



Course syllabus

Faculty of Technology
Department of Mathematics

1MA452 Flervariabelanalys, 7,5 högskolepoäng
Analysis of several variables, 7.5 credits

Main field of study

Mathematics

Subject Group

Mathematics

Level of classification

First Level

Progression

G1F

Date of Ratification

Approved 2014-10-03

Revised 2019-03-13 by Faculty of Technology. Assessment methods are revised.
The course syllabus is valid from autumn semester 2019

Prerequisites

1MA403 Vector Geometry 7.5 credits, and 1MA404 Calculus II 7.5 credits or 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 these solutions, calculations, and reasonings in writing
- describe definitions, formulate and prove theorems that are central to the course.

Content

The course comprises:

- open, closed and compact sets in \mathbb{R}^n ;
- functions of several variables;
- limits of functions of several variables;
- continuity;
- continuous functions on compact sets;
- partial derivatives;
- optimization of functions of several variables;
- differentiability;
- the Chain Rule;
- gradient and directional derivatives;

- the inverse and implicit functions theorems;
- double integrals.

Type of Instruction

Lectures and seminars.

Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.

The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as failed.

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.

Credit Overlap

The course cannot be included in a degree along with the following courses of which the content fully, or partly, corresponds to the content of this course: 1MA152

Analysis of several variables, 7.5 credits

Other

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Required Reading and Additional Study Material

R.A. Adams, C. Essex,
Calculus - A Complete Course, Pearson Education, 2013.

Supplementary literature

Lars-Christer Böiers, Thomas Claesson. Arne Persson, Lars-Christer Böiers, *Analys i flera variabler*, Studentlitteratur, 2005.

Övningar i Analys i flera variabler, Studentlitteratur, 2007.