Biostatistical Modelling, 5.0 credits

Biostatistisk modellering, 5.0 hp

Third-cycle education course

8FO0111

Department of Health, Medicine and Caring Sciences

Valid from: Spring 2024

Approved by
The Research and PhD studies Committee

Approved
2019-09-23

Registration number
LiU-2019-01975

Entry requirements

Entry requirement for studies on third-cycle education courses

- second-cycle degree,
- 240 credits in required courses, including at least 60 second-cycle credits, or
- acquisition of equivalent knowledge in some other manner Specific entry requirements for this course
- approved course Basic biostatistics (4 credits) or equivalent

Learning outcomes

After completion of the course, the students should be able to:
Knowledge and understanding

- Account for statistical models related to different types of variables
- Account for statistical methods used to detect different types of errors or data discrepancy
- Account for probability distributions linked to the models included in the course

Competence and skills

- Build a valid statistical model with multiple variables
- Correctly interpret results from a model in a statistical program, as well as from scientific articles

Judgement and approach

- Critically appraise how statistical models have been applied in scientific articles

Contents

The course covers how to build statistical models to either adjust for errors in the data or explain as much of the variation as possible for a variable. The course covers several different variants of regression analysis and variance analysis as well as survival analysis. Multivariate analysis models are covered in brief.
The course focuses on students' knowledge about when to use a specific method, which variables can be used in the model, how to build a statistical model in a statistical program and how to interpret the results correctly.
The course addresses the application of statistical models in scientific articles. The course also covers how to check data for errors, and different methods of pre-processing variables before they are used in a statistical analysis.

Educational methods

The pedagogical approach applied at the Faculty of Medical and Health Sciences is student centered, problem-based learning (PBL). The student takes responsibility for his/her own learning and seeks and evaluates information and knowledge based on own queries and formulated problems. The role of the teacher is to guide and support the students.
Educational methods applied in this course are lectures followed by practical training using statistical software. Students perform individual tasks and group works followed-up by the teacher in the working sessions and in specific Question & Answer sessions.

Examination

The examination consists of written individual tasks distributed successively during the course and submitted in connection with the end of the course, and a group work that is presented orally at a mandatory session at the end of the course.
Students who cannot attend the presentation may submit their version of the group work in writing.
Students who fail are offered one re-examination occasion in close connection to the course. After that participation in a coming course examination is offered. The re-examination should be equally comprehensive as the ordinary examination.
Change of examiner
Students who have failed the course or part of the course twice are entitled to request another examiner for the following examination occasion.
Grading:

Pass or Fail

Grading

Two-grade scale

Course literature

A list of recommended literature will be provided by the course coordinator before the start of the course.

General information

On the student's request, course certificate is issued by the course examiner.
The course is planned and carried out according to what is stated in this syllabus.
Course evaluation, analysis and suggestions for improvement should be fed back to the Research and PhD studies Committee (FUN) by the course coordinator.
If the course is withdrawn or is subject to major changes, examination according to this syllabus is normally offered at three occasions within/in close connection to the two following semesters.