HF1906 Mathematical Statistics 5.0 credits

Matematisk statistik

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for HF1906 valid from Autumn 2018

Grading scale

A, B, C, D, E, FX, F

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Basic knowledge in calculus and linear algebra.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After completion of the course the student should be able to

- define and explain basic concepts in descriptive statistics and probability theory
- solve some standard problems that include standard discrete and continuous random distributions
- construct a confidence interval to estimate a population mean
- apply the central limit theorem
- present data graphically in a suitable way
- compute point estimates and confidence intervals
- use suitable software (for example Matlab or Excel) for solving problems and applications mentioned above

Course contents

- Statistics: Descriptive statistics.
- Sets and combinatorics. Probability theory, basic notations.
- Sample spaces, dependent and independent events. Conditional probability. The theorem of total probability.
- Stochastic variables. Expected value, variance and standard deviation.
- Discrete stochastic variables.
- Uniform, hypergeometric distribution.
- The binominal and Poisson distributions.
- Continuous random variables.
- Uniform distribution, exponential and normal distribution.
- Functions of random variables. The central limit theorem.
- Point estimation and confidence intervals for means.

Course literature

Kerstin Vännman, Matematisk statistik, ISBN:9789144016900

Examination

- TEN1 - Examination, 5.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.