



# SF2705 Fourier Analysis 7.5 credits

Fourieranalys

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

## Establishment

Course syllabus for SF2705 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

- formulate central definitions and theorems within the topic of the course,
- apply and generalize theorems and methods within the topic of the course,
- describe, analyze and formulate basic proofs within the topic of the course.

## Course contents

**Fourier series and integrals in one variable:** Pointwise convergence, convergence in  $L_2$ , summation of Fourier series and integrals. Theorems of Parseval and Plancherel.

**Fourier series and integrals in several variable:** Fourier analysis in higher dimensions and on discrete Abelian groups.

**Fourier analysis of analytic functions:** Hardy functions on the unit disk, Paley-Wiener Theorem, Hardy functions and filters.

**Applications: Selection of the following.** Heat equation, wave equation, isoperimetric inequality, Laplace equation on the unit disk and half-plane, Szegő's Theorem.

## 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.

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

Written exam. For obtaining higher grades, additionally an oral exam is required.

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.