SF1696 Calculus in One Variable 7.5 credits

Envariabelanalys

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

Establishment

Grading scale

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

Education cycle

First cycle

Main field of study

Mathematics, Technology

Specific prerequisites

Basic requirements and SF1695Baskursimatematik.

Language of instruction

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

Intended learning outcomes

After completing the course, the student should be able to

• Use concepts,theorems and methods to solve, and present solutions to, problems within the parts of single variable calculusand, including its applications,described by the course content.

• Use programming to solve problems within the parts of single variable calculus, including its applications, described by the course content.

• Read and comprehend mathematical text.

with the purpose to:

• Develop a good understanding of fundamental single variable calculus and being able to use it to mathematically model applied problems.

• Develop skill in visualizing central concepts and solve applied problems with programming, as well as presenting the results in a clear manner.

Course contents

Function, domain, range. Increasing and decreasing functions.Inverse functions. The class of elementary functions. Limits. Continuity, theorems on continuous functions. Derivative, rules of differentiation, the mean value theorem and their applications. Linear differential equations with constant coefficients and their applications. The Riemann integral, primitive functions, the fundamental theorem of calculus, techniques of integration. Riemann sums, geometric and other applications of integrals, improper integrals. Sequences and series. Numerical treatment of equations, ordinary differential equations, and integrals.

Examination

- DAT1 - Computer laboration, 1.5 credits, grading scale: P, F
- TEN1 - Exam, 6.0 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.

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

Other requirements for final grade

Written examination, possibly with the option of continuous assessment.

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.