



# SF1673 Analysis in one variable

## 7.5 credits

### Analys i en variabel

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 SF1673 valid from Autumn 2019

### Grading scale

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

### Education cycle

First cycle

### Main field of study

Technology

### 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 calculus 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 calculus, variable substitution, integration by parts, partial fractions. Riemann sums, geometric and other applications of integrals, improper integrals, estimates and convergence. Parameterization of curves and arc length. Sequences and series, convergence criteria, the Cauchy integral test. Taylor series.

## Specific prerequisites

Basic requirements.

## Course literature

The literature is published on the course webpage no later than four weeks before the course starts.

## Examination

- TEN1 - Final Exam, 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.

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

## Other requirements for final grade

Written exam.

## 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.