SF2707 Functional Analysis 7.5 credits

Funktionalanalys

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 SF2707 valid from Autumn 2007

Grading scale

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

Education cycle

Second cycle

Main field of study

Mathematics

Specific prerequisites

Language of instruction

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

Intended learning outcomes

To give an introduction to the basic concepts and fundamental theorems in functional analysis and operator theory.

Course contents

Banach spaces. Bounded operators. Compactness in metric spaces. The Banach-Steinhaus' theorem. The open mapping theorem. The closed graph theorem. Dual spaces. The Hahn-Banach theorem. Dual spaces to Lp and C[0,1]. Weak topologies. The Banach-Alaoglu theorem. Adjoint operators. Campact operators and the Fredholm alternative. Hilbert spaces and operators on Hilbert spaces. The spectral theorem for self-adjoint operators on Hilbert spaces.

Course literature

Announced at the start of the course- Last time Friedman: Foundations of Modern Analysis, Dover 1982, was used.

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.

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.