HF1004 Mathematics and Statistics 7.5 credits

Matematik 2 med 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 HF1004 valid from Autumn 2007

Grading scale

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

Education cycle

First cycle

Main field of study

Mathematics,Technology

Specific prerequisites

Basic knowledge in calculus and linear algebra corresponding to the courses Mathematics I, HF1901 or HF1903

Language of instruction

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

Intended learning outcomes

To enhance the mathematical skills from Mathematics 1 and thus build sound foundations for further studies in the courses of the program. To give basic knowledges in the fields of mathematical statistics, probability theory, differential equations and complex numbers.

After the course the student should be able to

. use the fundamental concepts of mathematical statistics, probability theory, differential equations and complex numbers.

. write mathematical texts using notations connected to these fundamental concepts.

. set up models expressed in terms of the fundamental concepts.

. use classical methods of problem solving in these fields of mathematics.

Course contents

- Complex numbers: The complex plane. Modulus and argument.Polar, rectangular and exponential form. Eulers and de Moivres theorems. Algebraic equations.
- Differential equations: Separable differential equations. First order differential equations. Linear differential equations with constant coefficients. Applications.
- Statistics: descriptive statistics.
- Probability theory: Dependent and independent events. Conditional probability.
- Discrete and continuous stochastic variables: Expected value, variance and standard deviation.
- Distributions: Uniform, hypergeometric, binomial, Poisson, exponential and normal distribution
- Functions of random variables. The central limit theory.
- Point and interval estimation.

Examination

- TEN1 - Examination, 3.5 credits, grading scale: A, B, C, D, E, FX, F
- TEN2 - Examination, 4.0 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.