



Course syllabus

Faculty of Technology

Department of Mathematics

1MA132 Analys för ingenjörer, 7,5 högskolepoäng

Calculus for engineers, 7.5 credits

Main field of study

Mathematics

Subject Group

Mathematics

Level of classification

First Level

Progression

G1F

Date of Ratification

Approved 2014-08-26

Revised 2015-11-03 by Faculty of Technology.

The course syllabus is valid from spring semester 2016

Prerequisites

1MA131 Basic Mathematics for Engineers or the equivalent

Objectives

After completing the course, the student should be able to solve problems, perform calculations, and conduct lines of reasoning within the part of mathematics that is covered by the course, and to communicate those solutions, calculations, and reasonings in writing.

Content

- Derivatives and function studies: Definition of derivative, rules for calculation, the derivatives of the elementary functions, the Mean-Value Theorem, extreme value problems, sketching the graph of a function, asymptotes.
- Taylor expansions and Taylor series with applications: Maclaurin expansions of elementary functions and limit computations, estimates of the remainder term
- Integrals: Antiderivatives, definition of integral, the Fundamental Theorem of Calculus, the Mean-Value Theorem for Integrals, integration by parts, substitutions, integrals of rational functions, improper integrals
- Applications of integrals: Volumes, centers of mass, arc lengths, rotation areas
- Differential equations: First order linear DE, separable DE, second order linear DE with constant coefficients, applications

Type of Instruction

Lectures and seminars.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

The student's knowledge is assessed in the form of a written exam.

On request, students may have their credits translated to ECTS-marks. Such a request must be sent to the examiner before the grading process starts.

Course Evaluation

A course evaluation will be carried out at the end of the course in accordance with the guidelines of the University. The result of the course evaluation will be filed at the department.

Required Reading and Additional Study Material

Månsson J., Nordbeck P. *Endimensionell analys*, Studentlitteratur, latest edition.
185 (393) pages

Månsson J., Nordbeck P. *Övningar i endimensionell analys*, Studentlitteratur, latest edition.
119 (207) pages