



Faculty of Medicine

BIMM34, Biomedicine:Biomedical Profession, 15 credits

Biomedicin: Biomedicinsk profession, 15 högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Committee for Biomedical, Medical and Public Health Education on 2015-05-27 to be valid from 2015-07-01, autumn semester 2015.

General Information

The course is an elective component within semester 3 of the Master of Medical Science programme in Biomedicine.

Language of instruction: English

Main field of studies

Biomedicine

Depth of study relative to the degree requirements

A1F, Second cycle, has second-cycle course/s as entry requirements

Learning outcomes

Knowledge and understanding

On completion of the course, the students shall be able to

- account for key theory of science issues focusing on hypothesis, empirical data, experiment and observation
- account for the process of research publishing and critically analyse different publishing models
- explain how research is evaluated

Competence and skills

On completion of the course, the students shall be able to

- plan a research project in biomedicine and describe it in a project plan
- independently perform systematic literature searches and searches in bioinformatics databases and argue for the chosen strategy
- use a reference management program
- write a short research application and argue for its structure and composition
- write a popular science text taking the reader's perspective into account
- write an application for ethical review
- make a research presentation taking the listener's perspective into account
- analyse verbal and non-verbal communication in oral presentations and give and take constructive feedback
- propose, execute, interpret and critically review basic statistical analyses within different themes: non-parametric methods, regression and variance analysis, binary outcomes, correlation, diagnostic tests, experimental design and studies of reliability

Judgement and approach

On completion of the course, the students shall be able to

- reflect on their own and their fellow students' performance with regard to research communication for knowledgeable researchers as well as for educated members of the public
- reflect on ethical and statistical considerations in medical research
- reflect on the process from pharmaceutical idea to finished product

Course content

The aim of the course is to prepare students for research and development work, partly to enable them to complete a degree project within the programme and partly to prepare them for future work within the academy as well as in pharmaceutical and other business and industry. The course content corresponds to the compulsory course component for doctoral students admitted at the Faculty of Medicine, Lund University.

The following components are included in the course:

- rules and principles of research ethics, Swedish legislation on ethical review, ethical considerations with regard to research and immaterial rights
- regulations with regard to gene-modified microorganisms (GMM) and an orientation in good laboratory practice (GLP)
- research within the life science industry (a seminar series with invited representatives from business and industry)
- project plan (theory and practice)
- systematic information searches in databases, bibliometrics
- oral research presentations including an orientation in theories of
- cognitive and behavioural science, focusing on non-verbal communication patterns in the context of presentations, stress reactions and voice management,
- academic writing (research applications) including popular science summaries,
- evaluation of research results, peer review and constructive criticism
- publishing methods including graphical tools
- biostatistical methods including statistical description (average, standard deviation,

- normal distribution, confidence interval, reference range), statistical analysis (significance, strength, hypothesis testing, p-value, transformation, parametric and non-parametric tests, paired and unpaired tests, correlation, regression, Anova), clinical information value (sensitivity and specificity, roc curves, predictive values). An introduction to epidemiological research and SPSS.
- basic bioinformatics (databases, sequence alignment, finding sequences sequence analysis, protein structure)
- supervision at a laboratory

Course design

The course activities mainly require independent and active study. A few lectures are provided and are mostly linked to practical exercises and individual and/or group assignments. Case study exercises occur. Homework assignments are usually in the form of preparations for oral and written presentations. An important component of the course consists of seminars requiring active student participation.

Assessment

The learning outcomes of the course are assessed on the basis of five thematic portfolios as follows:

The portfolio on biomedicine and research ethics is used to assess the outcomes on ethics in all categories of learning outcomes through assignments, a written exam and active participation in group exercises and seminars.

The portfolio on the theory and practice of research communication is used to assess the outcomes in all categories of learning outcomes through assignments and active participation in group exercises and seminars.

The portfolio on oral communication is used to assess the outcomes in the categories of competence and skills and judgement and approach through oral presentations, active participation in exercises and constructive feedback on fellow students' performance.

The portfolio on biomedical statistics is used to assess the outcomes on statistics in all categories of learning outcomes through assignments and a written exam.

The course portfolio is used to assess the outcomes on bioinformatics, research within the life science industry, supervision and research planning in all categories of learning outcomes through assignments and active participation in group exercises and seminars

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass.

Entry requirements

To be admitted to the course, students must have at least 60 credits in the Master of Science programme in Biomedicine.

Further information

The course corresponds to the compulsory third-cycle courses on research ethics, research communication, oral communication, applied statistics II specialising in biomedicine and laboratory medicine (as well as some components from the specialisation in clinical research) at the Faculty of Medicine, Lund University. Students admitted to research studies must apply to have the credits for this course transferred to the research studies programme.

The course largely corresponds to the previous course BIMM32 Biomedicine- The Profession.

Subcourses in BIMM34, Biomedicine:Biomedical Profession

Applies from H15

- 1501 Biomedical research ethics, 3,0 hp
Grading scale: Fail, Pass
- 1502 Scientific communication in theory and practice, 1,5 hp
Grading scale: Fail, Pass
- 1503 Oral communication, 1,5 hp
Grading scale: Fail, Pass
- 1504 Biomedical statistics, 3,0 hp
Grading scale: Fail, Pass
- 1505 Course portfolio, 6,0 hp
Grading scale: Fail, Pass