Bayesian Statistics

Single subject and programme course

7.5 credits

Bayesiansk statistik

732G43

Valid from: 2017 Autumn semester

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

Date determined
2017-09-22

Main field of study
Statistics

Course level
First cycle

Advancement level
G2X

Course offered for
- Bachelor´s Programme in Statistics and Data Analysis

Intended learning outcomes
After completion of the course, the student should be able to
- describe the main concepts in Bayesian statistics
- explaine the differences between frequentist and Bayesian statistics
- use the most common statistical methods in Bayesian inference
- choose suitable models for Bayesian inference of various practical problems
- use statistical software to solve statistical problems
- compare the results from frequentist and Bayesian methods on given practical problem

Course content
The course consists of general concepts and methods in Bayesian statistics. In addition, MCMC is implemented as a tool to estimate more complicated models in which an analytical form of the posterior is not possitble.
Contents:
- subjective probabilities
- Bayes' theorem
- prior distribution
- sensitivity analysis of prior distributions
- likelihood function
- posterior distribution
- credible interval
- model evaluation
- MCM

Teaching and working methods
The teaching comprises lectures, tutorials, seminars, and computer sessions. Homework and independent study are a necessary complement to the course.

Examination

Written examination. Written reports. Detailed information about the examination can be found in the courses study guide.

If the LiU coordinator for students with disabilities has granted a student the right to an adapted examination for a written examination in an examination hall, the student has the right to it. If the coordinator has instead recommended for the student an adapted examination or alternative form of examination, the examiner may grant this if the examiner assesses that it is possible, based on consideration of the course objectives.

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

Three-grade scale, U, G, VG

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.

Department

Institutionen för datavetenskap