

Opasraportti

FMed - Master's Programme in Biomedical Engineering: Biomechanics and Imaging (2017 - 2018)

Master of Health Sciences (MHS) – Master Programme in Biomedical Engineering: Biomechanics and Imaging

Studies include compulsory intermediate and advanced studies, advanced module's studies and optional studies. The student executes compulsory studies 50 ECTS credits, studies of chosen advanced module 30 ECTS credits, master's thesis 30 ECTS credits, and optional studies so that the total extent of the degree is at least 120 ECTS credits. Studies are executed according to the personal study plan with individual timetable depending on the optional studies. Some of the courses are held only every second year.

Advanced Studies 30 ECTS Credits

Advanced studies are collected from the field of biomechanics and imaging. Student selects courses worth of 20 ECTS credits. Project work is compulsory part of biomedical engineering advanced studies.

Optional Studies about 10 ECTS Credits

Optional studies will be executed so that the total extent of the degree is at least 120 credits. Optional studies can be chosen from other advanced module or from other intermediate and advanced studies that support the degree. In the case of optional studies, if necessary, the student must agree with the organizing department for the participation for the course.

Language Studies 2-10 ECTS Credits

Student need to include Finnish language courses worth of 2-10 ECTS credits into the personal study plan if not native Finnish speaking person nor executed compensatory courses earlier.

Recommended Optional Studies:

080923S Physics in Radiation Therapy 5 ECTS cr (P4)
080922S Microscopy and Spectroscopic Imaging 5 ECTS cr (P3)
080927S Connected Health and mHealth 5 op (P1)

[747604S](#) Introduction to Biocomputing 3 ECTS cr (P2)

[764322A](#) Cell Membrane Biophysics 7 ECTS cr (P1-P2)

[764629S](#) Identification of Linear Systems 5 ECTS (P3)

[031044A](#) Mathematical Methods 3 ECTS cr (P1-P3)

[464085A](#) Patenting 5 ECTS cr (P3-P4)

[812671S](#) Usability Testing 5 ECTS cr (P3-P4)

[521238S](#) Optoelectronic Measurements 5 ECTS cr (P4)

[521412A](#) Digital Techniques I 5 ECTS cr (P1-P2)

[521432A](#) Electronics Design I 5 ECTS cr (P1-P2)

[555242A](#) Product Development 5 ECTS cr (P1-P3)

[580201A](#) Biomedical Engineering Programming Study 5 ECTS cr

[580202S](#) Biomedical Engineering Project 5-10 ECTS cr

Tutkintorakenteet

Master Programme in Biomedical Engineering: Biomechanics and Imaging, Master of Health Science (120 ECTS cr)

Tutkintorakenteen tila: published

Lukuvuosi: 2017-18

Lukuvuoden alkamispäivämäärä: 01.08.2017

Complementary Studies (enintään 60 op)

Compulsory studies (vähintään 50 op)

080925A: Anatomy and Physiology for Biomedical Engineering, 5 op

041201A: Basics in eHealth, 5 op

080928S: Biomedical Engineering Research Methods and Seminar, 5 op

521093S: Biomedical Instrumentation, 5 op

521273S: Biosignal Processing I, 5 op

080920S: Diagnostic Imaging, 5 op

521467A: Digital Image Processing, 5 op

521242A: Introduction to Biomedical Engineering, 5 op

580121A: Practical training, 1 - 5 op

521124S: Sensors and Measuring Techniques, 5 op

Advanced Studies (vähintään 30 op)

Advanced studies 30 ECTS cr consist of courses in biomechanics and imaging (at least 20 ECTS cr) and one compulsory complementary project work (10 ECTS cr; course code 080917S, 080918S or 080919S).

080924S: Biomaterials, 2 - 5 op

080916S: Biomechanics of Human Movement, 5 op

080921S: Biomedical Ultrasound, 5 op

521240S: Biophotonics and Biomedical Optics, 5 op
 080926A: Introduction to Biomedical Imaging Methods, 1 - 3 op
 080917S: Project in Biomedical Technology, 5 - 10 op
 080919S: Project in Health Technology, 5 - 10 op
 080918S: Project in Medical Imaging, 5 - 10 op
 080915S: Tissue Biomechanics, 5 op

Master's Thesis and Maturity Test (vähintään 30 op)

580213S: Master's Thesis in Biomedical Engineering, 30 op
 580211S: Maturity Test, 0 op

Language studies (2 - 10 op)

In a case when the student isn't native Finnish speaking person or hasn't completed relevant compensatory courses she/he must include in the personal study plan and complete Finnish language courses (2 - 10 ECTS cr).

900013Y: Beginners' Finnish Course 1, 3 op
 900053Y: Beginners' Finnish Course 2, 5 op
 900017Y: Survival Finnish, 2 op

Optional studies appr. 10 ECTS cr

With optional studies the student complements her/his studies up to 120 ECTS cr required for the degree. Optional studies can include courses from advanced modules or other intermediate or advanced courses provided by the university and related to the chosen field. When necessary, the student must agree independently on participation in the course with the organizing unit. Recommended optional studies for Master degree:

[080923S](#) Physics in Radiation Therapy 5 ECTS cr (P4)

[747604S](#) Introduction to Biocomputing 3 ECTS cr (P2)

[764322A](#) Cell Membrane Biophysics 7 ECTS cr (P1-P2)

[764629S](#) Identification of Linear Systems 5 ECTS (P3)

[031044A](#) Mathematical Methods 3 ECTS cr (P1-P3)

[464085A](#) Patenting 5 ECTS cr (P3-P4)

[812671S](#) Usability Testing 5 ECTS cr (P3-P4)

[521238S](#) Optoelectronic Measurements 5 ECTS cr (P4)

[521412A](#) Digital Techniques I 5 ECTS cr (P1-P2)

[521432A](#) Electronics Design I 5 ECTS cr (P1-P2)

[555242A](#) Product Development 5 ECTS cr (P1-P3)

[580201A](#) Biomedical Engineering Programming Study 5 ECTS cr

[580202S](#) Biomedical Engineering Project 5-10 ECTS cr

Opintojaksojen kuvaukset

Tutkintorakenteisiin kuuluvien opintokohteiden kuvaukset

080925A: Anatomy and Physiology for Biomedical Engineering, 5 op

Voimassaolo: 01.08.2017 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Kyösti Heimonen, Miika Nieminen

Opintokohteen kielet: English

ECTS Credits:

5 ECTS credit points / 135 hours of work

Language of instruction:

English

Timing:

Master studies, Spring 2018, 4th period

Learning outcomes:

The student is able to define human anatomy and describe the physiological functions, and can explain how these can be investigated using different imaging methods and measurement systems

Contents:

The course acquaints the student to human physiology and anatomy. Areas covered include

Cells and tissues,

Skin, blood, blood circulation and the fluids of the body

Musculoskeletal organs

Defence reactions of the body

Respiration

Digestion,

Urine secretion

Metabolic regulation, heat regulation

Reproduction

Sensory functions

Nervous system

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 28h, demonstrations 12h. Independent studying and preparing reports 95h. Final examination

Target group:

Biomedical engineering and physics students

Recommended optional programme components:

The course is an independent entity and does not require additional studies carried out at the same time. Imaging methods are more closely studied in the course Diagnostic Imaging.

Recommended or required reading:

Supplementary reading will be given in the beginning of the course.

Assessment methods and criteria:

Taking part in the lectures and demonstrations. Written reports on demonstrations. Final exam.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

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

Person responsible:

Professor Miika Nieminen

Working life cooperation:

Course demonstrations will be held in hospital environment and are related to diagnostics.

Other information:

max. 40 students

041201A: Basics in eHealth, 5 op

Voimassaolo: 01.08.2011 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Medicine

Arvostelu: 1 - 5, pass, fail

Opettajat: Jarmo Reponen

Opintokohteen kielet: English

Leikkaavuudet:

ay041201A Basics in eHealth (OPEN UNI) 5.0 op

ECTS Credits:

5 ECTS credit points / 135 hours of work

Language of instruction:

English

Timing:

2nd period for exchange students, Faculty of Medicine

3rd period for degree students and other exchange students i.e. BME

Learning outcomes:

The student can define central information and communication technological terms and solutions in healthcare, and can list respective applications in healthcare services and training.

The student can evaluate the societal and economic significance of information and communication technology in healthcare

Contents:

- terms and concepts
- societal dimensions
- delivery of health services
- electronic patient records
- data transfer within the health care system
- data transfer between the health care professionals and the patients
- citizens providing their own health data, mHealth-solutions
- national healthcare information exchange in Finland- remote consultations, examples like teleradiology, telepsychiatry, telerehabilitation
- economical and functional assessment
- remote education
- future visions of health care information systems
- changing current topics in connected health like: AI, knowledge based medicine, cybersecurity, etc

Mode of delivery:

Web-based teaching

Learning activities and teaching methods:

Interactivity takes place in virtual learning environment Optima. The course consists of video-taped lectures, power point-presentations and links to other material available in the web. Performance of duties includes an essay, exam, participating in discussions on the grounds of the lectures.

Web lectures 15h / Web exam 40h / Written essay 40h* / Self-study and participation to web discussion 40h

(*Exchange student can relate their essay to the situation in their home countries)

Target group:

MSc and 3rd year BSc students of Biomedical Engineering and Medical Technology (medical technology, biomedical engineering, biophysics, physics, other degree programs), students of Health Sciences and information technology and everyone who is interested

Recommended or required reading:

All recommended or required reading are offered in Optima virtual learning environment

Assessment methods and criteria:

Web tasks, an essay and final exam

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

The course utilizes a numerical grading scale 1 – 5. In the numerical scale one stands for a fail.

Person responsible:

Professor Jarmo Reponen

Nina Keränen

080928S: Biomedical Engineering Research Methods and Seminar, 5 op

Voimassaolo: 01.08.2017 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Jämsä, Timo Jaakko

Opintokohteen kielet: English

ECTS Credits:

5 ECTS credit points / 135 hours of work

Language of instruction:

English

Timing:

Master studies, Autumn, 1st period

Learning outcomes:

The student familiarizes with the principles of scientific work. The student can identify the essential features of scientific publications. The student can present the central content of a scientific article to others. The student can present critical questions related to a scientific presentation, and give and receive feedback on the presentations.

Contents:

Lectures, seminars and scientific literature. Publication forums in the field and characteristics of scientific articles.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Introduction lectures, presentations and discussion on the basis of the latest scientific publications. Each student will give two presentations and act as an opponent for two (peer-assessment).

Lectures 10h, seminars 20h, self-study 105h.

Target group:

Biomedical Engineering MSc students

Recommended optional programme components:

Prepares the student for thesis work.

Recommended or required reading:

Selected scientific articles and material indicated by lecturer

Assessment methods and criteria:

Attending seminars, making presentations and acting as an opponent. The assessment criteria are based on the learning outcomes of the course. The more detailed assessment criteria is found on Optima.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

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

Person responsible:

Professor Timo Jämsä

Working life cooperation:

The course prepares for working life.

Other information:

Also for doctoral studies

521093S: Biomedical Instrumentation, 5 op

Voimassaolo: 01.08.2015 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Electrical Engineering DP

Arvostelu: 1 - 5, pass, fail

Opettajat: Igor Meglinski

Opintokohteen kielet: Finnish

Leikkaavuudet:

521107S Biomedical Instrumentation 6.0 op

ECTS Credits:

5

Language of instruction:

English.

Timing:

Period 3.

Learning outcomes:

After the course the student is capable to explain principles, applications and design of medical instruments most commonly used in hospitals. He/she can describe the electrical safety aspects of medical instruments and can present the physiological effects of electric current on humans. In addition the student is able to explain medical instrumentation development process and the factors affecting it. He/she also recognizes typical measurands and measuring spans and is able to plan and design a biosignal amplifier.

Contents:

Diagnostic instruments (common theories for medical devices, measurement quantities, sensors, amplifiers and registering instruments). Bioelectrical measurements (EKG, EEG, EMG, EOG, ERG), blood pressure and flow meters, respiration studies, measurements in a clinical laboratory, introduction to medical imaging methods and instruments, ear measurements, heart pacing and defibrillators, physical therapy devices, intensive care and operating room devices and electrical safety aspects.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures/exercises 42 h and self-study 100 h.

Target group:

Students interested in biomedical measurements.

Prerequisites and co-requisites:

None

Recommended optional programme components:

Course replaces earlier courses Biomedical measurements and Biomedical instrumentation.

Recommended or required reading:

R. S. Khandpur: Biomedical Instrumentation, Technology and Applications, McGraw-Hill, 2005 and J. G. Webster: Medical Instrumentation, Application and Design, 4th edition, John Wiley & Sons, 2010.

Assessment methods and criteria:

The course is passed by the final exam or optionally with the assignments/test agreed at the first lecture.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1 - 5.

Person responsible:

Igor Meglinski

Working life cooperation:

No.

521273S: Biosignal Processing I, 5 op**Voimassaolo:** 01.08.2005 -**Opiskelumuoto:** Advanced Studies**Laji:** Course**Vastuuyksikkö:** Computer Science and Engineering DP**Arvostelu:** 1 - 5, pass, fail**Opettajat:** Tapio Seppänen**Opintokohteen kielet:** Finnish**ECTS Credits:**

5 ECTS credits / 50 hours of work

Language of instruction:

English. Examination can be taken in English or Finnish.

Timing:

The course unit is held in the autumn semester, during period 2. It is recommended to complete the course at the end of studies.

Learning outcomes:

After completing the course, student

1. knows special characteristics of the biosignals and typical signal processing methods
2. can solve small-scale problems related to biosignal analysis
3. implement small-scale software for signal processing algorithms

Contents:

Biomedical signals. Digital filtering. Analysis in time-domain and frequency domain. Nonstationarity. Event detection. Signal characterization.

Mode of delivery:

Face-to-face teaching and guided laboratory work.

Learning activities and teaching methods:

Lectures 10h, Laboratory work 20h, Self-study 20h, written examination.

Target group:

Students interested in biomedical engineering, at their master's level studies.
Students of the University of Oulu.

Prerequisites and co-requisites:

The mathematic studies of the candidate degree program of computer science and engineering, or equivalent. Programming skills, especially basics of the Matlab. Basic knowledge of digital signal processing.

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:

The course is based on selected chapters of the book "Biomedical Signal Analysis", R.M Rangayyan, 2nd edition (2015). + Lecture slides + Task assignment specific material.

Assessment methods and criteria:

Laboratory work is supervised by assistants who also check that the task assignments are completed properly. All task assignments are compulsory. The course ends with a written exam.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

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

Person responsible:

Tapio Seppänen

Working life cooperation:

No.

Other information:

-

080920S: Diagnostic Imaging, 5 op

Voimassaolo: 01.08.2017 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Miika Nieminen

Opintokohteen kielet: English

ECTS Credits:

5 ECTS credit points / 135 hours of work

Language of instruction:

English

Timing:

Master studies, Autumn 2017, 1st and 2nd periods

Learning outcomes:

The student is able to define the physical principles on which various medical imaging devices are based upon.

Contents:

The course acquaints the students to the basic physics related to imaging modalities and therapeutic systems used in hospitals. Covered topics include e.g. x-ray imaging, computed tomography, magnetic resonance imaging, nuclear medicine and methods of clinical neurophysiology.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 26h, demonstrations 8h, exercises 4h, independent studying and preparing reports 97h. Final exam.

Target group:

Biomedical Engineering MSc students (medical technology, information technology, and other related degree programs), Physics MSc students (biophysics/medical physics) and other minor subject students. Also for the other students of the University of Oulu.

Prerequisites and co-requisites:

Recommended: physics basic courses and Radiation physics, biology and safety (766116P, 761116P, 764117P or 764317A).

Recommended optional programme components:

BME-courses

Recommended or required reading:

Dowsett, Kenny, Johnston: The Physics of Diagnostic Imaging, 2nd ed., Hodder Arnold, 2006.

Assessment methods and criteria:

Taking part in the lectures and demos. Written report on demonstrations. Final exam.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

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

Person responsible:

Professor Miika Nieminen

Working life cooperation:

Demonstrations are held in hospital environment and are related to diagnostics.

521467A: Digital Image Processing, 5 op

Voimassaolo: 01.08.2012 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Computer Science and Engineering DP

Arvostelu: 1 - 5, pass, fail

Opettajat: Heikkilä, Janne Tapani

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay521467A Digital Image Processing (OPEN UNI) 5.0 op

ECTS Credits:

5 ECTS credits / 133 hours of work

Language of instruction:

Lectures in Finnish and exercises in English. Course can be passed in Finnish and English.

Timing:

Autumn, period 1.

Learning outcomes:

Upon completion of the course the student:

- understands the basic theory of digital image processing and knows its main applications,
- is able to apply spatial and frequency domain and wavelet based methods in image enhancement, restoration, compression and segmentation.

Contents:

1. Fundamentals of digital images, 2. Image enhancement in spatial and frequency domains, 3. Image restoration, 4. Color image processing, 5. Wavelets, 6. Image compression, 7. Morphological image processing and 8. Image segmentation.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures 24 h, exercises 14 h and homework assignments 30 h. The rest is independent work.

Target group:

Computer Science and Engineering students and other Students of the University of Oulu.

Prerequisites and co-requisites:

None.

Recommended optional programme components:

In order to obtain deep understanding of the content, it is a benefit if the student has completed the mathematics courses in the computer science and engineering BSc program or otherwise has equivalent knowledge.

Recommended or required reading:

Gonzalez, R.C., Woods, R.E.: Digital Image Processing, Third Edition, Prentice-Hall, 2008, Chapters 1-10. Lecture notes and exercise

Assessment methods and criteria:

The course is completed by passing the exam and homework assignments.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

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

Person responsible:

Janne Heikkilä

Working life cooperation:

None.

Other information:

-

521242A: Introduction to Biomedical Engineering, 5 op

Voimassaolo: 01.08.2017 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Electrical Engineering DP

Arvostelu: 1 - 5, pass, fail

Opettajat: Teemu Myllylä

Opintokohteen kielet: English

ECTS Credits:

5 ECTS cr

Language of instruction:

English

Timing:

Period 1

Learning outcomes:

After completing the course, the student has a basic knowledge of the biomedical engineering discipline and the applications of engineering science to biomedical problems.

Contents:

Biomedical engineering is a highly multidisciplinary field of study that ranges from theory to applications at the interface between such as engineering, biophotonics, medicine and biology. This course will introduce the subdisciplines within biomedical engineering, including systems physiology, bioinstrumentation, bioimaging and biomedical signal analysis. General issues of each of the subdisciplines will be illustrated together with selected examples and clinical applications. A number of lectures will be given by different lecturers working in health tech companies, University of Oulu and Oulu University Hospital, presenting the fields of the biomedical engineering. In addition, course offerings of biomedical engineering at the University of Oulu are introduced.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

The course includes lectures, demonstrations and a group project.

Target group:

-
Prerequisites and co-requisites:

-
Recommended optional programme components:

-
Recommended or required reading:

-
Assessment methods and criteria:

University exam

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

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

Person responsible:

Teemu Myllylä

Working life cooperation:

Guest lecturers

Other information:

-

580121A: Practical training, 1 - 5 op

Voimassaolo: 01.08.2005 -

Opiskelumuoto: Intermediate Studies

Laji: Practical training

Vastuuyksikkö: Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Jämsä, Timo Jaakko

Opintokohteen kielet: Finnish

ECTS Credits:

1-5 ECTS credits/ 27-135 hours of work

Language of instruction:

Finnish / English

Timing:

The course can be taken during Master studies in autumn or spring semester, or during the summer period.

Learning outcomes:

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

- know basic skills in working life,
- recognize his/hers own skills,
- is able to present those in the CV.

Contents:

Practical training in the field.

Mode of delivery:

Practical training in the field.

Learning activities and teaching methods:

The student finds the place for practical training by him/herself and agrees on the training together with the person in charge. 1 ECTS credit equals two weeks of training. Practical training includes writing a plan before the training and afterwards updating the CV and evaluation of the learned skills. Documents are accepted by person responsible. The course can be compensated based on earlier working experience using RPL-protocol (recognition of prior learning).

Target group:

Master degree students of Biomedical Engineering or Medical Technology

Prerequisites and co-requisites:

Student needs to have adequate basic skills for the training tasks.

Recommended optional programme components:

The course is an independent entity but the student is expected to have adequate skills for the training.

Assessment methods and criteria:

Before the training period the eligibility of the position is evaluated by the person responsible. Before the training students makes a plan for the training and the objectives. After the training period student evaluates skills learned

regarding working skills and studies. Student provides letter of reference and other documentations (CV and application form) for the person responsible. If course is compensated based on earlier working experience student fills RPL-form, updates CV and delivers them for person responsible for evaluation.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

The course utilizes grading pass / fail.

Person responsible:

Dr Maarit Kangas

Working life cooperation:

Practical training can take place in companies, universities or other research organisations.

521124S: Sensors and Measuring Techniques, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Electrical Engineering DP

Arvostelu: 1 - 5, pass, fail

Opettajat: Teemu Myllylä, Igor Meglinski

Opintokohteen kielet: Finnish

ECTS Credits:

5

Language of instruction:

English.

Timing:

Period 1.

Learning outcomes:

After the course the student is capable to explain the operating principles of different sensors and can select a right sensor for each measuring target. He/she is able to quantify the requirements that affect sensor selection as well as recognize and evaluate the uncertainty of a measurement. In addition the student is able to plan and design sensor signal conditioning circuits.

Contents:

Methods for measuring displacement, velocity, acceleration, torque, liquid level, pressure, flow, humidity, sound and temperature. Ultrasound, optical and nuclear measurement techniques and applications, material analyses such as pH measurement and gas concentration, pulp and paper measurements and smart sensors.

Mode of delivery:

Pure face-to-face teaching.

Learning activities and teaching methods:

Lectures 26h, exercises 12h and self-study 100h.

Target group:

4 year students.

Prerequisites and co-requisites:

No.

Recommended optional programme components:

No.

Recommended or required reading:

H. N. Norton: Handbook of Transducers, Prentice Hall P T R, 1989 or 2002; lecture and exercise notes.

Assessment methods and criteria:

The course is passed by a final exam and passed exercises.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Igor Meglinski, Teemu Myllylä

Working life cooperation:

No.

080924S: Biomaterials, 2 - 5 op

Voimassaolo: 01.08.2017 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Health Sciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: English

ECTS Credits:

2-5 ECTS credit points / 54-135 hours of work.

Language of instruction:

English

Timing:

Master studies, autumn, 2nd period. The course is not organized in 2017.

Learning outcomes:

The student can list essential biological and tissue-replacing materials and can describe their properties. The student identifies and can explain the basics of interactions between biomaterials and tissues.

Contents:

Biocompatibility, metallic and ceramic implantation materials, polymers, biodegradable materials, bioglass, multifunctional biomaterials, tissue engineering, examples of applications.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Scope and credits of the course and the methods of implementation vary.

Lectures 18 h. Self-study 36-117 h. Written report.

Target group:

Master Students of Biomedical Engineering and Medical Technology. Other students who are interested in biomaterials

Recommended or required reading:

Lecture material. Literature: Introduction to biomaterials: Basic Theory with Engineering Application. C. Mauli Agrawal. Joo L. Ong, Mark R. Appleford, and Gopinath Mani. Cambridge texts in Biomedical Engineering

Assessment methods and criteria:

Participating to class, given exercises, written report.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

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

Person responsible:

Professor Timo Jämsä

080916S: Biomechanics of Human Movement, 5 op

Voimassaolo: 01.08.2012 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Jämsä, Timo Jaakko

Opintokohteen kielet: English

ECTS Credits:

5 ECTS credit points / 135 hours of work.

Language of instruction:

English

Timing:

Master studies, 3rd period

Learning outcomes:

The student can describe the main challenges of movement biomechanics and principles for motion analysis. The student knows basics of biomechanical measurement and modeling of movement. The student can perform practical biomechanical experiments, analyze measurement data, interpret results, and report them using good scientific reporting practice.

Contents:

Musculoskeletal biomechanics. Motion sensors and motion analysis. Biomechanical modeling of movement. Balance measurement. Fall biomechanics. Measurement of physical activity.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 14h / Assignment 54h / Self-study 67h. Final exam.

Target group:

Biomedical Engineering MSc students (medical technology, information technology, other related degree programs). Physics MSc students (biophysics, medical physics). Other interested MSc students.

Prerequisites and co-requisites:

It is recommended to have basic knowledge on anatomy and physiology, statistical analysis, sensors and measurement techniques and signal processing.

Recommended optional programme components:

The course is an independent entity and does not require additional studies carried out at the same time. Tissue biomechanics will be studied on the course 080915S.

Recommended or required reading:

Material given during lectures.

Assessment methods and criteria:

Accepted home exercises and assignments, written exam. The exam includes definition and explanation assignments and problems.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

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

Person responsible:

Professor Timo Jämsä

Working life cooperation:

None

080921S: Biomedical Ultrasound, 5 op

Voimassaolo: 01.08.2017 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Heikki Nieminen

Opintokohteen kielet: English

ECTS Credits:

5 ECTS credit points / 135 hours of work.

Language of instruction:

English

Timing:

The course is held in the spring semester, during period III in even years. It is recommended to complete the course during master studies.

Learning outcomes:

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

- Masters the basics of ultrasound physics
- Understands the working principles of methods used in research and clinic

Contents:

Ultrasound has enabled establishment of emerging technologies for biomedicine in characterization and therapy. This course focuses ultrasound physics behind these technologies. Research and clinical applications exploiting this physics, such as elastography, quantitative tissue characterization, drug delivery, ultrasound surgery (HIFU), acoustic levitation, tissue actuation and tissue stimulation by ultrasound, will be elaborated.

Mode of delivery:

The course is delivered as face-to-face teaching and partially as distance teaching. The course includes independent work.

Learning activities and teaching methods:

Lectures 24 h. Exercises 8 h. Independent work 40 h. Project study 30 h with a report and oral presentation 33 h.

Target group:

Master students in Biomedical Engineering and Physics, and other interested Master level students.

Prerequisites and co-requisites:

The required prerequisite is the completion of the following course or corresponding information to enrolling for the course: 080920S Diagnostic Imaging 5 credits.

Recommended optional programme components:

The course and the following courses support each other: 080926A Introduction to Biomedical Imaging Methods 1-3 credits, and 080922S Microscopy and Spectroscopic Imaging 5 credits.

Recommended or required reading:

Lecture slides and presented literature.

Assessment methods and criteria:

Taking part in lectures, conducting exercises, preparation of the course work (report + oral presentation).

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

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

Person responsible:

Docent Heikki Nieminen

521240S: Biophotonics and Biomedical Optics, 5 op

Voimassaolo: 01.08.2015 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Electrical Engineering DP

Arvostelu: 1 - 5, pass, fail

Opettajat: Igor Meglinski

Opintokohteen kielet: Finnish

ECTS Credits:

5

Language of instruction:

English

Timing:

Period 2

Learning outcomes:

On successful completion of the course, students will be able to categorize the basic principles of modern optical and laser-based diagnostic modalities and instruments used in advanced biomedical research and clinical medicine. They will be able to demonstrate detailed understanding and evaluate the key biophotonics techniques underlying day-to-day clinical diagnostic and therapies and industrial applications in pharmacy, health care and cosmetic products.

They can operate with the selected techniques of their choice.

Contents:

The course includes in-depth coverage of state-of-the-art optical imaging and spectroscopy systems for advanced biomedical research and clinical diagnosis, fundamental properties of light such as coherence, polarization, angular momentum, details of light interaction with tissue, and modern imaging system. Coherent Optical Tomography (OCT), Laser Doppler Flowmetry, Laser Speckle Imaging (LSI), Photo-Acoustic Tomography (PAT), Tissue polarimetry; Optical and Near-Infrared Spectroscopy (NIRS), Confocal and Fluorescence Microscopies; Tissue Optics: Light/matter interactions, index of refraction, reflection, optical clearing, absorption, Mie scattering, Rayleigh scattering, Monte Carlo modelling.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures/exercises 42 h and self-study 100 h.

Target group:

Students interested in biomedical measurements.

Prerequisites and co-requisites:

None.

Recommended optional programme components:

A new course

Recommended or required reading:

V.V Tuchin: Handbook of Optical Biomedical Diagnostics, SPIE Press, 2002; V.V Tuchin: Handbook of Coherent Domain Optical Methods, Springer, 2nd edition, 2013. D.A Boas, C. Pitris, N. Ramanujam, Handbook of Biomedical Optics, CRC Press, 2011.

Assessment methods and criteria:

The course is passed by the final exam and with the assignments.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1 - 5

Person responsible:

Igor Meglinski

Working life cooperation:

No.

080926A: Introduction to Biomedical Imaging Methods, 1 - 3 op

Voimassaolo: 01.08.2017 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Health Sciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: English

ECTS Credits:

1-3 ECTS credit points / 27-81 hours of work.

Language of instruction:

English

Timing:

Master studies, 3rd or 4th period.

Learning outcomes:

The student understands and can describe the basic principles and main applications of imaging methods used in biomedical research.

Contents:

Differences between in vivo, ex vivo and in vitro imaging. Light and electron microscopy. Optical projection and coherence tomography. Optical in vivo imaging. Magnetic resonance imaging. Fourier transform infrared imaging spectroscopy. Raman imaging spectroscopy. Micro-computed tomography. Ultrasound imaging. Basics of image analysis and interpretation

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Scope of the course and the methods of implementation vary. The course includes lectures 16h and demonstrations 8h. Independent study is determined by the extent of the course to 3-57 hours. The course includes a final exam.

Target group:

All students who are interested in methods of biomedical imaging. The course is suitable for both Master and Doctoral students.

Recommended or required reading:

Required literature is given in the lectures.

Assessment methods and criteria:

Participation in the lectures and demonstrations (compulsory). Written exam (3 ECTS). The course can be taken as 1, 2 or 3 ECTS.

1 ECTS # participation in all the lectures

2 ECTS # participation in all the lectures and demonstrations

3 ECTS # participation in the lectures and demonstrations + final exam

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

The 1 and 2 ECTS courses utilize verbal grading: pass or fail. The 3 ECTS course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

Person responsible:

Postdoctoral researcher Lassi Rieppo

080917S: Project in Biomedical Technology, 5 - 10 op

Voimassaolo: 01.08.2012 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Jämsä, Timo Jaakko

Opintokohteen kielet: Finnish

ECTS Credits:

10 ECTS credit points / 270 hours of work.

Language of instruction:

Finnish / English

Timing:

The course can be taken during Master studies in autumn or spring semester, or during the summer period.

Learning outcomes:

Upon completion of the course, the student will be able to solve a research or development problem and report it in writing and by oral presentation.

Contents:

Performing a small project example on research topic or development.

Mode of delivery:

Independent work.

Learning activities and teaching methods:

The student participates in project within or outside the university. Project topics are offered in Optima. The student prepares a personal project plan according to separate specifications, participates in seminars, prepares a written research report and presents it in a seminar.

Target group:

Master degree students of the Biomedical Engineering or Medical Technology (primarily for students from Medical Faculty).

Recommended optional programme components:

The course is an independent entity.

Assessment methods and criteria:

Students prepares a project plan, participates in seminars, and reports project results in written report and by oral presentation.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

The course utilizes grading scale pass/fail.

Person responsible:

Dr Lassi Rieppo

Working life cooperation:

Project can be commissioned by a company or other organisation. Topic and supervision is agreed together with the organisation.

080919S: Project in Health Technology, 5 - 10 op

Voimassaolo: 01.08.2012 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Jämsä, Timo Jaakko

Opintokohteen kielet: Finnish

ECTS Credits:

10 ECTS credit points / 270 hours of work.

Language of instruction:

Finnish / English

Timing:

The course can be taken in autumn or spring semester, or during the summer period. It is recommended to take this course at the 3rd spring semester.

Learning outcomes:

Upon completion of the course, the student will be able to solve a research or other type of problem and report it in writing and by oral presentation.

Contents:

Performing a small project example on research topic or development.

Mode of delivery:

Independent work.

Learning activities and teaching methods:

The student participates in a research project within or outside the university. The student prepares a personal project plan according to separate specifications. At the end of the project, the student prepares a written research report and presents it in a seminar. In addition, the student participates in at least two other seminar sessions.

Target group:

Degree students of the Biomedical Engineering (primarily for students from Medical faculty).

Recommended optional programme components:

The course is an independent entity.

Assessment methods and criteria:

Students make and present a project plan, participate in seminar, and report project results in written report and oral presentation.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

The course utilizes grading scale pass/fail.

Person responsible:

Maarit Kangas

Working life cooperation:

Project can be commissioned by a company or other organisation. Topic and supervision is agreed together with the client.

080918S: Project in Medical Imaging, 5 - 10 op

Voimassaolo: 01.08.2012 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Jämsä, Timo Jaakko

Opintokohteen kielet: Finnish

ECTS Credits:

10 ECTS credit points / 270 hours of work.

Language of instruction:

Finnish / English

Timing:

The course can be taken during Master studies in autumn or spring semester, or during the summer period.

Learning outcomes:

Upon completion of the course, the student will be able to solve a research or development problem and report it in writing and by oral presentation.

Contents:

Performing a small project example on research topic or development.

Mode of delivery:

Independent work.

Learning activities and teaching methods:

The student participates in project within or outside the university. Project topics are offered in Optima. The student prepares a personal project plan according to separate specifications, participates seminars, prepares a written research report and presents it in a seminar.

Target group:

Master degree students of the Biomedical Engineering or Medical Technology (primarily for students from Medical Faculty).

Recommended optional programme components:

The course is an independent entity.

Assessment methods and criteria:

Students prepares a project plan, participates in seminars, and reports project results in written report and by oral presentation.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

The course utilizes grading scale pass/fail.

Person responsible:

Professor Timo Jämsä

Working life cooperation:

Project can be commissioned by a company or other organisation. Topic and supervision is agreed together with the organisation.

080915S: Tissue Biomechanics, 5 op

Voimassaolo: 01.08.2012 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Health Sciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: English

ECTS Credits:

5 ECTS credit points /135 hours of work.

Language of instruction:

English

Timing:

The course is held in the autumn semester, during period 1. It is recommended to complete the course during Master studies.

Learning outcomes:

The student can describe the main biomechanical characteristics of different tissues as well as their failure mechanisms. The student can perform practical biomechanical experiments, analyze measurement data, interpret results, and report them using good scientific reporting practice. The student understand how numerical modeling can be used to solve problems in tissue biomechanics.

Contents:

Introduction to tissue biomechanics. Most important biomechanical parameters and material models. Experimental measurements of biomechanical properties of tissues. Structure, composition and mechanical properties of different tissues. Biomechanical modeling of tissues.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 15h / Exercises 8h / Assignment 8h / Self-study 104h. Final exam.

Target group:

Master students of Biomedical Engineering (all degree programs) and Physics (biomedical physics major and other minor subject students). The course is also suitable for other interested students with adequate prerequisites.

Prerequisites and co-requisites:

It is recommended that the student has basic knowledge on cell biology, anatomy and physiology, mechanics, differential equations, and matrix algebra.

Recommended optional programme components:

The course is an independent entity and does not require additional studies carried out at the same time. Motion biomechanics will be studied on the course 080916S Biomechanics of Human Movement.

Recommended or required reading:

Material given during the course.

Assessment methods and criteria:

Accepted exercises, assignment and written final exam. The final exam is based on lectures and other given materials, and it includes definition and explanation assignments and problems (including mathematical calculations). Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

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

Person responsible:

Associate Professor Simo Saarakkala

Other information:**580213S: Master's Thesis in Biomedical Engineering, 30 op**

Voimassaolo: 01.08.2013 -

Opiskelumuoto: Advanced Studies

Laji: Diploma thesis

Vastuuyksikkö: Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Jämsä, Timo Jaakko

Opintokohteen kielet: English

ECTS Credits:

30 ECTS credit points / 810 hours of work

Language of instruction:

Finnish or English

Timing:

Master studies

Learning outcomes:

The student can independently solve a research problem, and describe and solve it. The student can report the work in written form according to the scientific report principles.

Contents:

Research project in the field of medical & wellness technology and writing of the thesis.

Mode of delivery:

Independent work

Learning activities and teaching methods:

Thesis can be made at different research groups of the university or in industry or health care system. The student writes the thesis independently supported by the supervisor. The topic and contents should be discussed with the professor beforehand.

Target group:

Master Students of Biomedical Engineering or Medical Technology

Recommended optional programme components:

Connected with Study plan 5 ects

Assessment methods and criteria:

Writing the thesis

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

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

Person responsible:

Professor Timo Jämsä

Working life cooperation:

Thesis can be made for an organization outside the university

Other information:

It is recommended that before starting the Master's Thesis student has completed about 60 credits from master studies.

580211S: Maturity Test, 0 op

Voimassaolo: 01.08.2003 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Jämsä, Timo Jaakko

Opintokohteen kielet: Finnish

ECTS Credits:

0 ECTS credit points

Language of instruction:

Finnish / Swedish ior English

Timing:

After completion of Master's Thesis

Learning outcomes:

The student can produce mature text in popular form of the research field and thus show ones familiarity to the field

Contents:

Depends on the topic of the thesis

Mode of delivery:

Literary work

Learning activities and teaching methods:

Takes place after master's thesis. Written based on a given topic considering the thesis.

Target group:

Master Students of Biomedical Engineering or Medical Technology

Recommended optional programme components:

Will be written after the Master's Thesis has been submitted for a review.

Assessment methods and criteria:

Writing the Maturity test or the abstract of the Master's Thesis in the student's native language Finnish or Swedish. If the student's native language is another than Finnish or Swedish the Faculty will define separately the requirements for the language test.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

Pass or fail. The contents will be assessed by the person responsible. If the student has not made the maturity test as part of the bachelor degree, the language will be assessed by a teacher of the Languages and Communication, University of Oulu Extension School.

Person responsible:

Professor Timo Jämsä

Other information:

If the student has not made the maturity test as part of bachelor's degree, the maturity test also presents the language skills in Finnish or Swedish.

900013Y: Beginners' Finnish Course 1, 3 op

Voimassaolo: 01.08.1995 -

Opiskelumuoto: Language and Communication Studies

Laji: Course

Vastuuyksikkö: Languages and Communication

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay900013Y Beginners' Finnish Course 1 (OPEN UNI) 2.0 op

Proficiency level:

A1.2

Status:

The course is intended for the international students in every faculty of Oulu University.

Required proficiency level:

A1.1, Completion of the Survival Finnish course (900017Y) or the equivalent language skills.

ECTS Credits:

3 ECTS credits

Language of instruction:

As much Finnish as possible; English will be used as a help language.

Timing:

-

Learning outcomes:

By the end of the course the student can understand and use some familiar and common everyday expressions relating to her/himself and everyday situations. S/he can interact in a simple way provided the other person talks slowly and clearly and is willing to help. The student is able to read short simple texts and messages dealing with familiar topics. S/he also deepens her/his understanding of the Finnish language and communication styles.

Contents:

This is lower elementary course which aims to help students to learn communication skills in ordinary everyday situations. During the course, students broaden their vocabulary and knowledge of grammar and principles of pronunciation. They also practise to understand easy Finnish talk about everyday subjects, and reading and writing short and simple texts/messages.

The topics and communicative situations covered in the course are: talking about oneself, one's family, studies and daily routines, as well as asking about these things from other person, expressing opinions, describing people and things, talking about weather and seasons, the names of the months and colours.

The structures studied are: verb types, basics of the change of the consonants k, p and t in verbs and nouns, the genitive and partitive cases, possessive structure, some declension types for nouns (word types) and the basics of the local cases.

Mode of delivery:

Contact teaching and guided self study

Learning activities and teaching methods:

Lessons 2 times a week (26 h) and guided self study (50 h)

Target group:

International degree and post-graduate degree students and exchange students of the University

Prerequisites and co-requisites:

Completion of the Survival Finnish Course

Recommended optional programme components:

-

Recommended or required reading:

Gehring, S. & Heinzmann, S. Suomen mestari 1 (chapters 3 - 5)

Assessment methods and criteria:

Regular and active participation in the weekly lessons (twice a week), homework assignments and written exam at the end of the course will be observed in assessment.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

Grading scale is 1-5.

Person responsible:

Anne Koskela

Working life cooperation:

-

Other information:

Sign-up in WebOodi. The course will start right after the Survival Finnish course.

900053Y: Beginners' Finnish Course 2, 5 op

Voimassaolo: 01.08.1995 -

Opiskelumuoto: Language and Communication Studies

Laji: Course

Vastuuyksikkö: Languages and Communication

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay900053Y Beginners' Finnish Course 2 (OPEN UNI) 4.0 op

Proficiency level:

A1.3

Status:

The course is intended for the international students in every faculty of Oulu University.

Required proficiency level:

A1.2, completion of the Beginners' Finnish course 1 (900013Y) or the equivalent language skills.

ECTS Credits:

5 ECTS credits

Language of instruction:

As much Finnish as possible; English will be used as a help language.

Timing:

-

Learning outcomes:

By the end of the course the student can understand and use some very common everyday expressions and sentences. S/he can communicate in easy and routine tasks requiring a simple and direct exchange of information on familiar everyday matters. The student understands different kinds of short texts. S/he can for example locate important information in them. In addition, s/he has acquired more detailed knowledge of the language and culture.

Contents:

This is a post-elementary course. During the course students learn more about communication in ordinary everyday situations in Finnish. They also extend their vocabulary and knowledge of grammar. Students practise understanding simple Finnish talk and short texts.

The topics and communicative situations covered in the course are: asking for and giving directions, asking for help/favours, carrying out transactions in shops and restaurants, talking about the past, asking for and expressing opinions and feelings, accommodation, travelling, vehicles, work, professions, food, drink and parties.

The structures studied are: the local cases, nominative plural (basic form plural), imperfect (past tense of verbs), part of the imperative, more declension types for nouns (word types), more about the change of the consonants k, p and t in verbs and nouns, declension of the demonstrative pronouns and personal pronouns, more about the partitive case, basics of the object cases, postpositions and some sentence types in Finnish.

Mode of delivery:

Contact teaching and guided self study

Learning activities and teaching methods:

Lessons 2 times a week (50 h) and guided self study (75 h)

Target group:

International degree and post-graduate degree students and exchange students of the University

Prerequisites and co-requisites:

Completion of the Beginners' Finnish Course 1

Recommended optional programme components:

-

Recommended or required reading:

Gehring, S. & Heinzmann, S.: **Suomen mestari 1** (kappaleet 6-9)

Assessment methods and criteria:

Regular and active participation in the weekly lessons (twice a week), homework assignments and written midterm and final exams will be observed in assessment.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

Grading scale is 1-5.

Person responsible:

Anne Koskela

Working life cooperation:

-

Other information:

Sign-up in WebOodi. The lessons will be held **twice a week** during a 13-week period.

900017Y: Survival Finnish, 2 op

Voimassaolo: 01.08.1995 -

Opiskelumuoto: Language and Communication Studies

Laji: Course

Vastuuyksikkö: Languages and Communication

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay900017Y Survival Finnish Course (OPEN UNI) 2.0 op

Proficiency level:

A1.1

Status:

The course is intended for the international students in every faculty of Oulu University.

Required proficiency level:

No previous Finnish studies.

ECTS Credits:

2 ECTS credits

Language of instruction:

Finnish and English

Timing:

-

Learning outcomes:

By the end of the course the student can understand and use some very common everyday expressions and phrases, and s/he can locate informational content in simple texts and messages. The student also knows the basic characteristics of Finnish language and Finnish communication styles.

Contents:

This is an introductory course which aims to help students to cope with the most common everyday situations in Finnish. During the course, students learn some useful everyday phrases, some general features of the vocabulary and grammar, and the main principles of pronunciation.

The topics and communicative situations covered in the course are: general information about the Finnish language, some politeness phrases (how to greet people, thank and apologize), introducing oneself, giving and asking for basic personal information, numbers, some time expressions (how to tell and ask the time, days of the week, time of day), food, drink and asking about prices.

The structures studied are: personal pronouns and their possessive forms, forming affirmative, negative and interrogative sentences, the conjugation of some verbs, the basics of the partitive singular and some local cases for answering the 'where'-question.

Mode of delivery:

Multi-modal teaching (Contact teaching, on-line teaching and independent work)

Learning activities and teaching methods:

Lessons 1–2 times a week (12–14 h) and guided self study (36 h)

Target group:

International degree and post-graduate degree students and exchange students of the University

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Will be provided during the course.

Assessment methods and criteria:

Regular and active participation in the weekly lessons (twice a week), homework assignments and written exam at the end of the course will be observed in assessment.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

Grading scale is 1-5.

Person responsible:

Anne Koskela

Working life cooperation:

-

Other information:

Sign-up in WebOodi.