Statistical Methods

Single subject and programme course

6 credits

Statistical Methods

732A93

Valid from: 2016 Autumn semester

Determined by
The Quality Board at the Faculty of Arts and Sciences

Date determined
2016-04-13

Offered for the last time
Autumn semester 2023

Replaced by
732A83

Main field of study
Statistics

Course level
Second cycle

Advancement level
A1X

Course offered for
- Master´s Programme in Statistics and Data Mining

Entry requirements
A bachelor's degree in one of the following subjects: statistics, mathematics, applied mathematics, computer science, engineering or a similar degree. Completed courses in calculus, linear algebra, statistics and programming are also required. Documented knowledge of English equivalent to Engelska B/Engelska 6.

Intended learning outcomes
After completion of the course the student should be able to:
- use knowledge of the common statistical distributions for building statistical models,
- demonstrate a good understanding of the main principles within point estimation, interval estimation and hypothesis testing,
- demonstrate a good understanding of the main concepts of Bayesian analysis,
- build linear regression models, check their uncertainty and perform model comparison,
- apply methods for sampling from large finite populations,
- apply the basic imputation methods for model building and estimation.

Course content

A theoretical basis of statistical concepts and methods that are required for qualified work and research in statistics.
The course covers:
- concept of probability,
- random variable, common statistical distributions and their properties,
- point- and interval estimation,
- hypothesis testing,
- simple and multiple linear regression, t-test and F-test; Residual and outlier analyses,
- likelihood, prior and posterior distribution, and Bayes theorem,
- concept of Markov chains,
- sampling with and without replacement,
- imputation for model building.

Teaching and working methods

The teaching comprises lectures, seminars, and computer exercises complemented by self-studies. The lectures are devoted to presentations of concepts, theories and methods. The computer exercises provide practical experience of statistical analysis. The seminars comprise presentations and discussions of various assignments.

Examination

Written reports on home assignments. One final written examination. Detailed information about the examination can be found in the course's study guide.

Students failing an exam covering either the entire course or part of the course two times are entitled to have a new examiner appointed for the reexamination.

Students who have passed an examination may not retake it in order to improve their grades.

Students failing an exam covering either the entire course or part of the course twice are entitled to have a new examiner appointed for the reexamination.

Students who have passed an examination may not retake it in order to improve their grades.

Grades

ECTS, EC

Other information

Planning and implementation of a course must take its starting point in the wording of the syllabus. The course evaluation included in each course must therefore take up the question how well the course agrees with the syllabus. The course is carried out in such a way that both men´s and women´s experience and knowledge is made visible and developed.

Planning and implementation of a course must take its starting point in the wording of the syllabus. The course evaluation included in each course must therefore take up the question how well the course agrees with the syllabus.

The course is carried out in such a way that both men´s and women´s experience and knowledge is made visible and developed.

Department

Institutionen för datavetenskap