SF2743 Advanced Real Analysis I 7.5 credits

Avancerad reell analys I

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for SF2743 valid from Autumn 2021

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Mathematics

Specific prerequisites

Completed course SF1677 Foundations of Analysis.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After the course the student should be able to

- explain basic concepts and theorems within the parts of analysis described by the course content,
- apply basic concepts, theorems and methods within the parts of analysis described by the course content in problem solving.

Course contents

Integration and measure theory: Basic measure theory, integration of measurable functions (Lebesgue integrals), convergence theorems, product measures, Fubini's theorem.

Functional Analysis: Introduction to functional analysis, metric spaces, Banach and Hilbert spaces, basic theorems about linear operators and functionals.

Applications which can be chosen among: topics from Fourier analysis, ergodic theory, probability theory, Sobolev spaces, differential equations.

Examination

- TEN1 - Examination, 7.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH’s coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

The examination consists of a final exam and possible continuous examination in the form of written assignments or an oral exam.

The examiner decides, in consultation with KTHs Coordinator of students with disabilities (Funka), about any customized examination for students with documented, lasting disability. The examiner may allow another form of examination for re-examination of individual students.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.