



# SF1633 Differential Equations I

## 6.0 credits

### Differentialekvationer I

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 SF1633 valid from Autumn 2019

### Grading scale

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

### Education cycle

First cycle

### Main field of study

Mathematics, 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 the solution to, problems within the parts of the theory of differential equations that are described by the course content;
- read and comprehend mathematical text.

## Course contents

- First order ordinary differential equations: Fundamental theory and concepts, separable and linear equations, modeling.
- Linear ordinary differential equations of higher order and systems of linear ordinary differential equations: Fundamental theory, finding solutions in specific cases, in particular the case of constant coefficients, discussion of properties of solutions.
- Autonomous systems: Fundamental concepts, stationary solutions and their stability, applications to dynamical systems and scientific modeling.
- Integral transforms: Laplace transform and Fourier series, and their application to differential equations.
- Introduction to partial differential equations: Solution of classical boundary value problems.

## Specific prerequisites

Completed basic course SF1626 Calculus in Several Variable or SF1674 Multivariable Calculus.

## Course literature

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

## Examination

- TEN1 - Examination, 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.

The examiner, in consultation with the KTH coordinator for disability (Funka), decides on any adapted examination for students with documented, permanent disability.

## Other requirements for final grade

Written exam, possibly with 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.