



SF2744 Advanced Real Analysis II 7.5 credits

Avancerad reell analys II

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

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

Establishment

Course syllabus for SF2744 valid from Autumn 2019

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

Measure theory: Signed measures and Hahn-decomposition, Metric outer measures, Radon-Nikodym derivative, Lebesgue decomposition.

Functional Analysis: Dual spaces, weak topologies, the Banach-Alaoglu theorem, adjoint operators, compact operators and their spectrum, Fredholm alternative, Hilbert spaces and operators on Hilbert spaces, the spectral theorem for self-adjoint operators on Hilbert spaces, Fredholm determinants, unbounded operators.

Applications can be chosen among: Fourier analysis, ergodic theory, probability theory, Sobolev spaces, differential equations, geometric measure theory (Hausdorff and other measures).

Course literature

Announced no later than 4 weeks before the start of the course on the course web page.

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.

The examination consists of a written 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.