Faculty of Science

MATB13, Mathematics: Analysis in Several Variables, 15 ECTS credits
Matematik: Flervariabelanalys, 15 högskolepoäng
First Cycle / Grundnivå

Confirmation
The course syllabus was confirmed by the Education Committee of the Faculty of Science 19-11-2007 and has been revised 27-04-2011. The syllabus is valid from 27-04-2011, Autumn Semester of 2011.

General information
The course is an optional course at the First cycle in a Bachelor’s degree in science.

Language of instruction: Swedish or English. When needed, the entire course will be given in English.

Main Field of Studies
Mathematics

Specialisation
G1F, First cycle, has less than 60 credits course/s at the first cycle as admission requirements

Learning outcomes
The aim of the course is that students on completion of the course should have acquired the following knowledge and skills:

Knowledge and understanding

On completion of the course, the students shall:

- be able to use and describe the theory and applications of differential and integral calculus for functions of several variables
- be acquainted with the mathematical notions and methods brought up within the course
Skills and abilities

On completion of the course, the students are expected to:

- have developed an ability to interpret relevant information and to independently identify, formulate, and solve problems concerning real valued functions of several variables,
- have developed a good skill and ability to handle problems within differential and integral calculus for functions of several variables,
- have developed their ability to identify the logical structure of mathematical arguments and to prove mathematical statements,
- have developed their ability to communicate mathematics in spoken and written form

Assessment skills and approach

On completion of the course, the students are expected to:

- be able to appreciate and use formal mathematical concepts
- have acquired basic knowledge to be prepared for further studies of mathematics

Course content

- Continuous functions of several variables, optimization.
- Differentiable functions. Gradient and directional derivative, extreme values
- Variable substitution. The inverse function theorem. Implicit functions.

Course implementation

Teaching consists of lectures and group exercises.

Course examination

Examination consists of a written test and, in connection with this, an oral examination. Oral examination is held only for those who passed the appurtenant written test. Students who fail the ordinary examination are offered a re-examination shortly after.

Grading scale

The grading scale consists of the grades Fail, Pass, Pass with distinction. In order to pass the entire course, it is required to pass the written test as well as the oral examination. The final grade is determined by the results on the different parts of the examination.

Admission requirements

To be eligible for the course requires basic eligibility and the courses MATA14 Analysis 1, 15 ECTS credits, MATA15 Algebra 1, 15 ECTS credits, or corresponding.

Additional information

The course can not be credited as part of a degree along with MAT245 Flervariabelanalys, 10p.