



## DEPARTMENT OF MATHEMATICAL SCIENCES

### **MSG200 Statistical Inference, 7.5 credits**

Statistisk slutledning, 7,5 högskolepoäng

*First Cycle*

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#### **Confirmation**

This course syllabus was confirmed by Department of Mathematical Sciences on 2019-01-10 to be valid from 2019-01-20, spring semester of 2019.

*Field of education:* Science 100%

*Department:* Department of Mathematical Sciences

#### **Position in the educational system**

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.

The course can be part of the following programme: 1) Bachelor's Programme in Mathematics (N1MAT)

*Main field of studies*

Mathematical Statistics

*Specialization*

G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

#### **Entry requirements**

Knowledge corresponding to the courses *MMG200 Mathematics 1*, *MMG300 Multivariable Analysis* and *MSG110 Probability Theory*.

#### **Learning outcomes**

After passing 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

### **Course content**

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.

### **Form of teaching**

Lectures and exercise-sessions. Hand-in assignments that give bonus points for the exam.

*Language of instruction:* English

### **Assessment**

Written exam.

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**

Oral and/or written course evaluation will be performed. The results of the evaluation will be communicated to the students and will serve as a guide for the development of the course.