

Syllabus

for course at advanced level

Bayesian Statistics I
Bayesiansk statistik I

**7.5 Higher Education
Credits**
7.5 ECTS credits

Course code:	ST422A
Valid from:	Autumn 2010
Date of approval:	2010-05-19
Department	Department of Statistics
Main field:	Statistics
Specialisation:	A1N - Second cycle, has only first-cycle course/s as entry requirements

Decision

This syllabus was approved by the Board of the Department of Statistics on May 19, 2010.

Prerequisites and special admittance requirements

90 Higher Education Credits (HEC) in Statistics or equivalent. English B or equivalent.

Course structure

Examination code	Name	Higher Education Credits
11BE	Bayesian statistics I	7.5

Course content

The course consists of one course unit:

1. Bayesian Statistics I

Bayesian analysis is an umbrella term for the methods using Bayes' theorem to combine collected data with other sources of information (earlier studies, experts' reports etc.) in order to form a combined probability interpretation of an unknown/uncertain phenomena.

This course gives an introduction to Bayesian analysis with focus on the understanding of basic concepts and methods. Simple stylized problems are studied in detail together with a more general analysis of complex realistic problems. The course also gives an introduction to the modern simulation-based computational methods used in Bayesian practical work.

The concepts that are more thoroughly treated are:

Subjective probabilities. Likelihood. Prior and posterior distribution. Model comparison. Model evaluation. Modern simulation methods.

The content of the course gives extended knowledge of great use in applications of statistical methods in several fields.

Learning outcomes

After completing the course the student should be able to:

- give an account of the difference between subjective and frequency-based probability interpretation
- design a statistical problem from a Bayesian point of view
- solve basic standard problems with analytical Bayesian methods

- solve basic statistical problems with simulation-based computational methods

Education

Teaching forms may consist of lectures, exercises, seminars, computer sessions and tutoring. Some compulsory attendance and other mandatory elements may be required.

Forms of examination

- a. Examination will be done by assessing the learning outcomes. Examination will be in the form of a written test.
- b. Grading is done according to a seven-point scale related to the specified learning outcomes:
A = Excellent
B = Very Good
C = Good
D = Satisfactory
E = Adequate
Fx = Inadequate
F = Totally Inadequate
- c. The assessment criteria for the course will be distributed at the beginning of the course.
- d. In order to pass the course, the grade E or higher is required on the course unit.
- e. Students who receive the grade Fx or F on an examination are entitled to at least four additional examinations to achieve the lowest grade E as long as the course is still given.

Students who receive the grade E or higher on an examination may not retake this examination in order to attempt to achieve a higher grade.

Students who receive the grade Fx or F on an examination twice by the same examiner are entitled to request that a different examiner be appointed to set the grade of the examination. Such a request must be in writing and sent to the head of the department.

Here, the term examination denotes all compulsory elements of the course.

Interim

Students can request examination in accordance with this syllabus up to three times during a period of two years after the course is no longer given. Such a request must be in writing and sent to the head of the department. Here, the term examination denotes all compulsory elements of the course.

Misc

The course has previously been given under the course code ST402A.

Required reading

The course literature is described in an appendix to the syllabus.