Linnæus University

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 2017-11-13 by Faculty of Technology. Removal of ECTS-grading scale.
The course syllabus is valid from spring semester 2018

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.

Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

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