MSF100   Statistical Inference Principles, 7.5 credits

Principer för statistisk slutledning, 7,5 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Department of Mathematical Sciences on 2018-02-09 to be valid from 2018-02-09, spring semester of 2018.

Field of education: Science 100%

Department: Department of Mathematical Sciences

Position in the educational system

The course can be part of the following programme: 1) Mathematical Sciences, Master's Programme (N2MAT)

Main field of studies	*Specialization*
Mathematical Statistics	A1F, Second cycle, has second-cycle course/s as entry requirements

Entry requirements

Knowledge corresponding to the course *MSG200 Statistical Inference* is required. In addition, knowledge corresponding to at least 15 credits in mathematical statistics at the second cycle level is required.

Learning outcomes

On succesful completion of the course, the student will be able to

- describe the mathematical foundations of point estimation, hypothesis testing, interval estimation and asymptotic evaulation

- use the above concepts in various practical applications
- evaluate the methods.

Course content

The course takes an advanced and rigorous look at mathematical statistics and approaches to inference. In addition to covering central concepts and models of statistics, differing philosophical perspectives on scientific inference are discussed and compared.

The main topics of the course are:

- exponential families of probability distributions,
- the sufficiency and likelihood principles of data reduction,
- maximum likelihood estimators and Bayes estimators,
- EM algorithm,
- likelihood ratio tests and Bayesian tests,
- most powerful tests,
- interval estimators,
- asymptotic evaluation.

Form of teaching

Lectures and exercise sessions.

Language of instruction: English

Assessment

Written exam (5 credits). Written assignments (2.5 credits).

If a student, who has failed the same examined component twice, wishes to change examiner before the next examination, a written application shall be sent to the department responsible for the course and shall be granted unless there are special reasons to the contrary (Chapter 6, Section 22 of Higher Education Ordinance).

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).

Course evaluation

At the end of the course the students will be asked to answer a questionnaire. The results of and possible changes to the course will be shared with students who participated in the evaluation and students who are starting the course.