Linnæus University

Course syllabus

Faculty of Technology

Department of Mathematics

2MA402 Fördjupad analys, 7,5 högskolepoäng
2MA402 Calculus advanced course, 7.5 credits

Main field of study
Mathematics

Subject Group
Mathematics

Level of classification
First Level

Progression
G2F

Date of Ratification
Approved by Faculty of Technology 2020-11-09
The course syllabus is valid from autumn semester 2021

Prerequisites
1MA465 Multivariable calculus and vector calculus and 1MA907 Linear algebra
advanced course or corresponding courses

Objectives
After completing the course, the student is expected to be able to

- solve problems, perform calculations and arguments in the part of mathematics
  covered by the course, and communicate these solutions, calculations and
  reasoning in writing
- explain definitions and formulate and prove theorems that are central to the
  course.

Content
The course treats analysis in the Euclidean space R^n.

- Differentiable functions, uniform continuity
- Topology, Bolzano-Weierstrass' theorem, continuous functions on compact sets
- Pointwise and uniform convergence, Weierstrass M-test
- Taylor expansion and optimization
- The Riemann integral, integration of parameter-dependent functions, Jordan

measurable sets, generalized integrals

Type of Instruction
Lectures and exercises

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

The grade A is the highest grade, and the remaining grades follow in decreasing order where E is the lowest grade to pass. The grade F means that the student's performance is considered insufficient to pass.

The examination is a written exam.

Repeat examination is offered in accordance with Local regulations for courses and examination at the first and second-cycle level at Linnaeus University.

If the university has decided that a student is entitled to special pedagogical support due to a disability, the examiner has the right to give a customized exam or to have the student conduct the exam in an alternative way.

Course Evaluation
During the course or in close conjunction with the course, a course evaluation is carried out. Results and analysis of the course evaluation are promptly presented as feedback to the students who have completed the course. Students who participate during the next course instance receive feedback at the start of the course. The course evaluation is carried out anonymously.

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

Mandatory literature

Jerry Shurman, *Calculus and analysis in Euclidean spaces*, Springer, 2016, 300/500 pages. ISBN 978-3-319-49314-5

Material from the department