

MSG200, STATISTICAL INFERENCE, 7.5 credit points

Level: undergraduate

1. Authorisation

The course plan has been authorised by the vice-dean of the Department of Mathematical Sciences on November 9, 2006, to be valid from July 1, 2007.

Educational field: Mathematical Sciences

2. Educational context

The course is part of the Bachelor Program in Mathematical Sciences. It is also open for students outside the program who meet the course prerequisites.

3. Prerequisites

First course in probability and statistics worth of 7.5 credits.

4. Goals and learning outcomes

After finishing the course the student should be able to

- summarize multiple sample data in a meaningful and informative way,
- recognize several basic types of statistical problems corresponding to various sampling designs,
- estimate relevant parameters and perform appropriate statistical tests for multiple sample data sets.

5. Course description

This is a second course in mathematical statistics introducing the following key topics of statistical inference:

- sampling designs and summarizing data
- maximum likelihood estimation of parameters, bootstrap
- parametric and non-parametric inference
- the analysis of variance, linear least squares, categorical data
- elements of the decision theory and Bayesian inference.

6. Literature

Mathematical statistics and data analysis by John A. Rice.

Lecture notes and home assignment solutions downloadable from the internet.

7. Assessment

Written examination. Bonus points for an optional laboratory assignment.

8. Grades

The grade levels are Fail (U), Pass (G), and High Pass (VG). A wish for an ECTS grade should be reported to the examiner at the beginning of the course.

9. Course evaluation

In the middle of the course the teacher arranges a feedback discussion with the students and at the end of the course the students will be asked to answer a questionnaire. The results of the questionnaire will be processed by the teacher together with student representatives.

10. Additional information