SF1685 Calculus in One Variable 7.5 credits

Envariabelanalys

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

Establishment

Course syllabus for SF1685 valid from Autumn 2019

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Basic requirements.

Language of instruction

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

Intended learning outcomes

After the course the student should be able to

- use concepts. theorems and methods to solve and present solutions to problems within the parts of one variable caclulus described by the course content,
- read and comprehend mathematical text.

Course contents

Function, function graph, domain, range. Increasing and decreasing functions, odd and even functions. Inverse functions. The class of elementary functions. Trigonometric functions, exponential and logarithmic functions. Power laws, logarithms. Limits, rules for calculating limits, standard limits. Continuity, theorems on continuous functions. Derivative, rules of differentiation, the mean value theorem, implicit differentiation, applications: rate of change, linear approximation, tangent, extreme value problems, sketching the graph of a function, l'Hôpital's rule. Taylor's formula with error estimates. Linear differential equations with constant coefficients and their applications. The Riemann integral, primitive functions, the fundamental theorem integral calcolus, variable substitution, integration by parts, partial fractions. Riemann sums, geometric and other applications of integrals, improper integrals, estimates and convergence. Paramterization of curves and arc length. Sequences and series, convergence criteria, the Cauchy integral test. Taylor series.

Course literature

Announced no later than 4 weeks before the start of the course on the course web page.

Examination

- TEN1 - Examination, 7.5 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.

The examiner decides, in consultation with KTHs Coordinator of students with disabilities (Funka), about any customized examination for students with documented, lasting disability.

Other requirements for final grade

Written exam, possibly with the possibility of continuous examination.

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.