general practitioner and to handle the treatment of acute cases.

**Contents:**

Introduction: patient's anamnesis and examination, diagnosis and treatment plan, ultrasonography and other medical procedures, sexology.

Obstetrics: physiology of a pregnancy, planning and monitoring of pregnancy, multiple pregnancy, fetal growth retardation, infections during pregnancy, internal medicine problem during pregnancy, 3rd trimester hemorrhaging, miscarriage, premature delivery, monitoring of childbirth, puerperium.

**Learning activities and teaching methods:**

Lectures 27 h

Theme-days 10 h

Student Congress 4 h

Practical training in Central Hospitals 20 h

Small group teaching:

- group teaching 15 h

- ward rounds and learning at wards, following of the own patient 22 h

- outpatient clinic learning 17 h

- maternity care center and health care center learning 4,5 h (learning diagnostics and treatment of real patients)

Problem based learning:

- guided teaching 16 h

- without guidance either privately or in a group 24 h

The admission exam 6 h (web-based)

Week exams I, II, and III (web-based) 6 h

The patient cases exam 3 h

Self-study (preparing for Theme-days, congress and exams) 95 h.

**Target group:**

Medical students

**Prerequisites and co-requisites:**

The prerequisites for the course unit are previous studies (C1-C8 course units).

The admission exam (web-based) should be passed.

**Recommended optional programme components:**

No alternative course units.

**Recommended or required reading:**

Text book: Ylikorkala O, Tapanainen J (toim.) Naistentaudit ja synnytykset 5. uud. painos. Kustannus Oy Duodecim, 2011.

Recommended reading: Collins Sally, Arulkumaran Sabaratman, Hayes Kevin, Jackson Simon, Impey Lawrence: Oxford Handbook of Obstetrics and Gynaecology. The third edition.

**Assessment methods and criteria:**

Attending to all compulsory teaching => pass

Week Exam I, II, III => 1-5/fail

The Patient cases exam (final exam): evaluation from 0-48 point, approval limit is 24 points => 1-5/fail.

**Grading:**

The course unit utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

The final grade of the course is formed Patient cases exam (70 %) and Week exams (30 %).

**Person responsible:**

Prof. Hannu Martikainen



**Other information:**

Multi-professional work.

**083060A: Oncology and palliative care, 4 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Turpeenniemi-Hujanen, Taina Marjatta

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

4 ECTS credits

**Language of instruction:**

Finnish/English

**Timing:**

September-November.

**Learning outcomes:**

-

**Contents:**

The diagnostics, oncological therapeutic modalities and the patient follow-up of solid cancers and lymphomas. Palliative care and end-of-life care of oncological patients.

**Mode of delivery:**

Lectures, web-based teaching, seminars, small group teaching.

**Learning activities and teaching methods:**

Lectures 33 h/ Small Group Teaching 10h/ Oncological Seminars 10h. Preliminary Examination 3 h (online). Final Examination 2 h.

**Target group:**

Target groups are the 6 th year medical students (MD).

**Prerequisites and co-requisites:**

The required prerequisite for participation to the course unit is the completion of 5 years of medical studies in Oulu curriculum.

**Recommended optional programme components:**

Teaching is also given during other courses (e.g. anesthesiology, geriatrics, general medicine, neurology, urology, plastic surgery).

**Recommended or required reading:**

Joensuu, Roberts, Teppo, Tenhunen: Syöpätaudit, last edition, Kustannus Oy Duodecim

UICC: TNM-luokituskirja ja UICC Clinical Oncology, viim.painos.

Recommended literature:

Joensuu H, Kouri M, Ojala A, Tenhunen M, Teppo L: Kliininen sädehoito. Duodecim viim.painos.

Saarto T ym: Palliativinen hoito. Duodecim viim.painos.

Lahtinen T, Holsti LR: Kliininen säteilybiologia. Duodecim viim.painos.

Bomford CK & Kunkler IH: Walter and Miller´s Textbook of Radiotherapy. Radiation Physics, Therapy and Oncology. Churchill Livingstone 2003.

Elonen E ym: Syöpälääkeopas. Viim. painos.

Kallanranta T, Rissanen P, Viikkumaa I: Kuntoutus. Duodecim viim.painos.

**Assessment methods and criteria:**

During the course unit, there are preliminary and final exams. Both of them should be passed. In addition, passing of preliminary exam is required before the final exam.

**Grading:**

The course unit utilizes a numerical grading scale 1-5. In the numerical scale zero stands for fail.

**Person responsible:**

Taina Turpeenniemi-Hujanen, Professori

Peeter Karihtala, Clinical lecturer

Jussi Koivunen, Clinical lecturer

**Working life cooperation:**

Small group teaching includes examining patients.

**Other information:**

-

**083050A: Ophthalmology, 4 op****Voimassaolo:** 01.08.2016 -**Opiskelumuoto:** Intermediate Studies**Laji:** Course**Vastuuyksikkö:** Medicine**Arvostelu:** 1 - 5, pass, fail**Opettajat:** Nina Hautala**Opintokohteen kielet:** Finnish

Ei opintojaksokuvauksia.

**083031A: Otorhinolaryngology, 7 op****Voimassaolo:** 01.08.2016 -**Opiskelumuoto:** Intermediate Studies**Laji:** Course**Vastuuyksikkö:** Medicine**Arvostelu:** 1 - 5, pass, fail**Opettajat:** Alho, Olli-Pekka**Opintokohteen kielet:** Finnish**ECTS Credits:***7 ECTS credits / 187 hours of work***Language of instruction:**

Finnish

**Timing:**

The course is held in the autumn and spring semester during the 4th year of studies

**Mode of delivery:**

Blended teaching

**Target group:**

4th year medical degree students

**Person responsible:**

Professor Olli-Pekka Alho

**A540146: Pathology and diagnostics I, 10 op****Voimassaolo:** 01.08.2017 -**Opiskelumuoto:** Intermediate Studies**Laji:** Study module**Vastuuyksikkö:** Medicine**Arvostelu:** 1 - 5, pass, fail**Opettajat:** Mäkinen, Markus Juhana**Opintokohteen kielet:** Finnish**ECTS Credits:**

10 ECTS credits

Laboratory Medicine:

1.0 ECTS/ 27 hours of work

Organ Pathology:

6.0 ECTS credits/162 hours of work

Radiology:

3 ECTS credits /80 hours of work

**Language of instruction:**

Finnish

**Timing:**

Laboratory medicine:

C5 (3rd year, Autumn semester)

Organ pathology:

Autumn semester of 3<sup>rd</sup> year, except autopsy teaching that extends to Spring semester of 3<sup>rd</sup> year.

Radiology:

C5-6 (3rd year, Autumn and Spring semester)

**Learning outcomes:**

**Laboratory medicine:**

By the end of the course the student can list the most frequently used tests in clinical chemistry, their indications and interpretation. The student understands the importance of good practices in phlebotomy. The student can specify the basics of the quality control of the laboratory tests. The student understands the feedback control systems in endocrinology and on this base can diagnose the common endocrine disorders and their reasons. The student can list the hormone determinations and indications to use them. The student knows the common weaknesses and disturbing factors of hormone determinations. The student understands how to diagnose heritable metabolic diseases and the use of cancer markers. The student knows the effects of childhood, pregnancy and older age on the laboratory methods. The student can work as a member in a team.

**Organ pathology:**

The student will understand the pathogenesis, pathologic tissue changes and their clinical significance in relation to the symptoms ja prognosis of the disease in different organ systems.

The student will learn the indications, limitations and the main sources of diagnostical errors in diagnostic pathology and learn to interpret the pathologist's report correctly. The student will also learn the role of pathology in the treatment of patients and as a part of a multidisciplinary team and know how to work in a group.

**Radiology**

Upon completion of this first curricular unit of radiology, student should be able to understand the principle of justification of radiological studies. Additionally student should have competence to explain the most important indications for radiological studies and principles of radiological modalities, including nuclear medicine. After completing the unit, student should master basic image interpretation skills of radiographs and know the most common findings of these examinations. Student can work in a group.

**Contents:**

**Laboratory medicine:**

Lectures contain following subjects: Clinical Chemistry as a medical speciality, diagnostics of heart and vascular disorders, examination of kidneys and urinary tracts, clinical enzymology, examination of liver and gastrointestinal tract, tests to analyse water, sodium and potassium balance, therapeutic drug monitoring and chemical toxicology, most frequently used laboratory test and their indications. Theoretical background of clinical endocrinology, hormone determinations, adrenal function and its disorders, hypothalamic and hypophysis hormones, the follow up of pregnancy by clinical chemical methods, endocrinology of aging, thyroid function and its disorders and calcium metabolism and its disorders. Analyzing congenital heritable metabolic diseases and cancer markers.

Contents of small group practical courses: taking blood samples and preparation of samples for different tests, results of laboratory test in healthy individuals, reference ranges, sources of errors and their origin and quality controls of laboratory tests.

Goal of the theme day: The students can perform to point of care tests.

**Organ pathology:**

The course comprises of histopathological and cytological diagnostics and pathogenesis of diseases in following organ systems: Gastrointestinal tract, liver, pancreas, biliary system, lymphatic tissue, bone marrow, kidneys, urinary tract, prostate, testes, penis, breast tissue, soft tissue, bone, joints and endocrine organs. The course includes a 3 hour final exam, 95 hours of self-study and 62 hours of contact teaching which is divided in the following way:

- Lectures 26h
- Seminar 4h
- Group and microscope exercises 20h
- Autopsies 6h
- Autopsy demonstrations 2h
- Laboratory observation 2h
- Clinical-pathological meetings 2h

In total, the course comprises of 160 hours of study (6 ECTS).

#### **Radiology:**

General introduction to radiology (techniques) and indications, principle of justification, emergency radiology, musculoskeletal radiology, thoracic radiology, abdominal radiology, neuroradiology and nuclear medicine and molecular imaging

Flipped learning approach is used applying G Suite learning environment.

#### **Mode of delivery:**

Blended learning.

#### **Learning activities and teaching methods:**

##### **Laboratory medicine:**

Lectures 10 h, small group practical courses 6 h and one theme day. In addition the student has independent preparation for small group practical courses and for the theme day..

##### **Organ pathology:**

Lectures and exercises are interactive teaching. Some of the lectures can be provided with the opportunity to follow the lectures through remote access. The seminar will include lectures and student presentations.

Group and histology exercises are based on preliminary assignments.

In the autopsy exercises, students will participate in a medical autopsy. In the autopsy demonstrations, the teacher will present the key findings of the autopsy to other student groups.

Clinical-pathological meeting: Students will participate in some of the university hospital meetings. Laboratory

observation: Students will follow the macroscopic study of surgical resections and frozen sections at the pathology department.

Exam is a traditional final exam. Examination of microscopic changes (histology) can be used to utilize the online learning environment (PathXL).

#### **Radiology:**

The implementation methods of the course vary.

The learning methods are based on flipped classroom, i.e. independent self-education based on electronic materials and teacher guided checkpoints in small group.

#### **Target group:**

3rd year medical doctor degree students

#### **Prerequisites and co-requisites:**

Completion of preclinical studies (first 2 years of medical school)

#### **Recommended optional programme components:**

There are no alternative courses.

#### **Recommended or required reading:**

##### **Laboratory medicine:**

Textbook: Tietz Fundamentals of Clinical Chemistry and Molecular Diagnostics, 7th edition, CA Burtis, DE Bruns, 2015. Other textbooks: Endokrinologia, Kustannus Oy Duodecim, M Välimäki, T Sane, L Dunkel, 2009.

##### **Organ pathology:**

Books: Mäkinen M et al. (Eds.): Pathology, Duodecim (2012)

Alternatives:

Cross SS, Underwood's Pathology, a Clinical Approach (6th or newer edition)

Kumar V et al., Robbins Basic Pathology (9th or newer edition)

Course material (Finnish): Seminars; Lecture handouts; guide to autopsy

Course contents (histology lessons) at <https://lieko.oulu.fi>

Käypä hoito recommendations

Other material delivered during the course.

#### **Radiology:**

Books:

Either, Roberto Blanco Sequeiros et al (Editors): Kliininen radiologia [in Finnish] or Mettler, FA (Editor): Essentials of Radiology

100-tärkeintä rtg-kuvaa (National teaching image base): Distributed through university online environment.

**Assessment methods and criteria:****Laboratory medicine:**

At the end there will be an essay examination based on materials given in lectures, small group practical courses, in textbooks and other materials given to the students.

**Organ pathology:**

Lectures are voluntary but recommended. Group teachings and seminars are compulsory and attendance is recorded. Compulsory teachings given prior to the final examination must be completed before participation to the final exam. The final exam must be completed successfully.

**Radiology:**

This course unit utilizes online short questions and multiple choice exam assessment.

**Grading:**

1-5, fail

**Person responsible:**

Markus Mäkinen

**Working life cooperation:**

Student learns partially in an authentic clinical environment as a team member. No clinical internship placements during the courses.

*Compulsory*

**083003A: Pathology and diagnostics I: Laboratory medicine, 1 op**

**Voimassaolo:** 01.08.2017 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Vuolteenaho, Olli Jaakko Tuomas

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

Laboratory Medicine:

1.0 ECTS/ 27 hours of work

**Language of instruction:**

Finnish

**Timing:**

Laboratory medicine:

C5 (3rd year, Autumn semester)

**Learning outcomes:**

Laboratory medicine:

By the end of the course the student can list the most frequently used tests in clinical chemistry and their indications and critical interpretation. The student can standardize sample taking so that the above facts that increase the deviation in test results can be eliminated. The student can specify the basics of the quality control of the laboratory tests. The student understands the feedback control systems in endocrinology and on this base can diagnose the common endocrine disorders and their reasons. The student can list the hormone determinations and indications to use them. The student knows the common weaknesses and disturbing factors of hormone determinations. The student understands how to diagnose heritable metabolic diseases and the use of cancer markers. The student knows the effects of childhood, pregnancy and older age on the laboratory methods.

**Contents:**

Laboratory medicine:

Lectures contain following subjects: Clinical Chemistry as a medical speciality, diagnostics of heart and vascular disorders, examination of kidneys and urinary tracts, clinical enzymology, examination of liver and gastrointestinal tract, tests to analyse water, sodium and potassium balance, therapeutic drug monitoring and chemical toxicology, most frequently used laboratory test and their indications. Theoretical background of clinical endocrinology, hormone determinations, adrenal function and its disorders, hypothalamic and hypophysis hormones, the follow up of pregnancy by clinical chemical methods, endocrinology of aging,

thyroid function and its disorders and calcium metabolism and its disorders. Analyzing congenital heritable metabolic diseases and cancer markers.

Contents of small group practical courses: taking blood samples and preparation of samples for different tests, results of laboratory test in healthy individuals, reference ranges, sources of errors and their origin and quality controls of laboratory tests.

Goal of the theme day: The students can perform to point of care tests.

**Mode of delivery:**

Face-to-face teaching

**Learning activities and teaching methods:**

Lectures 10 h, small group practical courses 6 h and one theme day. In addition, the student has independent preparation for small group practical courses and for the theme day.

**Target group:**

3<sup>rd</sup> year medical doctor degree students

**Prerequisites and co-requisites:**

Completion of preclinical studies (first 2 years of medical school)

**Recommended optional programme components:**

There are no alternative courses.

**Recommended or required reading:**

Textbook: Tietz Fundamentals of Clinical Chemistry and Molecular Diagnostics, 7th edition, CA Burtis, DE Bruns, 2015. Other textbooks: Endokrinologia, Kustannus Oy Duodecim, M Välimäki, T Sane, L Dunkel, 2009[MM1]

[MM1]

Books: Either, Roberto Blanco Sequeiros et al (Editors): Kliininen radiologia [in Finnish] or Mettler, FA (Editor): Essentials of Radiology

100-tärkeintä rtg-kuvaa (National teaching image base): Distributed through university Optima online environment.

Assessment methods and criteria

**Assessment methods and criteria:**

At the end there will be an essay examination based on materials given in lectures, small group practical courses, in textbooks and other materials given to the students.

**Grading:**

Numerical grading with a grading scale 0-5, when 0 stands for fail and 5 for excellent.

**Person responsible:**

Olli Vuolteenaho

**Working life cooperation:**

During the course, a student will learn partially in an authentic laboratory environment. No clinical internship placements are involved during the course.

**083004A: Pathology and diagnostics II: Organ pathology, 6 op**

**Voimassaolo:** 01.08.2017 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Mäkinen, Markus Juhana

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

6.0 ECTS credits /160 hours of work

**Language of instruction:**

Finnish

**Timing:**

Autumn semester of 3<sup>rd</sup> year, except autopsy teaching that extends to Spring semester of 3<sup>rd</sup> year.

**Learning outcomes:**

The student will understand the pathogenesis, pathologic tissue changes and their clinical significance in relation to the symptoms ja prognosis of the disease in different organ systems.

The student will learn the indications, limitations and the main sources of diagnostic errors in diagnostic pathology and learn to interpret the pathologist's report correctly. The student will also learn the role of pathology in the treatment of patients and as a part of a multidisciplinary team and know how to work in a group.

**Contents:**

The course comprises of histopathological and cytological diagnostics and pathogenesis of diseases in following organ systems: Gastrointestinal tract, liver, pancreas, biliary system, lymphatic tissue, bone marrow, kidneys, urinary tract, prostate, testes, penis, breast tissue, soft tissue, bone, joints and endocrine organs. The course includes a 3 hour final exam, 95 hours of self-study and 62 hours of contact teaching which is divided in the following way:

- Lectures 26h
- Seminar 4h
- Group and microscope exercises 20h
- Autopsies 6h
- Autopsy demonstrations 2h
- Laboratory observation 2h
- Clinical-pathological meetings 2h

In total, the course comprises of 160 hours of study (6 ECTS).

**Mode of delivery:**

Blended learning.

**Learning activities and teaching methods:**

Lectures and exercises are interactive teaching. Some of the lectures can be provided with the opportunity to follow the lectures through remote access. The seminar will include lectures and student presentations. Group and histology exercises are based on preliminary assignments.

In the autopsy exercises, students will participate in a medical autopsy. In the autopsy demonstrations, the teacher will present the key findings of the autopsy to other student groups.

Clinical-pathological meeting: Students will participate in some of the university hospital meetings.

Laboratory observation: Students will follow the macroscopic study of surgical resections and frozen sections at the pathology department.

Exam is a traditional final exam. Examination of microscopic changes (histology) can be used to utilize the online learning environment (PathXL).

**Target group:**

3<sup>rd</sup> year medical doctor degree students

**Prerequisites and co-requisites:**

Completion of preclinical studies (first 2 years of medical school)

**Recommended optional programme components:**

There are no alternative courses.

**Recommended or required reading:**

Books: Mäkinen M et al. (Eds.): Pathology, Duodecim (2012)

Alternatives:

Cross SS, Underwood's Pathology, a Clinical Approach (6th or newer edition)

Kumar V et al., Robbins Basic Pathology (9th or newer edition)

Course material (Finnish): Seminars; Lecture handouts; guide to autopsy

Course contents (histology lessons) at <https://lieko oulu.fi>

Käypä hoito recommendations

Other material delivered during the course.

**Assessment methods and criteria:**

Lectures are voluntary but recommended. Group teachings and seminars are compulsory and attendance is recorded.

Compulsory teachings given prior to the final examination must be completed before participation to the final exam.

The final exam must be completed successfully.

**Grading:**

1-5, fail

**Person responsible:**

Markus Mäkinen

**Working life cooperation:**

Student learns partially in an authentic clinical environment as a team member. No clinical internship placements during the courses.

**Other information:**

The course is included in the new curriculum of medical studies from 2017. The course will be carried out for the first time in 2019.

**083005A: Pathology and diagnostics III Radiology and safe practice in radiology, 3 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Tervonen, Osmo Antti, Jaakko Niinimäki

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

3 ECTS credits /80 hours of work

**Language of instruction:**

Tuition is organized in Finnish.

**Timing:**

The course unit is held during the autumn and spring semester of the third year of medical studies.

**Learning outcomes:**

Radiology 1

Upon completion of this first curricular unit of radiology, student should be able to understand the principle of justification of radiological studies. Additionally student should have competence to explain the most important indications for radiological studies and principles of radiological modalities, including nuclear medicine. After completing the unit, student should master basic image interpretation skills of radiographs and know the most common findings of these examinations.

**Contents:**

The English curriculum consists both Radiology 1 and 2. The English curriculum also includes voluntary modules of Radiation safety and Nuclear medicine (separate exam).

Radiology I

General introduction to radiology (techniques) and indications, principle of justification, emergency radiology, musculoskeletal radiology, thoracic radiology, abdominal radiology, neuroradiology and nuclear medicine and molecular imaging

Flipped learning approach is used applying G Suite learning environment.

**Mode of delivery:**

The mode of delivery for the course unit is flipped learning i.e. self-education and face-to-face checkpoints.

**Learning activities and teaching methods:**

The implementation methods of the course vary.

The learning methods are based on flipped classroom, i.e. independent self-education based on electronic materials and teacher guided checkpoints in small group.



**Target group:**

Target group are the 3rd year medical students (MD).

**Prerequisites and co-requisites:**

Prerequisite for participation to the course unit is the completion of preclinical studies (first 2 years of medical school)

**Recommended optional programme components:**

There are no alternative courses.

**Recommended or required reading:**

Books: Either, Roberto Blanco Sequeiros et al (Editors): Kliininen radiologia [in Finnish] or Mettler, FA (Editor): Essentials of Radiology

100-tärkeintä rtg-kuvaa (National teaching image base):

**Assessment methods and criteria:**

This course unit utilizes online short questions and multiple choice exam assessment.

**Grading:**

The course unit utilizes passed/failed grading scale. The grade will not be given until all the obligatory teaching courses are completed.

**Person responsible:**

Osmo Tervonen, Professor

Jaakko Niinimäki, Professor

Vesa Kiviniemi, clinical lecturer

**Working life cooperation:**

No

**083040A: Pathology and diagnostics II, 4 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

4 ECTS

**Language of instruction:**

Finnish

**Timing:**

During 5th academic year.

**Learning outcomes:**Laboratory medicine

The student has studied near all the clinical courses and at first the concept of reference values and reference change values are repeated. In which order different test are selected in common diseases? Patient cases deal with thyroid diseases, heart infarcts and diabetes mellitus. In different disease there is risk for misinterpretation and medical doctors should be prepared for them. In addition new methods are dealt with e.g. those based on mass spectrometric instruments.

Another subject is the organization of laboratories, price of laboratory test and how these methods are ordered in normal practice.

Pathology

Upon completion of the course the student will be able

- to know, for each organ system included, the basic mechanisms of diseases (etiology and pathogenesis), their basic morphological characteristics, and terminology related with diseases.
- to explain the relationship between these features of the diseases and their symptoms and other clinical manifestations
- to recognize and classify the most common morphological alterations diseases of these organ systems
- to know the most important sources of error in histopathological diagnostics of these organ systems

- to be familiar with the pertinent collaboration between clinician and pathologists needed in every day clinical work.

### Radiology

Upon completion of this second curricular unit of radiology, the student should be able to take the principle of justification in account while ordering radiologic studies. Student should master the indications and methods for selected investigations in radiology within general practices clinical context. After the study unit, student should master also the basics of interpretation of radiographs and recognizes the typical findings.

### **Contents:**

#### Laboratory medicine

Lectures contain both theory and patient cases where this theoretical knowledge is used.

#### Pathology

Gynecopathology. Dermatopathology. Clinicopathological collaboration in primary health care.

#### Radiology

Musculoskeletal radiology, thoracic radiology, abdominal radiology, neuroradiology, urogenital radiology, interventional radiology and paediatric radiology

### **Mode of delivery:**

Face-to-face

### **Learning activities and teaching methods:**

#### Laboratory medicine

Lectures 6 h, examination 0.5 h, independent preparation for subjects in lectures and self study 7 h.

#### Pathology

Lectures 6 h; theme days 4 h, Practicals 6 h. Self study 36 hours, written examination 2 h.

#### Radiology

The implementation methods of the course vary.

Lectures consist of 14 hours. There will be 7,5 hours of guided small group teaching events (image interpretation and Ultrasound anatomy) c. 17.5 h of studying privately or in a group (ultrasound facility available for self-learning).

Examination 1.5 h.

### **Target group:**

Fifth year medical students.

### **Prerequisites and co-requisites:**

The completion preclinical studies, A540146 Pathology and Diagnostics (3rd year), and the pathology integrated with 4<sup>th</sup> year clinical courses is required.

### **Recommended optional programme components:**

(Laboratory Medicine, Pathology and Radiology)

### **Recommended or required reading:**

#### Laboratory medicine

Textbook: Clinical Chemistry, 5th edition, Mosby, W.J. Marshall, S.K. Bangert 2004. Other textbooks: Veritaudit, Kustannus Oy Duodecim, T. Ruutu, A Rajamäki, R Lassila, K Porkka 2007; Endokriologia, Kustannus Oy Duodecim, M. Välimäki, T. Sane, L. Dunkel, 2000

#### Pathology

Books: Cross SS: Underwood's Pathology, a clinical approach (6th ed. 2013); or Underwood JCE: General and systematic pathology (5th ed. 2009); sections Skin, Female genital tract, partly section How do pathologists help patient care; or Kumar V. et al.: Robbins Basic Pathology, (2017 or 2013). Alternatives: Kumar V. et al.: Robbins and Cotran, Pathologic basis of disease (2014 or 2010).

In Finnish: Mäkinen M. et al. Patologia, Duodecim, 2012; Lecture handouts. Material associated with virtual pathology teaching program.

#### Radiology

Books: Either, Roberto Blanco Sequeiros et al (Editors): Kliininen radiologia [in Finnish] or Mettler, FA (Editor): Essentials of Radiology

100-tärkeintä rtg-kuvaa (National teaching image base): Distributed through university Optima online

### **Assessment methods and criteria:**

Participation in compulsory teaching and successful participation to final exam, where the parts of laboratory medicine, pathology and radiology have to be completed independently.

### **Grading:**

Numerical grading 0-5.

### **Person responsible:**

#### Laboratory medicine

Olli Vuolteenaho, Professor

#### Pathology

Markus Mäkinen, Professor

Radiology

Osmo Tervonen, Professor

Jaakko Niinimäki, Professor

**Working life cooperation:**

No

**083015A: Patient care and prevention, 5 op****Voimassaolo:** 01.08.2016 -**Opiskelumuoto:** Intermediate Studies**Laji:** Course**Vastuuyksikkö:** Medicine**Arvostelu:** 1 - 5, pass, fail**Opettajat:** Tero Raiskila**Opintokohteen kielet:** Finnish**ECTS Credits:**

5 ECTS credits – 135 h Student's work

**Language of instruction:**

Finnish

**Timing:**

3rd year, autumn and spring semesters

**Learning outcomes:**

Upon completion of the course, the student is able to:

- take into account psychosomatic disorders and comorbidities
- assess concurrent psychological and somatic symptoms
- assess patient's situation, health habits and functional ability
- perform patient centered health coaching
- know the importance of proper nutrition, rest and exercise for health
- define patient's agency toward her/his health habits and utilize evidence based interviewing and coaching methods

describe the importance of reflection in the communication.

**Contents:**

- somatization and psychosomatic disorders
- molecular biological background of nutrition and nutritional changes
- life style intervention approaches in substance abuse, obesity, smoking, and exercise
- significance of nutrition and exercise in disease susceptibility and morbidity and treatment of diseases
- preventive medicine
- health promotion in disease prevention, motivational interviewing, evidence based health coaching, dialogical approach, group and personal coaching
- analytical approach to patient encounters

**Mode of delivery:**

Blended learning

**Learning activities and teaching methods:**

Interprofessional face-to-face teaching, kick off seminar, workshop in health coaching, group coaching, personal coaching, follow up visit. Moodle e-learning platform. Group sessions on communication skills.

**Target group:**

Medical and health care students

**Prerequisites and co-requisites:**

Pre-clinical medical studies for medical students

**Recommended optional programme components:**

The study module (5 ECTS credits) is formed in co-operation between the following specialties (1 ECTS credit\*):

- psychiatry\*
- general medicine\*
- sport medicine\*
- public health science\*
- internal medicine\*

During the course, the students complete a multiprofessional workshop in health coaching.

**Recommended or required reading:**

Material including the sessions. Recommended material and books by the specialties. Oppiportti: "Motivoiva keskustelu"-online course.

**Assessment methods and criteria:**

Attending to all compulsory teaching and writing a final report.

**Grading:**

Pass-failed

**Person responsible:**

Tero Raiskila

**Working life cooperation:**

Part of the teaching will be held in health center with guidance of GP and clinical teacher

**A540148: Pediatrics, 17 op**

**Voimassaolo:** 01.08.2017 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Study module

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Mika Rämets, Petri Kulmala

**Opintokohteen kielet:** Finnish

Ei opintojaksokuvauksia.

*Compulsory*

**083041A: Pediatrics PART I (pediatrics), 14 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

14.0 ECTS / 370 hours of study

**Language of instruction:**

Finnish, some lectures in English

**Timing:**

The course unit is held both in the spring and autumn semesters

**Learning outcomes:**

Upon completion the student is able:

- to diagnose and treat the most common pediatric diseases as a general practitioner or as a first-year resident in a hospital
- to provide first aid to acutely and critically ill children
- to understand pediatric preventive health care and health education

-

**083042A: Pediatrics PART II (child psychiatry), 3 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Petri Kulmala, Ebeling, Hanna Elina

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

3 ECTS credits / 87 hours of work (in Finnish)

1,5 ECTS credits /40 hours of work in English

**Language of instruction:**

Finnish (in English a book Examination and term paper is possible with 1

**Timing:**

5th year, at autumn and spring semesters

**Learning outcomes:**

After passing the course (only a book examination in English)

—

The student

- knows the normal psychological development of children
- can distinguish psychiatric disorders of children from normal development
- knows the main risk and protective factors of mental health development
- knows the main mental health problems of children and adolescents
- knows the main aspects of the treatment of child mental health problems

**Contents:**

1) The common child psychiatric problems and disorders in respect of normal development. Etiology, epidemiology, diagnostics and treatment.

2) Risk and protective factors of child psychiatric disorders, prevention of problems.

- Other contents in Finnish.

**Mode of delivery:**

In Finnish

1) Lectures

2) Special theme days

3) Small group teaching: Own patients, Out-patient teaching and Problem k

In English: book examination

**Learning activities and teaching methods:**

Only book examination in English

Lectures 14h

Theme-day 10h + Part of the pediatric theme-day 1h

Small group teaching:

Outpatient sessions 4h

Own patient

- discussions 5h

- examining 6h

Problem based learning:

- guided teaching 4h

The admission exam 1h

The Final exam 2 h

Self-study 40h

In all 87 h = 3,2 op

**Target group:**

Bachelors of medicine

**Prerequisites and co-requisites:**

Recommended that study modules of the first 4 years are over

**Recommended optional programme components:**

together with other courses of The Health of Children and Adolescents A540148

**Recommended or required reading:**

Kumpulainen K, Aronen E, Ebeling H, Laukkanen E, Marttunen M, Puura K, Sourander A.

Lastenpsykiatria ja nuorisopsykiatria. Kustannus Oy Duodecim, 2016. (in Finnish)

or Barker P: Basic child psychiatry. Oxford, Blackwell Science, last edition.

Lectures and material delivered in the group instructions (in Finnish)

**Assessment methods and criteria:**

The assessment of the course is based on the learning outcomes of the course.

The admission exam (only in Finnish): Required literature: Text book, part 1: Psychological development of the child and adolescent. Part 2 (partly): Evaluation of a child, adolescent and parenthood. The admission exam is either a web-based multiple choice test or viva voce.. Exam is required to be passed.

Attending to all compulsory teaching (In Finnish).

The final exam (Requirements: The Finnish text book, lectures and group teaching material) is evaluated from 0 to 10 points (the approval limit is 5 points), grading scale pass/ fail.

The English book examination is evaluated with similar scales as the final exam in Finnish.

**Grading:**

The course unit utilizes verbal grading scale pass/ fail.

The course is approved when all exams are approved and the student has attended to all compulsory teaching (The course in Finnish).

The English course with 1,5 ECTS credits is passed when the book examination is passed. and term paper is approved.

**Person responsible:**

Hanna Ebeling prof. (Päivi Lindholm, univ. teacher)

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Pirkko Riipinen

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

10 ECTS credits

**Language of instruction:**

Finnish

**Timing:**

The course is held in the 4<sup>th</sup> year, beginning at August.

**Learning outcomes:**

A student who has passed the course in psychiatry is expected to have mastered the following modules:

- Basic knowledge of psychiatry from a general practitioner's perspective
- Basic skills, required for independent medical practice, in the diagnosis and treatment of common mental disorders to the extent needed in general medical practice (psychotherapeutic therapies, drug therapy, family and network activities)
- Basic knowledge of the identification of common and serious mental disorders and substance abuse at different stages of life: at the perinatal stage and among youths, adults and the elderly
- Treatment classification: the timely referral of patients for psychiatric consultation and specialist hospital care
- Evaluation of need for sick leave on psychiatric grounds
- Basic knowledge of urgent treatment during psychological crises
- Evaluate risk for suicidality
- Knowledge of the legal and insurance psychiatric regulations necessary for a general practitioner and their application to one's own work (especially Mental Health Act, Child Welfare Act and the Finnish Transport Safety Agency's (Trafi's) instructions on the capacity to drive)

Basic knowledge of interaction in a patient/physician relationship and multi-professional work

- Understanding the importance of one's own personality and emotions, the physician-patient relationship, and instructions for professionals on the success of treatment and taking such instructions into account in the care relationship
- Understanding the importance of cooperation with the patient's relatives and with other employees involved in psychiatric care: health centre and school psychologist, nurse, psychiatric nurse, public health nurse
- Familiarity with the basics of network and family therapy
- Taking account of the situation of children of psychiatric patients
- Knowledge of the most common psychological tests and readiness to cooperate with health centre psychologists
- Ability to act as a specialist in a psychiatric organisation, under the guidance of a specialist and in cooperation with other psychiatric healthcare staff

**Contents:**

Basic knowledge of psychiatry as a general practitioner, identification of the most common mental disorders and substance abuse problems, and treatment at different stages of life: perinatal stage, youths, adults and the elderly, as well as referring the patient for psychiatric specialist care.

**Mode of delivery:**

The tuition will be implemented mainly as face-to-face teaching.

**Learning activities and teaching methods:**

Lectures 42 hours, group teaching 18 hours, seminars 40 hours and group work 10 hours, examining patients 10 hours, apprenticeship in psychiatric ward 1-2 weeks and in emergency duty 6 hours, web-based teaching 40 hours, final exam and individual work 64 hours.

**Target group:**

The course is compulsory for 4th year students of medicine.

**Prerequisites and co-requisites:**

Previous medical studies have to be completed.

**Recommended optional programme components:**

The course is an independent entity and does not require additional studies carried out at the same time.

**Recommended or required reading:**

As a textbook by Lönnqvist J, et al. (ed.) *Psykiatria*. (Psychiatry, in Finnish only) published by Oy Duodecim, Helsinki, latest edition. Kumpulainen K et al. (ed.) *Lastenpsykiatria ja nuorisopsykiatria*, Kustannus Oy Duodecim (Child Psychiatry and Adolescent Psychiatry), published by Oy Duodecim, Helsinki, latest edition (for adolescent psychiatry, in Finnish only). In addition, the final examination includes the topics covered in the lectures, group teaching,

seminars and theme days, as well as the related preliminary materials. Recommended reading includes the Evidence Based Guidelines ([www.terveysportti.fi](http://www.terveysportti.fi)), the Mental Health Act and Mental Health Decree, and the Child Welfare Act (<http://www.finlex.fi/en/laki/> - legislation) and Duodecim's books on alcohol dependence and drug and pharmaceutical addiction (in Finnish only).

**Assessment methods and criteria:**

Students complete the preliminary test in Optima at the beginning of the course. During the course, students gather entries on completed courses in the logbook: opening session, group sessions, M1 seminar, theme days, clinical training and on-call duty. Feedback sessions (group chat, inquiry and feedback session, and Optima feedback form) are also part of the learning process. The grade for the course is based on a written final exam.

**Grading:**

The grade for the psychiatry course is based on a final exam, which is graded on a scale of 0 to 5 (where 0 is a fail).

**Person responsible:**

Professor Pirkko Riipinen and clinical lecturers

**Working life cooperation:**

The course includes a clinical practice period lasting one week in psychiatric units.

## 044000S: Clinical patient work, 5 op

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Jukka Palm

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

5 ECTS credits

**Language of instruction:**

Finnish

**Timing:**

3rd year of medical studies (M.D. degree students)

**Grading:**

Pass-fail.

**Working life cooperation:**

Authentic clinical working environment

## A540149: Measures and support for functioning, 12 op

**Voimassaolo:** 01.08.2017 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Study module

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Leena Ala-Mursula

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

12 ECTS credits

**Language of instruction:**

Finnish



**Timing:**

The course is held during the 6th year of the curriculum, from semester 2022-23 onwards

**Learning outcomes:**

Upon completion of the course, the student

- is able to evaluate functioning in a holistic manner and is able to support the patient's actorship
- is able to consider work-related origins of ill health, as well as the aspect of promoting work ability, when seeing working-aged patients
- knows the structure of the Finnish Occupational Health Care (OHC) system and the principles of its collaboration with other parts of Health Care and with working life
- understands the goals and principles of rehabilitation as a discipline and knows the structure and principles of the Finnish rehabilitation system
- is able to coordinate care regarding main public health issues with special reference to both multi-morbidity and to patient groups with particular needs
- understands the relevance of continuity of care as well as planning actions together with the patient

**Contents:**

- The basic theoretical concepts of general practice, occupational health care and rehabilitation with regard to the learning goals listed above
- Techniques of patient-centered interview
- Multi-disciplinary collaboration and how to lead networking meetings
- The making of plans of care and rehabilitation together with the patient and the stakeholders
- The optimal use of various systems of care and rehabilitation

**Mode of delivery:**

-

**Learning activities and teaching methods:**

-

**Target group:**

Tuition is targeted to 6th year medical students

**Prerequisites and co-requisites:**

The earlier studies in the curriculum of basic medical education

**Recommended optional programme components:**

The course is a compulsory one and cannot be replaced with other courses, although it has interfaces with several disciplines

**Recommended or required reading:**

Text books: General Practice, Health from work, Physiatrics (in Finnish)

Course materials

Current Care Guidelines with relevance to the course

**Assessment methods and criteria:**

To be confirmed later; several evaluations during the course with regard to the specified learning goals

**Grading:**

Pass/fail

**Person responsible:**

Person responsible: Leena Ala-Mursula. Deputy: Juha Auvinen

**Working life cooperation:**

Part of the tuition will take place at workplaces

**Other information:**

-

*Compulsory*

**044020S: General practice, 7 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Juha Auvinen

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

7 ECTS credits

**Language of instruction:**

Finnish

**Timing:**

The sixth year (CXI-XII), autumn and spring semester

**Learning outcomes:**

Upon completion of the course, the student is able to:

- describe factors affecting morbidity on individual and population level
- diagnose and treat common diseases
- uncover patient's experience of her/his disease and find out patient's own relation to her/his illness
- act as an expert in preventive medicine in primary care
- apply health promoting and disease preventing methods on individual, family and population level
- function as a member in interprofessional team and benefit from the expertise of other team members
- manage time in patient practice

**Contents:**

Supervision of health professionals, insurance in medicine, military medicine?, health legislation, child welfare policlinic, medical certificates, patient with multiple issues in primary health care, patient care in primary health care in light of medical guidelines, critical evaluation and practical use of research in primary health care. Health centre practice

**Mode of delivery:**

Face-to-face teaching. One week practical training in health centers.

**Learning activities and teaching methods:**

Lectures, seminars and small group teaching. One week practice period in health centers

**Target group:**

The students from medicine

**Recommended or required reading:**

Yleislääketiede, Kumpusalo E, Ahto M, Eskola K, Keinänen-Kiukaanniemi, S, Kosunen E, Kunnamo I, Lohi J (toim) Kustannus Oy Duodecim 2005; Laki potilaan asemasta ja oikeuksista 17.8.1992/785; Laki terveydenhuollon ammattihenkilöistä 28.6.1994/559; Sosiaali- ja terveysministeriön asetus potilasasiakirjojen laatimisesta sekä niiden ja muun hoitoon liittyvän materiaalin säilyttämisestä. 99/2001; SosTMA lääkkeen määräämisestä 726/2003; L sähköisestä lääkemääräyksestä 2.2.2007/61; a SosTMA sähköisestä lääkemääräyksestä 25.6.2008/485.

**Assessment methods and criteria:**

Written examinations. participation in seminars and small group teaching and practical period in health centers.

**Grading:**

The final examination is an OSCE –examination having five questions. Each question utilizes verbal grading scale “pass/ fail “. To pass the exam student has to pass each questions. The final grading scale is also pass/fail

**Person responsible:**

Professor of general practice Markku Timonen

**Working life cooperation:**

The course includes one week practical period in the health center

**Other information:**

-

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Karppinen, Jaro Ilari

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

3 ECTS credits

**Language of instruction:**

Finnish

**Timing:**

The course is held in the autumn and spring terms of the sixth year

**Learning outcomes:**

Upon completion the student understands the principles of diagnostics, differential diagnostics, treatment, evaluation of functional ability and rehabilitation in the field of Physical and Rehabilitation Medicine. The student is able to adapt his/her knowledge to primary health care practice.

**Contents:**

The definitions and assessment methods of functional ability in the context of ICF (International Classification of Functioning and Health)

Multi-professionality in rehabilitation

Low back disorders

Neck disorders

Lower extremity disorders

Upper extremity disorders

Rehabilitation of spinal cord injuries

Rehabilitation of strokes

Rehabilitation of brain injuries

Limb amputations, prostheses and rehabilitation

Principles of physiotherapy

Principles of occupational therapy

Social work in rehabilitation

Pain psychology

Assistive devices

Vocational rehabilitation

Recognition of obstacles in functional ability and finding solutions for these

**Mode of delivery:**

Internet lectures, lecture-related exercises and questions & answers sessions

Thematic days with focus on functional ability

**Learning activities and teaching methods:**

Internet lectures ca. 30-40h

Exercises linked to lectures ca. 15-20h

Questions and answers sessions 6h

Visit of rehabilitation ward or spinal cord polyclinic 2,5 h

Thematic days 8h (+ 4h within Geriatrics)

Exercises related to thematic days 12h (+ 6h within Geriatrics)  
 Assessment of a patient with musculoskeletal disorder at the 4th study year 2h  
 Musculoskeletal clinical examination at the 6th study year (optional) 5h

**Target group:**

Medical students sixth year

**Prerequisites and co-requisites:**

-

**Recommended optional programme components:**

Theme days will be arranged in collaboration with Geriatrics and Oulu University of Applied Sciences

**Recommended or required reading:**

Last issue of Physical and Rehabilitation Medicine textbook. Current Care guidelines of Physical and Rehabilitation Medicine. The new text book on Rehabilitation when appropriate. Internet material of Oppiportti.

**Assessment methods and criteria:**

Internet lectures-related exercises (>100), of which 50% has to be solved  
 Final examination (essay)

**Grading:**

Approved/failed (50% of maximum points)

**Person responsible:**

Professor Jaro Karppinen  
 Professor Mauri Kallinen

**Working life cooperation:**

-

**Other information:**

-

**044022S: Occupational health, 2 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Leena Ala-Mursula

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

2 ECTS credits

**Language of instruction:**

Finnish

**Timing:**

The course is held in the 6th year, C11

**Learning outcomes:**

Upon completion of the course, the student is able to take notice of potential work-related origins of ill health, as well as the aspect of promoting work ability, when seeing working-aged patients

The student will be able to understand the structure of the Finnish Occupational Health Care (OHC) system and the principles of its collaboration with other parts of Health Care and with the workplaces

**Contents:**

The Finnish Occupational Health Care (OHC) system and the guidelines of its collaboration with the working life and the health care sector

Relationships between work and health, work-related diseases, occupational diseases

The assessment and supporting of work ability

**Mode of delivery:**

Kurssi toteutetaan lähiopetuksena. Luentoja voi seurata myös etänä.

**Learning activities and teaching methods:**

There will be 14 hours of lectures and 10 hours of guided group teaching. The remaining 30 hours of self-study includes preparatory and reflective tasks attached to the group tuition sessions, conducted both individually and in small groups. Activating methods are utilized in all teaching.

**Target group:**

Medical students in their 6th year, C11.

**Prerequisites and co-requisites:**

The earlier studies in the curriculum of basic medical education.

**Recommended optional programme components:**

-

**Recommended or required reading:**

Material is mainly in Finnish, see left column

**Assessment methods and criteria:**

The students' progress towards the learning goals is discussed and supported during the group tuitions, which are based on the presentations and documents prepared by the students.

The passing of the course examination is required.

An anonymous electronical survey for evaluation and feedback is organized after the course, asking e.g. the students' self-perception of reaching the central learning goals of the course.

Feedback of the feedback is provided to the students in the electronical learning environment, including an overview of the performance in the examination and the ideas received for further development of the tuition.

**Grading:**

Pass/Fail

**Person responsible:**

Professor of Occupational Health Care Leena Ala-Mursula

**Working life cooperation:**

-

**Other information:**

-

**044030S: Physician, health and society, 7 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Tiina Ikäheimo

**Opintokohteen kielet:** Finnish

**Proficiency level:**

-

**Status:**

**Required proficiency level:****ECTS Credits:**

7 ECTS credits

**Language of instruction:**

Finnish/English

**Timing:**

The sixth year. autumn semester (C11)

**Learning outcomes:**

The course is structured based on the interaction between the general population and individuals. Understanding the state of health of the population and factors related to it is necessary, for cost-efficient and effective treatment of patients, appropriate professional orientation, as well as rational decision-making. Respectively, knowing the state of an individual/patient and applying holistic and effective care increases wellbeing and reduces the burden of health care at the population level. The objective of the course is that students understand the population-based approach and close connection with clinical work, identify how public health science is associated with the practical work of a medical doctor and know how to apply it in their own work. The more specific learning objectives are to understand the specific features of population health, enable critical examination and interpretation of epidemiologic research, understand the framework of health economy as a part of cost-accounting of health care, understand the various structures of health leadership, gain knowledge of the principles and systems related to insurance medicine and rehabilitation, as well as legislation the obliges health care practitioners. One objective is also that a student understands the significance of multiculturalism in the work of a physician, as well as receive an overview of the global public health challenges, and how these are reflected in the health status of the Finnish population.

**Contents:**

Lectures and theme days:

- Epidemiology of diseases
- Fundamentals of health economics
- Leadership in different health systems
- Rehabilitation
- Health promotion and disease prevention
- Health policy
- Health sociology
- Health care legislation
- Multiculturalism in the work of a physician
- Global health
- Public health science and the work of a medical doctor
- Insurance medicine

Group work and seminars:

- The topics of the group work include major public health threatening environmental and lifestyle risk factors and diseases. Solutions are sought for preventing or reducing the adverse health effects from a national, regional and individual doctor's perspective.

**Mode of delivery:**

Face-to-face teaching

**Learning activities and teaching methods:**

Lectures, theme days, group work and seminars.

**Target group:**

Students of medicine

**Prerequisites and co-requisites:**

-

**Recommended optional programme components:**

The course is linked to C4 – Public health science (public health science, environmental health care, epidemiology)

**Recommended or required reading:**

Koskenvuo K. (toim) Sairauksien ehkäisy. Duodecim 2003, soveltuvilta osin; Terveystieteiden tutkimuskeskus 1326/2010.

Kauhanen ym. (2013) Kansanterveystiede. Sanoma Pro Oy, 320s.; Terveystieteiden tutkimuskeskus 30.12.2010/1326.

**Assessment methods and criteria:**

Written examinations. Participation in the lectures, theme days, group work and seminars.

**Grading:**

Final grade of public health course will consist of final written exam and seminar assessment. Seminar work is assessed as a pass/fail. Final examination of public health comprises 3-4 questions, 2.5–10 points each. At least 10 points are required for passing the examination.

**Person responsible:**

Docent Tiina Ikkäheimo

**Working life cooperation:**

-

**Other information:**

-

## 044001S: Practical Training 1, 3 - 18 op

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Practical Training

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** Finnish

**Voidaan suorittaa useasti:** Kyllä

**Proficiency level:**

-

**Status:**

-

**Required proficiency level:**

-

**ECTS Credits:**

Degree of medical licentiate includes 24 ECTS of clinical training. Training has to be done at least in 2 weeks periods (2 weeks = 3 ECTS).

**Language of instruction:**

finnish

**Timing:**

1.-6. years of medical studies

**Learning outcomes:**

The aim of the training is to depend the knowledge and skills of medical students in practical work. During the training student applies the learned skills in practice, performs basic operations under supervision ja gets acquainted to work in a multi professional environment and to the operation of hospitals and health care centers

**Contents:**

Compulsory training is included in the degree of medical licentiate. The regulations regarding training are defined in Finnish in a separate document (Harjoitteluohjesääntö) that has been taken in effect at 1.1.2013. These regulations will be applied to all clinical training for the students who have started their medical school in 2011 or later. Each student has to fill the learning diary during each period of clinical training. The students are encouraged to carefully get acquainted with the instructions defined in the regulations (Harjoitteluohjesääntö) and in the learning diary booklet, before the beginning of a training period.

**Mode of delivery:**

The regulations regarding training are defined in Finnish in a separate document (Harjoitteluohjesääntö)

**Learning activities and teaching methods:**

Degree of medical licentiate includes 24 ECTS of clinical training. Training has to be done at least in 2 weeks periods (2 weeks = 3 ECTS). Please contact the coordinator of international affairs in the Faculty for further information ([Virpi.parkkila@oulu.fi](mailto:Virpi.parkkila@oulu.fi))

**Target group:**

Medical students

**Grading:**

Pass/fail

**Person responsible:**

Responsible person of the study programme

## A540150: Thesis, 20 op

**Voimassaolo:** 01.08.2017 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Study module

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Petri Kulmala

**Opintokohteen kielet:** Finnish

Ei opintojaksokuvauksia.

*Compulsory*

**044010S: Thesis, Study plan, 4 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Petri Kulmala

**Opintokohteen kielet:** Finnish

Ei opintojaksokuvauksia.

**044011S: Thesis, 16 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Diploma thesis

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Petri Kulmala

**Opintokohteen kielet:** Finnish

Ei opintojaksokuvauksia.

**044012S: Maturity exam (native language), 0 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Medicine

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Petri Kulmala

**Opintokohteen kielet:** Finnish

Ei opintojaksokuvauksia.