Course syllabus

Introduktion till reell analys
Introduction to Real Analysis

FMAA60, 7,5 credits, G1 (First Cycle)

Valid for: 2023/24
Faculty: Faculty of Engineering, LTH
Decided by: PLED F/Pi
Date of Decision: 2023-04-18

General Information

Elective for: C1, D1, F1, I1, M1, MD1, N1, Pi1, W1
Language of instruction: The course will be given in Swedish

Aim

To supplement the course in single variable calculus with theory for which there is no room within standard course. The course is meant for beginning students who already mastered large parts of the standard single variable calculus course.
Many methods and more abstract points of view are introduced to carry out proofs that are left out of the standard calculus course. They make it easier to see patterns and analogies in later courses.
The new ways of thinking and the concepts give the student a better capability to creatively attack new problems.

Learning outcomes

Knowledge and understanding
For a passing grade the student must

- be able to explain why the real numbers are needed in single variable calculus
- be able account for and illustrate concepts that are introduced during the course
- be able to account for the content of definitions, theorems and proofs.

Competences and skills
For a passing grade the student must

- be able to use concepts and methods from the course to carry out comparatively simple proofs.

Contents

- The real numbers.
- Topology and compactness.
- More about continuity
- More about derivative
- About integration
- Elementary functions
- Inequalities
- Sequences and recursion.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)
Assessment: Written exam.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Admission

Assumed prior knowledge: FMAB65 Calculus in One Variable B1
The number of participants is limited to: No
The course might be cancelled: If the number of applicants is less than 5.

Reading list

- T. Persson & M. Sundqvist Infinitesimalkalkyl Matematikcentrum 2020.

Contact and other information

Course coordinator: Anders Holst, studierektor@math.lth.se
Course coordinator: Tomas Persson, tomasp@maths.lth.se
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Course homepage: https://canvas.education.lu.se/courses/20435