

Opasraportti

LTK - Clinical Laboratory Science (2010 - 2011)

DEGREE PROGRAMME IN CLINICAL LABORATORY SCIENCE 2010-2011

1. General descriptions

Qualification awarded: Bachelor of Health Sciences, Master of Health Sciences, Licentiate of Health Sciences & Doctor of Health Sciences

Admission requirements: Bioanalythics degree from (post-secondary / polytechnic level)

Educational and professional goals: The educational goals are to educate students:

to work independently as an expert in their selected major field

to follow-up the development in their field and apply new, appropriate information to their daily work

to develop further Clinical laboratory activity and its administration or training on the basis of research

to continue with postgraduate studies in Clinical laboratory science

The professional goals are to educate graduates who are experts in planning, development, teaching and administrative positions in the field of health care. With individual minor selection, a student can direct his/her studies so that he/she can become a specialist, an administrator, or a teacher in Clinical laboratory work or Clinical laboratory science, for example.

Access to further studies: After completing the Master's degree, the student is eligible for applying for postgraduate education (licentiate degree, doctoral degree).

Course structure diagram with ECTS credits (60 per year): The Bachelor's degree consists of general studies (orientation and language studies, 52 credits), basic studies (25 cr) and intermediate studies (38 cr) in clinical laboratory science, studies in minor subject(s) and optional studies (55 cr), and a Bachelor's Thesis (10 cr). General studies are same in each programme/major subject. The Master's degree consists of advanced studies in clinical laboratory science (30 cr), studies in minor subject(s) and optional studies (60 cr), and a pro gradu thesis (30 cr). Some studies on Bachelor's level (parts of general studies, basic studies, and optional studies) are compensated for by previous studies, so that the Bachelor's degree can be completed in 1,5-2 years (full-time study).

STUDIES IN BACHELOR'S DEGREE (180 ECTS credits)

113 ECTS credits are replaced with earlier studies with a degree from a University of Applied Sciences and 103 ECTS credits are replaced with earlier studies in Health Science. Studies units marked with * can be replaced with earlier studies with a degree from a University of Applied Sciences.

Bachelor's degree (180 ECTS credits) consists of:

General studies 24-34 ECTS credits ´

350003Y The Philosophical foundation of scientific research 6.0

350005Y Statistics 6.0

350006Y Informatics of Health Sciences 2.0

350008Y Academic learning skills 3.0

350001Y The higher education system, study planning and tutoring 2.0

350007Y Statistical data processing 5.0

900007Y Basics of written communication* 2.0

900208Y Foreign language* 3.0

900107Y Other domestic language* 3.0

900008Y Elements of oral communication* 2.0

Basic- and subject studies of major subject
 351008P Research course* 2.0
 351511P Introduction to Clinical Laboratory Science 5.0
 040002Y Medical Cell and Development Biology 7.0
 352311A Philosophy and Ethics in Clinical Laboratory Science 3.0
 35107A Research methods I 4.0
 040103A Medical Biochemistry and Molecular Biology 11.0
 35232A Basics of clinical Laboratory Investigation 3.0
 352114A Bachelor's thesis and Written maturity 10.0

Minor studies
 Optional studies

Master's degree (120 ECTS credits) consists of:
 Advanced studies of major subject 60.0
 353550S-01 Development of Clinical Laboratory Science 4.0
 353550S-02 Optional Advanced Studies in Clinical laboratory science 12.0
 353213S Research methods lab II 8.0
 353204S Research seminars 6.0
 353205S Master's Thesis 30.0

Minor studies
 Optional studies

Final examination: Bachelor's thesis (10 cr) Bachelor's degree, pro gradu thesis (30 cr) Master's degree, a written maturity test
 Examination and assessment regulations: University of Oulu Rules of procedure; assessment is based on course objectives and detailed assessment criteria.
 ECTS-departmental co-ordinator: amanuensis of the Institute of Health Sciences tel. +358 8 537 5601

Tutkintorakenteisiin kuulumattomat opintokokonaisuudet ja -jaksot

352114A: Bachelor Thesis and Written Maturity Test, 6 op
 900008Y: Basics of Oral Communication, 3 op
 900007Y: Basics of Written Communication, 2 op
 352532A: Basics of clinical laboratory investigation, 3 op
 353550S-01: Development of clinical laboratory science, 4 op
 352228A: Elective special research course, 3 - 10 op
 902008Y: English, 3 op
 350006Y: Informatics of health sciences, 4 op
 350008Y: Introduction to academic studies, 3 op
 351511P: Introduction to clinical laboratory science, 5 op
 353206S: Master's thesis and thesis seminars, 30 op
 040103A: Medical Biochemistry and Molecular Biology, 14 - 15 op
 040103A-05: Medical Biochemistry and Molecular Biology Final exams, 1 op
 040103A-01: Medical Biochemistry and Molecular Biology Intermediate exams 1, 3 op
 040103A-02: Medical Biochemistry and Molecular Biology Intermediate exams 2, 2 op
 040103A-03: Medical Biochemistry and Molecular Biology Intermediate exams 3, 3 op
 040103A-04: Medical Biochemistry and Molecular Biology Intermediate exams 4, 3 op
 040103A-06: Medical Biochemistry and Molecular Biology Laboratory works, 1,5 op
 040103A-07: Medical Biochemistry and Molecular Biology Theme day, 0,5 op
 040002Y: Medical cell and developmental biology, 7 op

353550S: Optional advanced studies in clinical laboratory science, 11,5 op
 350003Y: Philosophical foundations for scientific research, 5 op
 352311A: Philosophy and ethics in clinical laboratory work, 3 op
 351513P: Replaced basic studies in clinical laboratory science, 11 op
 352513A: Replaced subject studies in clinical laboratory science, 17 op
 351008P: Research methods (basic), 2 op
 352107A: Research methods I, 6 op
 353203S: Research methods II, 10 op
 353213S: Research methods II, lab, 8 op
 353204S: Research seminars, 5 - 8 op
 901007Y: Second Official Language (Swedish), 3 op
 350007Y: Statistical computing, 5 op
 350005Y: Statistics, 6 op
 350001Y: Study planning and tutorial, 1 - 3 op

Opintojaksojen kuvaukset

Tutkintorakenteisiin kuulumattomien opintokokonaisuuksien ja -jaksojen kuvaukset

352114A: Bachelor Thesis and Written Maturity Test, 6 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay352114A Bachelor Thesis 6.0 op

ECTS Credits:

10 ECTS

Language of instruction:

Finnish

Timing:

2nd year autumn term

Learning outcomes:

The student gets familiar with scientific writing and principles of scientific research. With this knowledge she/he can do written scientific research based on research literature or empirical data. The student is able to present the research.

Learning activities and teaching methods:

Individual studying.

Recommended optional programme components:

Elementary course in research, Research methods in nursing science I.

Recommended or required reading:

Literature connected to research proposal.

Assessment methods and criteria:

Presentation of own raport. Written maturity test.

Grading:

Pass / Fail

Person responsible:

Doctoral candidate

900008Y: Basics of Oral Communication, 3 op

Voimassaolo: 01.08.1995 -

Opiskelumuoto: Language and Communication Studies

Laji: Course

Vastuuyksikkö: Language Centre

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay900008Y Basics of Oral Communication (OPEN UNI) 3.0 op

Ei opintojaksokuvauksia.

900007Y: Basics of Written Communication, 2 op

Voimassaolo: 01.08.1995 -

Opiskelumuoto: Language and Communication Studies

Laji: Course

Vastuuyksikkö: Language Centre

Arvostelu: 1 - 5, pass, fail

Opettajat: Outi Mikkola

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay900007Y Basics of Written Communication (OPEN UNI) 2.0 op

Ei opintojaksokuvauksia.

352532A: Basics of clinical laboratory investigation, 3 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Eeva Liikanen

Opintokohteen kielet: Finnish

ECTS Credits:

3 ECTS

Language of instruction:

Finnish

Timing:

1st year spring term not in 2011.

Learning outcomes:

The student evaluates quality of results of laboratory investigations. She/he is able to develop clinical laboratory activity.

Contents:

Trains of treatment and evidence-based Finnish Current Care guidelines.

Recommended or required reading:

Bonini P, Plebani M, Ceriotti F & Rubboli F. 2002. Errors in Laboratory Medicine. *Clinical Chemistry* 48, 694-698.
Christenson R. 2007. Evidence-based laboratory medicine - a guide for critical evaluation of *in vitro* laboratory testing. *Annals of Clinical Chemistry* 44, 111-130. Hovarth A & Pewsner D. 2004. Systematic reviews in laboratory medicine: principles, processes and practical considerations. *Clinica Chimica Acta* 342, 23-39. Kaila M & Korpi M. 2002. Mitä on näyttöön perustuva lääketiede? *Suomen Lääkärilehti* 57, 4467-4471. Kircher M ym. 2007. Quality indicators and specifications for key processes in clinical laboratories: a preliminary experience. *Clinical Chemistry and Laboratory Medicine* 45, 672-677. Current papers

You can check the literature availability at [this link](#)

Grading:

5-1/fail

Person responsible:

Eeva Liikanen

353550S-01: Development of clinical laboratory science, 4 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Eeva Liikanen

Opintokohteen kielet: Finnish

ECTS Credits:

4 ECTS

Language of instruction:

Finnish

Timing:

3rd year autumn term

Learning outcomes:

The student evaluates present state of clinical laboratory based on research and theory of science. She/he evaluates significance and state of clinical laboratory science in health care and surrounding society. She/he makes conclusions of future challenges in clinical laboratory science.

Contents:

Definition, development strategies and evaluation of theory. Knowledge and future of clinical laboratory science.

Learning activities and teaching methods:

17 hours of lectures and seminars, 83 hours of independent studies.

Recommended optional programme components:

Full completion of subject studies in clinical laboratory science.

Recommended or required reading:

Liikanen E.2009. Kliininen laboratoriotiede Gaudeamus.

Current papers.

Assessment methods and criteria:

Activity in seminars, a written essay

Grading:

5-1/fail

Person responsible:

Eeva Liikanen

Other information:

No substitution by earlier studies.

352228A: Elective special research course, 3 - 10 op

Voimassaolo: 01.08.2010 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

ECTS Credits:

1-5 credits

Language of instruction:

Finnish or English

Timing:

According to a personal study plan.

Learning outcomes:

Student has got acquainted with phases of research process and doing research according to a personal study plan.

Contents:

According to a personal study plan.

Learning activities and teaching methods:

Student plans an individual learning task with the responsible teacher.

Assessment methods and criteria:

According to a personal study plan.

Grading:

pass-fail

Person responsible:

Responsible person of the research project.

Other information:

The course suits for bachelor's and master's degree studies as elective studies.

902008Y: English, 3 op

Voimassaolo: 01.08.1995 -

Opiskelumuoto: Language and Communication Studies

Laji: Course

Vastuuyksikkö: Language Centre

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: English

Leikkaavuudet:

ay902008Y Academic English (OPEN UNI) 3.0 op

ECTS Credits:

3 credits

Person responsible:

Riitta Sallinen

Other information:

See description of part 1 ([902008Y-01](#)) and part 2 ([902008Y-02](#)).

350006Y: Informatics of health sciences, 4 op

Opiskelumuoto: General Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Pentti Nieminen

Opintokohteen kielet: Finnish

ECTS Credits:

2 ECTS

Language of instruction:

Finnish

Timing:

First year autumn term

Learning outcomes:

The student is able to use electronic databases and information services in her/his studies at the University of Oulu.

Contents:

1. Use of workstations, 2. Data security, 3. Networks, 4. Information retrieval from internet, 5. Software applied in nursing studies, 5. Library services, 6. Electronic journals and 7. Medline, CINAHL, Medic and Web of Science databases.

Learning activities and teaching methods:

Lectures 6 hours, practise 15 hours and self-study.

Recommended or required reading:

List given during the course.

Assessment methods and criteria:

Written essay, participation in workgroups.

Grading:

Pass / failed

350008Y: Introduction to academic studies, 3 op

Voimassaolo: 01.08.2005 -

Opiskelumuoto: General Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

ECTS Credits:

3 ECTS

Language of instruction:

Finnish

Timing:

1st year autumn term

Learning outcomes:

The student is able to assess himself as a student and a member of science community. He becomes conscious of the meaning of learning outcomes in planning his own studies. The student develops the readiness of writing and reading the academic writings. The student understands the ethical principles of students and teachers.

Contents:

Assessing own readiness of learning. The membership of faculty. Planning studies. Assessing reading and writing abilities. The ethical principles.

Learning activities and teaching methods:

Lectures, group working, web-based working and individual studying 80h.

Recommended or required reading:

Literature and articles, the Ethical Guidelines for Teachers and Students, University of Oulu.

Assessment methods and criteria:

Participating in lectures and accomplishing the tasks.

Grading:

Pass / Fail

351511P: Introduction to clinical laboratory science, 5 op

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Eeva Liikanen

Opintokohteen oppimateriaali:

Niiniluoto, Ilkka , , 1997, pakollinen

Kiikeri, Mika , , 2004, pakollinen

Opintokohteen kielet: Finnish

ECTS Credits:

5 ECTS

Language of instruction:

Finnish

Timing:

1st year autumn term (exception: autumn 2011)

Learning outcomes:

The student knows the scientific basis of Clinical laboratory science and its relationship with other sciences. The student evaluates clinical laboratory science as science and discipline.

Contents:

Origin, present and future of clinical laboratory science. Education, research and research subjects in clinical laboratory science.

Learning activities and teaching methods:

Lectures and seminars 20 hours, independent studies 85 hours, e-learning 20 hours.

Recommended or required reading:

Liikanen E. 2009. Kliininen laboratoriotiede. Gaudeamus. Helsinki.

Liikanen E, Halimaa S-L & Hukkanen K. 2006. Kliinisen laboratoriotieteen opinnäytteet - lähtökohtia kliinisen laboratoriotieteen tutkimuskohteisiin. Hoitotiede 18, 255-262.

Liikanen E & Ahonen S-M. 2008. Kliininen laboratoriotiede ja radiografia - Uuden tieteen haasteet. Niin & näin. Filosofinen aikakauslehti 56, 52-55. Current papers

Assessment methods and criteria:

Before the lectures, the student will take part to the literature examination: Kiikeri, M. & Ylikoski, P. 2004. Tiede tutkimuskohteena. Filosofinen johdatus tieteen tutkimukseen. Gaudeamus, Tampere.

Activity in e-learning, a written essay.

Grading:

Pass/fail

Person responsible:

Eeva Liikanen

Other information:

No substitution by earlier studies

353206S: Master's thesis and thesis seminars, 30 op

Opiskelumuoto: Advanced Studies

Laji: Diploma thesis

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

ECTS Credits:

30 ECTS

Timing:

3rd year autumn term to 4th year autumn term

Learning outcomes:

The student is able to write the Master's thesis

Learning activities and teaching methods:

Individual study or pair work under supervision of 1-2 teachers. Thesis can be written also as a scientific article.

Recommended optional programme components:

Elementary courses in research, Bachelor's thesis, research methods in nursing science I and II, Research Seminars.

Assessment methods and criteria:

The student writes pro gradu thesis or corresponding work. If the student have not taken part to the written maturity test in context of the Bachelor's thesis, the written maturity have to be performed. Student will get guidance app. three times.

Grading:

1-5

040103A: Medical Biochemistry and Molecular Biology, 14 - 15 op

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Medicine

Arvostelu: 1 - 5, pass, fail

Opettajat: Johanna Myllyharju

Opintokohteen kielet: Finnish

ECTS Credits:

14 ECTS

Timing:

C2

Learning outcomes:

Aim of this module is to learn the function of the cells at the molecular level and recognize the basic biochemical compounds, reactions and the overall regulation of various metabolic pathways, especially those which are meaningful for Medicine. Students will also learn the basics of molecular biology and common methodology used in molecular biology.

Contents:

Structure of carbohydrates, amino acids, lipids and nucleic acids; metabolism of the carbohydrates, amino acids, lipids and nucleic acids; porphyrins and bile pigments; vitamins; minerals; prostaglandins; thromboxanes; leukotrienes; nutrition; DNA synthesis and repair mechanisms; structure of chromosomes and genes; regulation of gene expression; RNA synthesis, species and functions; protein synthesis and genetic code; posttranslational modifications and processing of proteins; recombinant DNA technology; stem cells; oncogenes; growth factors; mitochondrial DNA and diseases; intracellular messengers; energy metabolism; hormones; hypoxia response of the cells; cell membranes; components and function of extracellular matrix. Laboratory works (5 different works) include basics of enzyme kinetics, mitochondria and oxidative phosphorylation, lipids, carbohydrates and hormonal regulation of lipolysis.

Learning activities and teaching methods:

Lectures 124 h. Laboratory work including tutorial teaching and verbal evaluation, 5 works and 24 h. Theme day containing preliminary preparations 9 h.

Recommended or required reading:

Oppikirja: Murray, R.K. (toim.): Harper's Illustrated Biochemistry, 27. painos, 2006.

Text book: Murray, R.K. (ed.): Harper's Illustrated Biochemistry, 27th edition, 2006.

Assessment methods and criteria:

Medical biochemistry and molecular biology course includes 4 different intermediate exams (4 essays, 0-2.5 p /essay, points needed for passing 4.75). Final exam consist of 6 essays (0-10 p/essay). In final exams only 2 essays from 6 can have points lower than 4.5, otherwise exam will be failed. All the intermediate exams and laboratory works should be passed before participation in final exam.

Grading:

5 = 50.75 or more, 4 = 44.75-50.5, 3 = 38.75-44.5, 2 = 32.75-38.5, 1 = 27.75-32.5.

Person responsible:

Professor Johanna Myllyharju

040103A-05: Medical Biochemistry and Molecular Biology Final exams, 1 op

Voimassaolo: 01.08.2010 -

Opiskelumuoto: Basic Studies

Laji: Partial credit

Vastuuyksikkö: Medicine

Arvostelu: 1 - 5, pass, fail

Opettajat: Johanna Myllyharju

Opintokohteen kielet: Finnish

ECTS Credits:

14 ECTS

Timing:

C2

Learning outcomes:

Aim of this module is to learn the function of the cells at the molecular level and recognize the basic biochemical compounds, reactions and the overall regulation of various metabolic pathways, especially those which are meaningful for Medicine. Students will also learn the basics of molecular biology and common methodology used in molecular biology.

Contents:

Structure of carbohydrates, amino acids, lipids and nucleic acids; metabolism of the carbohydrates, amino acids, lipids and nucleic acids; porphyrins and bile pigments; vitamins; minerals; prostaglandins; thromboxanes; leukotrienes; nutrition; DNA synthesis and repair mechanisms; structure of chromosomes and genes; regulation of gene expression; RNA synthesis, species and functions; protein synthesis and genetic code; posttranslational modifications and processing of proteins; recombinant DNA technology; stem cells; oncogenes; growth factors; mitochondrial DNA and diseases; intracellular messengers; energy metabolism; hormones; hypoxia response of the cells; cell membranes; components and function of extracellular matrix. Laboratory works (5 different works) include basics of enzyme kinetics, mitochondria and oxidative phosphorylation, lipids, carbohydrates and hormonal regulation of lipolysis.

Learning activities and teaching methods:

Lectures 124 h. Laboratory work including tutorial teaching and verbal evaluation, 5 works and 24 h. Theme day containing preliminary preparations 9 h.

Recommended or required reading:

Oppikirja: Murray, R.K. (toim.): Harper's Illustrated Biochemistry, 27. painos, 2006.

Text book: Murray, R.K. (ed.): Harper's Illustrated Biochemistry, 27th edition, 2006.

Assessment methods and criteria:

Medical biochemistry and molecular biology course includes 4 different intermediate exams (4 essays, 0-2.5 p /essay, points needed for passing 4.75). Final exam consist of 6 essays (0-10 p/essay). In final exams only 2 essays from 6 can have points lower than 4.5, otherwise exam will be failed. All the intermediate exams and laboratory works should be passed before participation in final exam.

Grading:

5 = 50.75 or more, 4 = 44.75-50.5, 3 = 38.75-44.5, 2 = 32.75-38.5, 1 = 27.75-32.5.

Person responsible:

Professor Johanna Myllyharju

040103A-01: Medical Biochemistry and Molecular Biology Intermediate exams 1, 3 op

Voimassaolo: 01.08.2010 -

Opiskelumuoto: Basic Studies

Laji: Partial credit

Vastuuyksikkö: Medicine

Arvostelu: 0,0 - 99,9

Opettajat: Johanna Myllyharju

Opintokohteen kielet: Finnish

ECTS Credits:

14 ECTS

Timing:

C2

Learning outcomes:

Aim of this module is to learn the function of the cells at the molecular level and recognize the basic biochemical compounds, reactions and the overall regulation of various metabolic pathways, especially those which are meaningful for Medicine. Students will also learn the basics of molecular biology and common methodology used in molecular biology.

Contents:

Structure of carbohydrates, amino acids, lipids and nucleic acids; metabolism of the carbohydrates, amino acids, lipids and nucleic acids; porphyrins and bile pigments; vitamins; minerals; prostaglandins; thromboxanes; leukotrienes; nutrition; DNA synthesis and repair mechanisms; structure of chromosomes and genes; regulation of gene expression; RNA synthesis, species and functions; protein synthesis and genetic code; posttranslational modifications and processing of proteins; recombinant DNA technology; stem cells; oncogenes; growth factors; mitochondrial DNA and diseases; intracellular messengers; energy metabolism; hormones; hypoxia response of the cells; cell membranes; components and function of extracellular matrix. Laboratory works (5 different works) include basics of enzyme kinetics, mitochondria and oxidative phosphorylation, lipids, carbohydrates and hormonal regulation of lipolysis.

Learning activities and teaching methods:

Lectures 124 h. Laboratory work including tutorial teaching and verbal evaluation, 5 works and 24 h. Theme day containing preliminary preparations 9 h.

Recommended or required reading:

Oppikirja: Murray, R.K. (toim.): Harper's Illustrated Biochemistry, 27. painos, 2006.

Text book: Murray, R.K. (ed.): Harper's Illustrated Biochemistry, 27th edition, 2006.

Assessment methods and criteria:

Medical biochemistry and molecular biology course includes 4 different intermediate exams (4 essays, 0-2.5 p /essay, points needed for passing 4.75). Final exam consist of 6 essays (0-10 p/essay). In final exams only 2 essays from 6 can have points lower than 4.5, otherwise exam will be failed. All the intermediate exams and laboratory works should be passed before participation in final exam.

Grading:

5 = 50.75 or more, 4 = 44.75-50.5, 3 = 38.75-44.5, 2 = 32.75-38.5, 1 = 27.75-32.5.

Person responsible:

Professor Johanna Myllyharju

040103A-02: Medical Biochemistry and Molecular Biology Intermediate exams 2, 2 op

Voimassaolo: 01.08.2010 -

Opiskelumuoto: Basic Studies

Laji: Partial credit

Vastuuyksikkö: Medicine

Arvostelu: 0,0 - 99,9

Opettajat: Johanna Myllyharju

Opintokohteen kielet: Finnish

ECTS Credits:

14 ECTS

Timing:

C2

Learning outcomes:

Aim of this module is to learn the function of the cells at the molecular level and recognize the basic biochemical compounds, reactions and the overall regulation of various metabolic pathways, especially those which are meaningful for Medicine. Students will also learn the basics of molecular biology and common methodology used in molecular biology.

Contents:

Structure of carbohydrates, amino acids, lipids and nucleic acids; metabolism of the carbohydrates, amino acids, lipids and nucleic acids; porphyrins and bile pigments; vitamins; minerals; prostaglandins; thromboxanes; leukotrienes; nutrition; DNA synthesis and repair mechanisms; structure of chromosomes and genes; regulation of gene expression; RNA synthesis, species and functions; protein synthesis and genetic code; posttranslational modifications and processing of proteins; recombinant DNA technology; stem cells; oncogenes; growth factors; mitochondrial DNA and diseases; intracellular messengers; energy metabolism; hormones; hypoxia response of the cells; cell membranes; components and function of extracellular matrix. Laboratory works (5 different works) include basics of enzyme kinetics, mitochondria and oxidative phosphorylation, lipids, carbohydrates and hormonal regulation of lipolysis.

Learning activities and teaching methods:

Lectures 124 h. Laboratory work including tutorial teaching and verbal evaluation, 5 works and 24 h. Theme day containing preliminary preparations 9 h.

Recommended or required reading:

Oppikirja: Murray, R.K. (toim.): Harper's Illustrated Biochemistry, 27. painos, 2006.

Text book: Murray, R.K. (ed.): Harper's Illustrated Biochemistry, 27th edition, 2006.

Assessment methods and criteria:

Medical biochemistry and molecular biology course includes 4 different intermediate exams (4 essays, 0-2.5 p /essay, points needed for passing 4.75). Final exam consist of 6 essays (0-10 p/essay). In final exams only 2 essays from 6 can have points lower than 4.5, otherwise exam will be failed. All the intermediate exams and laboratory works should be passed before participation in final exam.

Grading:

5 = 50.75 or more, 4 = 44.75-50.5, 3 = 38.75-44.5, 2 = 32.75-38.5, 1 = 27.75-32.5.

Person responsible:

Professor Johanna Myllyharju

040103A-03: Medical Biochemistry and Molecular Biology Intermediate exams 3, 3 op

Voimassaolo: 01.08.2010 -

Opiskelumuoto: Basic Studies

Laji: Partial credit

Vastuuyksikkö: Medicine

Arvostelu: 1 - 5, pass, fail

Opettajat: Johanna Myllyharju

Opintokohteen kielet: Finnish

ECTS Credits:

14 ECTS

Timing:

C2

Learning outcomes:

Aim of this module is to learn the function of the cells at the molecular level and recognize the basic biochemical compounds, reactions and the overall regulation of various metabolic pathways, especially those which are meaningful for Medicine. Students will also learn the basics of molecular biology and common methodology used in molecular biology.

Contents:

Structure of carbohydrates, amino acids, lipids and nucleic acids; metabolism of the carbohydrates, amino acids, lipids and nucleic acids; porphyrins and bile pigments; vitamins; minerals; prostaglandins; thromboxanes; leukotrienes; nutrition; DNA synthesis and repair mechanisms; structure of chromosomes and genes; regulation of gene expression; RNA synthesis, species and functions; protein synthesis and genetic code; posttranslational modifications and processing of proteins; recombinant DNA technology; stem cells; oncogenes; growth factors; mitochondrial DNA and diseases; intracellular messengers; energy metabolism; hormones; hypoxia response of the cells; cell membranes; components and function of extracellular matrix. Laboratory works (5 different works) include basics of enzyme kinetics, mitochondria and oxidative phosphorylation, lipids, carbohydrates and hormonal regulation of lipolysis.

Learning activities and teaching methods:

Lectures 124 h. Laboratory work including tutorial teaching and verbal evaluation, 5 works and 24 h. Theme day containing preliminary preparations 9 h.

Recommended or required reading:

Oppikirja: Murray, R.K. (toim.): Harper's Illustrated Biochemistry, 27. painos, 2006.

Text book: Murray, R.K. (ed.): Harper's Illustrated Biochemistry, 27th edition, 2006.

Assessment methods and criteria:

Medical biochemistry and molecular biology course includes 4 different intermediate exams (4 essays, 0-2.5 p /essay, points needed for passing 4.75). Final exam consist of 6 essays (0-10 p/essay). In final exams only 2 essays from 6 can have points lower than 4.5, otherwise exam will be failed. All the intermediate exams and laboratory works should be passed before participation in final exam.

Grading:

5 = 50.75 or more, 4 = 44.75-50.5, 3 = 38.75-44.5, 2 = 32.75-38.5, 1 = 27.75-32.5.

Person responsible:

Professor Johanna Myllyharju

040103A-04: Medical Biochemistry and Molecular Biology Intermediate exams 4, 3 op

Voimassaolo: 01.08.2010 -

Opiskelumuoto: Basic Studies

Laji: Partial credit

Vastuuyksikkö: Medicine

Arvostelu: 0,0 - 99,9

Opettajat: Johanna Myllyharju

Opintokohteen kielet: Finnish

ECTS Credits:

14 ECTS

Timing:

C2

Learning outcomes:

Aim of this module is to learn the function of the cells at the molecular level and recognize the basic biochemical compounds, reactions and the overall regulation of various metabolic pathways, especially those which are meaningful for Medicine. Students will also learn the basics of molecular biology and common methodology used in molecular biology.

Contents:

Structure of carbohydrates, amino acids, lipids and nucleic acids; metabolism of the carbohydrates, amino acids, lipids and nucleic acids; porphyrins and bile pigments; vitamins; minerals; prostaglandins; thromboxanes; leukotrienes; nutrition; DNA synthesis and repair mechanisms; structure of chromosomes and genes; regulation of gene expression; RNA synthesis, species and functions; protein synthesis and genetic code; posttranslational modifications and processing of proteins; recombinant DNA technology; stem cells; oncogenes; growth factors; mitochondrial DNA and diseases; intracellular messengers; energy metabolism; hormones; hypoxia response of the cells; cell membranes; components and function of extracellular matrix. Laboratory works (5 different works) include basics of enzyme kinetics, mitochondria and oxidative phosphorylation, lipids, carbohydrates and hormonal regulation of lipolysis.

Learning activities and teaching methods:

Lectures 124 h. Laboratory work including tutorial teaching and verbal evaluation, 5 works and 24 h. Theme day containing preliminary preparations 9 h.

Recommended or required reading:

Oppikirja: Murray, R.K. (toim.): Harper's Illustrated Biochemistry, 27. painos, 2006.

Text book: Murray, R.K. (ed.): Harper's Illustrated Biochemistry, 27th edition, 2006.

Assessment methods and criteria:

Medical biochemistry and molecular biology course includes 4 different intermediate exams (4 essays, 0-2.5 p /essay, points needed for passing 4.75). Final exam consist of 6 essays (0-10 p/essay). In final exams only 2 essays from 6 can have points lower than 4.5, otherwise exam will be failed. All the intermediate exams and laboratory works should be passed before participation in final exam.

Grading:

5 = 50.75 or more, 4 = 44.75-50.5, 3 = 38.75-44.5, 2 = 32.75-38.5, 1 = 27.75-32.5.

Person responsible:

Professor Johanna Myllyharju

040103A-06: Medical Biochemistry and Molecular Biology Laboratory works, 1,5 op

Voimassaolo: 01.08.2010 -

Opiskelumuoto: Basic Studies

Laji: Partial credit

Vastuuyksikkö: Medicine

Arvostelu: 1 - 5, pass, fail

Opettajat: Johanna Myllyharju

Opintokohteen kielet: Finnish

ECTS Credits:

14 ECTS

Timing:

C2

Learning outcomes:

Aim of this module is to learn the function of the cells at the molecular level and recognize the basic biochemical compounds, reactions and the overall regulation of various metabolic pathways, especially those which are meaningful for Medicine. Students will also learn the basics of molecular biology and common methodology used in molecular biology.

Contents:

Structure of carbohydrates, amino acids, lipids and nucleic acids; metabolism of the carbohydrates, amino acids, lipids and nucleic acids; porphyrins and bile pigments; vitamins; minerals; prostaglandins; thromboxanes; leukotrienes; nutrition; DNA synthesis and repair mechanisms; structure of chromosomes and genes; regulation of gene expression; RNA synthesis, species and functions; protein synthesis and genetic code; posttranslational modifications and processing of proteins; recombinant DNA technology; stem cells; oncogenes; growth factors; mitochondrial DNA and diseases; intracellular messengers; energy metabolism; hormones; hypoxia response of the cells; cell membranes; components and function of extracellular matrix. Laboratory works (5 different works) include basics of enzyme kinetics, mitochondria and oxidative phosphorylation, lipids, carbohydrates and hormonal regulation of lipolysis.

Learning activities and teaching methods:

Lectures 124 h. Laboratory work including tutorial teaching and verbal evaluation, 5 works and 24 h. Theme day containing preliminary preparations 9 h.

Recommended or required reading:

Oppikirja: Murray, R.K. (toim.): Harper's Illustrated Biochemistry, 27. painos, 2006.

Text book: Murray, R.K. (ed.): Harper's Illustrated Biochemistry, 27th edition, 2006.

Assessment methods and criteria:

Medical biochemistry and molecular biology course includes 4 different intermediate exams (4 essays, 0-2.5 p /essay, points needed for passing 4.75). Final exam consist of 6 essays (0-10 p/essay). In final exams only 2 essays from 6 can have points lower than 4.5, otherwise exam will be failed. All the intermediate exams and laboratory works should be passed before participation in final exam.

Grading:

5 = 50.75 or more, 4 = 44.75-50.5, 3 = 38.75-44.5, 2 = 32.75-38.5, 1 = 27.75-32.5.

Person responsible:

Professor Johanna Myllyharju

040103A-07: Medical Biochemistry and Molecular Biology Theme day, 0,5 op

Voimassaolo: 01.08.2010 -

Opiskelumuoto: Basic Studies

Laji: Partial credit

Vastuuyksikkö: Medicine

Arvostelu: 1 - 5, pass, fail

Opettajat: Johanna Myllyharju

Opintokohteen kielet: Finnish

ECTS Credits:

14 ECTS

Timing:

C2

Learning outcomes:

Aim of this module is to learn the function of the cells at the molecular level and recognize the basic biochemical compounds, reactions and the overall regulation of various metabolic pathways, especially those which are meaningful for Medicine. Students will also learn the basics of molecular biology and common methodology used in molecular biology.

Contents:

Structure of carbohydrates, amino acids, lipids and nucleic acids; metabolism of the carbohydrates, amino acids, lipids and nucleic acids; porphyrins and bile pigments; vitamins; minerals; prostaglandins; thromboxanes; leukotrienes; nutrition; DNA synthesis and repair mechanisms; structure of chromosomes and genes; regulation of gene expression; RNA synthesis, species and functions; protein synthesis and genetic code; posttranslational modifications and processing of proteins; recombinant DNA technology; stem cells; oncogenes; growth factors; mitochondrial DNA and diseases; intracellular messengers; energy metabolism; hormones; hypoxia response of

the cells; cell membranes; components and function of extracellular matrix. Laboratory works (5 different works) include basics of enzyme kinetics, mitochondria and oxidative phosphorylation, lipids, carbohydrates and hormonal regulation of lipolysis.

Learning activities and teaching methods:

Lectures 124 h. Laboratory work including tutorial teaching and verbal evaluation, 5 works and 24 h. Theme day containing preliminary preparations 9 h.

Recommended or required reading:

Oppikirja: Murray, R.K. (toim.): Harper's Illustrated Biochemistry, 27. painos, 2006.

Text book: Murray, R.K. (ed.): Harper's Illustrated Biochemistry, 27th edition, 2006.

Assessment methods and criteria:

Medical biochemistry and molecular biology course includes 4 different intermediate exams (4 essays, 0-2.5 p /essay, points needed for passing 4.75). Final exam consist of 6 essays (0-10 p/essay). In final exams only 2 essays from 6 can have points lower than 4.5, otherwise exam will be failed. All the intermediate exams and laboratory works should be passed before participation in final exam.

Grading:

5 = 50.75 or more, 4 = 44.75-50.5, 3 = 38.75-44.5, 2 = 32.75-38.5, 1 = 27.75-32.5.

Person responsible:

Professor Johanna Myllyharju

040002Y: Medical cell and developmental biology, 7 op

Opiskelumuoto: General Studies

Laji: Course

Vastuuyksikkö: Medicine

Arvostelu: 1 - 5, pass, fail

Opettajat: Tuukkanen, Kaarlo Juha Kullervo

Opintokohteen kielet: Finnish

ECTS Credits:

7credit points

Timing:

C1

Learning outcomes:

The learning outcomes are to identify the structure of various cell types (especially mammalian cells), the structure and function of cell organelles, cell growth and cell division and the principles of the regulation of cell function, genetic regulation and the common research techniques in cell biology. The student should understand gametogenesis, fertilization, embryonal development (0-40days) and its regulation as well as the development of embryonal malformations. The student should also understand the human growth and development. In addition, the student should learn the basic tissues of the human body and the microscopic structure of the tissues for understanding their normal and pathological function.

Contents:

Cell evolution and cell biology, human embryonal development (embryology), basic tissues which make up the organs (histology).

Learning activities and teaching methods:

Lectures 54 h and small group exercises 15 h

Recommended or required reading:

A.L. Kierszenbaum: Histology and Cell Biology: an introduction to pathology. Mosby, St Louis, (the latest edition), or J. Heino, M. Vuento: Biokemian ja solubiologian perusteet. WSOY oppimateriaalit, 1. edition (2007)

B. Young, J.S. Lowe, A. Stevens, J.W. Heath: Wheater's Functional Histology, A Text and Colour Atlas. Elsevier, Churchill Livingstone (or similar Atlas of Histology)

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

Additional material among the following books: 1) M. Niemi, K. Väänänen: Ihmisyksilön kehitysbiologia. Kustannus Oy Duodecim, 1993 2) H. Sariola, M. Filander, T. Heino, J. Jernvall, J. Partanen, K. Sainio, M. Salminen, I. Theseleff: Solusta yksilöksi, Kehitysbiologia. Kustannus Oy Duodecim, 2003

Web material:

<http://www.solunetti.fi> histology, pathology and embryology (partly under construction)

<http://www.thieme.com/dyn/ebooklibrary/index.php>

many atlas books, free access from the computers in the internet domain of Oulu University. Handouts of the lectures and practicals.

Assessment methods and criteria:

Participation in the small group practicals. The study module includes final examination . Medical cell and developmental biology and histology together with the study module of Anatomy will make the final grade of Anatomy. (See Anatomy study module)

Grading:

See Anatomy

Person responsible:

Professor Petri Lehenkari (Professor Juha Tuukkanen, leave of absence)

Other information:

Medical and dental students have the same study module .

The students in Medical and Wellness Technology have the same study module in extent of 5 credit points when participating in the lectures (54 h), one microscopy practical and the examination.

353550S: Optional advanced studies in clinical laboratory science, 11,5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Eeva Liikanen

Opintokohteen kielet: Finnish

ECTS Credits:

11,5 ECTS

Language of instruction:

Finnish

Timing:

2nd year autumn and spring term

Learning outcomes:

The student evaluates current research in clinical laboratory science and makes conclusions.

Contents:

According to student's choice, studies in clinical laboratory science and/or laboratory medicine (Faculty of Medicine, other faculties or other universities. Student plans her/his studies (supervisor's approval needed).

Learning activities and teaching methods:

Lectures, seminars, independent studies and/or training 300 hours.

Recommended optional programme components:

Full completion of subject studies in clinical laboratory science.

Recommended or required reading:

Current Papers

Assessment methods and criteria:

A written essay

Grading:

5-1/ fail

Person responsible:

Eeva Liikanen

350003Y: Philosophical foundations for scientific research, 5 op

Opiskelumuoto: General Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen oppimateriaali:

Haaparanta, Leila , , 1986, pakollinen

Sajama, Seppo , , 1993, pakollinen

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay350003Y Philosophical foundations for scientific research (OPEN UNI) 5.0 op

ECTS Credits:

6 ECTS

Language of instruction:

Finnish

Timing:

1st year autumn

Learning outcomes:

Upon completion the student know the most important traditions of philosophy, and their background, knows the philosophical principle of theory development in order to understand scientific methodological studies later.

Contents:

Philosophical foundations of science. Introduction to modern philosophical movements. Scientific concepts and theories. Goals and values of science.

Learning activities and teaching methods:

Lectures, 20 hour and two books.

Recommended or required reading:

Lectures and two books of following:

- Sajama, Seppo. 1993. *Arkipäivän filosofiaa*. Hygieia, Helsinki. and one of following
- Salonen T. 2004. *Tieteenfilosofia*. Lapin yliopisto, Rovaniemi.
- Raatikainen 2004. *Ihmistieteet ja filosofia*. Gaudeamus, Helsinki.
- Haaparanta L. & Niiniluoto I. 1998. *Johdatus tieteelliseen ajatteluun*. Hakapaino Oy, Helsinki

You can check the literature availability at [this link](#)

Assessment methods and criteria:

Examination of lectures and literature.

Grading:

Pass / Fail

Person responsible:

Lecturer

352311A: Philosophy and ethics in clinical laboratory work, 3 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

ECTS Credits:

3 ECTS

Language of instruction:

Finnish

Timing:

Exception: autumn 2011

Learning outcomes:

The student analyses philosophical and ethical issues of clinical laboratory activity. She/he evaluates her/his own ethical reasoning, gets acquainted practical philosophy theories and is able to analyze ethical problems in clinical laboratory work.

Contents:

Philosophical and ethical basic concepts in health sciences. Solution of ethical problems. Ethics in clinical laboratory science research. Professional ethics and ethical guidelines.

Learning activities and teaching methods:

Lectures and seminars 20 hours, independent studies 55 hours

Recommended or required reading:

Hallamaa J. 2003. Lääketieteellisen tutkimuksen etiikka - jotain erityistä? Suomen Lääkärilehti 33, 3239-3242.
 Halila R. 2003. The Role of National Ethics Commissions in Finland. Bioethics 17, 357-368. McQueen M. 1990. Ethics and Laboratory Medicine. Clinical Chemistry 36, 1404-1407. Nyrhinen T & Leino-Kilpi H. 2000. Ethics in the laboratory examination of patients. Journal of Medical Ethics 26, 54-60. Weber L & Bissel M. 1996. Case Studies in Ethics. The troubled phlebotomist: training new employees in an ethical organisation. Clinical Laboratory Management Review. November/December 633-635. Current papers.

You can check the literature availability at [this link](#)

Assessment methods and criteria:

A written essay.

Grading:

5-1/fail

Person responsible:

Eeva Liikanen

Other information:

No substitution by earlier studies

351513P: Replaced basic studies in clinical laboratory science, 11 op

Voimassaolo: 01.08.2006 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Eeva Liikanen

Opintokohteen kielet: Finnish

ECTS Credits:

11 ECTS

352513A: Replaced subject studies in clinical laboratory science, 17 op

Voimassaolo: 01.08.2006 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Eeva Liikanen

Opintokohteen kielet: Finnish

ECTS Credits:

17 ECTS

351008P: Research methods (basic), 2 op

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen oppimateriaali:

Paunonen, M. & Vehviläinen-Julkunen, K, , 1997, pakollinen

Hirsjärvi, Sirkka, , 2007, pakollinen

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay351008P Research methods (basic) (OPEN UNI) 2.0 op

ECTS Credits:

2 ECTS

Language of instruction:

Finnish

Learning outcomes:

The student gets familiar with aims and principles of scientific research and she/he knows the phases of research process.

Contents:

Methodological foundations for scientific research.

Learning activities and teaching methods:

Independent studying

Recommended optional programme components:

If the student has studied this course in another context, e.g. health administration science, student has to study course 351303P Nursing Science Today 2 ECTS.

Recommended or required reading:

Hirsjärvi, S., Remes, P. & Sajavaara, P. 2009. Tutki ja kirjoita. 15th edition. Tammi, Helsinki.

Paunonen, M., & Vehviläinen-Julkunen, K. 1997. (edit.) Hoitotieteen tutkimusmetodiikka. WSOY, juva.

You can check the literature availability at [this link](#)

Assessment methods and criteria:

Exam

Grading:

5-1/ fail

Other information:

The course is substituted to those students who have accomplished the university of applied sciences.

352107A: Research methods I, 6 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen oppimateriaali:

Polit, Denise F. , , 2004, pakollinen

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay352107A Research methods I (OPEN UNI) 6.0 op

ECTS Credits:

6 ECTS

Language of instruction:

Finnish

Timing:

1st year spring term

Learning outcomes:

The student gets familiar with methodological issues and the process of scientific research.

Upon completion the student should be able to:

- formulate a research problem and research purpose and design a research
- review and evaluate scientific literature
- design qualitative and quantitative research methods
- know main questions of reliability and validity
- take care of ethical considerations
- know how to write a research proposal

Contents:

The overview of research process, literature reviews, data collection, analysis of research data, reliability, addressing ethical issues, writing a research proposal.

Learning activities and teaching methods:

Lectures and practice 30 hours, independent studying and exam 130 hours.

Recommended optional programme components:

Research methods (basic).

If the student has studied Research methods I in another context, e.g. Health administration science, Student has to study course 352224A Nursing Science - Health Care System.

Recommended or required reading:

Polit DF & Beck CT. 2008. Nursing Research. Generating and assessing evidence for nursing practice. Lippincott Williams & Wilkins, Philadelphia.

Topical scientific articles.

You can check the availability of literature at [this link](#)

Assessment methods and criteria:

Participation in exercises, working groups and exam.

Grading:

1-5/fail

Person responsible:

Senior lecturers

Other information:

No substitution by earlier studies

353203S: Research methods II, 10 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Tarja Pölkki

Opintokohteen oppimateriaali:

Polit, Denise F. , , 2004, pakollinen

Paunonen, M. & Vehviläinen-Julkunen, K. , , 1997, pakollinen

Morse, Janice M. , , 1995, pakollinen

Janhonen, S & Nikkonen, M , , 2003, pakollinen

Karma, Kai , , 1990, pakollinen

Perttula J. & Latomaa T. , , 2005, pakollinen

Opintokohteen kielet: Finnish

ECTS Credits:

10 ECTS

Language of instruction:

Finnish

Timing:

2nd year spring term

Learning outcomes:

Upon completion the student should be able to:

- know in depth the features and methodological issues in quantitative and qualitative research
- know types/designs for nursing research and apply them in own research
- have a good command of the research process as a whole
- assess questions of reliability and validity and apply them in planning and implementing own research
- being aware of main questions of the ethical issues
- write a research proposal and research report

Contents:

Methodological issues in quantitative and qualitative research, types/designs for nursing research, phases of research process, reliability and validity assessment, ethical issues. Writing a research proposal and research report.

Learning activities and teaching methods:

Lectures and practice 50 hours, group-working 30 hours, independent studying and written essays 190 hours.

Recommended optional programme components:

Research methods (basic), research methods I, candidate thesis. No substitution by earlier studies.

Recommended or required reading:

Polit DF & Beck CT. 2008. Nursing Research. Generating and assessing evidence for nursing practice. Lippincott Williams & Wilkins, Philadelphia (in applied parts).

Janhonen & Nikkonen (eds.) Laadulliset tutkimusmenetelmät hoitotieteessä. WSOY. Helsinki (in applied parts).
Topical literature and scientific articles.

You can check the literature availability at [this link](#)

Assessment methods and criteria:

Participation in exercises, group-working, written essay/examination.

Grading:

5-1/fail

Person responsible:

Senior lectures in nursing science and health administration

353213S: Research methods II, lab, 8 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Tarja Pölkki

Opintokohteen kielet: Finnish

Voidaan suorittaa useasti: Kyllä

353204S: Research seminars, 5 - 8 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

ECTS Credits:

8 ECTS

Language of instruction:

Finnish

Timing:

3rd year autumn and spring term

Learning outcomes:

Student can argue her/his research process. The student writes research proposal.

Contents:

The student participate on three public defence on doctoral thesis, she/he will write (1 page) rapport of each of them. Rapports are given to supervisor of the seminars. The student participates on two research seminars at department. Writing of research proposal.

Learning activities and teaching methods:

Lectures 30 hours.

Recommended optional programme components:

Finished courses: Candidate thesis, Research course and Research methods I and II.

Recommended or required reading:

Literature connected to research proposal.

Assessment methods and criteria:

Research proposal. Writing of three rapports of public defense. The participation of seminars.

Grading:

Pass / Fail

Person responsible:

Lecturer

901007Y: Second Official Language (Swedish), 3 op

Voimassaolo: 01.08.1995 -

Opiskelumuoto: Language and Communication Studies

Laji: Course

Vastuuyksikkö: Language Centre

Opintokohteen kielet: Swedish

Leikkaavuudet:

ay901007Y Second Official Language (Swedish) (OPEN UNI) 3.0 op

Ei opintojaksokuvauksia.

350007Y: Statistical computing, 5 op

Opiskelumuoto: General Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Pentti Nieminen

Opintokohteen oppimateriaali:

Uhari, Matti , , 2001, pakollinen

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay350007Y Applied statistics and ADP (OPEN UNI) 5.0 op

ECTS Credits:

5 ECTS

Language of instruction:

Finnish

Timing:

1st year spring term

Learning outcomes:

The student can design data collection, she/he can enter the data to computer and can use statistical software to analyze the data. The student is able to report results and can critically read research articles

Contents:

Basic concepts. Methods of basic statistical analysis and inference. Statistical software and their use.

Learning activities and teaching methods:

Lectures 12 hours, group work 21 hours.

Recommended or required reading:

Uhari M & Nieminen P. 2001. Epidemiologia ja biostatiikka. Duodecim.

Assessment methods and criteria:

Exam, written report about data analysis and participation in workgroups.

Grading:

Pass / Failed

Person responsible:

Pentti Nieminen, Ph.D., Faculty of Medicine

350005Y: Statistics, 6 op

Opiskelumuoto: General Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Maria Laukkala

Opintokohteen oppimateriaali:

Heikkilä, Tarja , , 2004, pakollinen

Helenius, Hans , , 1989, pakollinen

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay350005Y Statistics (OPEN UNI) 6.0 op

ECTS Credits:

6 ECTS

Language of instruction:

Finnish

Timing:

First year autumn term

Learning outcomes:

Upon completion student get to know quantitative research planning process to get numeric observational data.

Student is able to describe things which are examined by tables, figures and parameters.

Student knows the principles of distribution and test theory and knows how to use statistic reasoning methods and models in quantitative data.

Contents:

The basic concept of statistic. Sampling methods. Observation matrix and scale. one-dimensional distribution and its parameters. Two-dimensional distribution and its interdependence numbers. Random variable and its distribution. Discrete variable and continuous variable. Statistical reasoning. Estimating, significant testing.

Learning activities and teaching methods:

Lectures 40 hours. Individual and group work 50 hours.

Recommended or required reading:

Karjalainen, A. & Laukkala, H. Luentomoniste 2008. Tilastollisen tutkimuksen perusteista.

Heikkilä, T. 1998. Tilastollinen tutkimus. Edita.

Helenius, H. 1989. Tilastollisten menetelmien perustiedot. Statcon Oy.

Läärä, E. & Lammi. 1989. Tilastotieteen perusteet lääketiedettä ja lähialoja varten. Luentomoniste. Kuopion yliopiston ylioppilaskunta.

You can check the literature availability at [this link](#)

Grading:

Pass / Fail

350001Y: Study planning and tutorial, 1 - 3 op

Opiskelumuoto: General Studies

Laji: Course

Vastuuyksikkö: Institute of Health Sciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

ECTS Credits:

2 ECTS

Language of instruction:

Finnish

Timing:

1st year autumn term - 2nd year autumn term

Learning outcomes:

The student knows the structure and aims of health science education. The student will be able to plan his/her own studies.

Contents:

Introduction to university studies: the structure of the education, its aims and contents. Study methods, individual study plan and learning assessment.

Learning activities and teaching methods:

Information sessions, student tutoring, teacher tutoring, independent studying, and workshops.

Recommended or required reading:

Curriculum

Assessment methods and criteria:

Individual study plan and its continuous self assessment, participation in student tutoring, teacher tutoring and workshops. Individual study plan will be turned in to teacher tutor by the end of autumn term.

Grading:

Pass / fail

Person responsible:

Assistant and teacher tutors