



FSF3627 Fourier Analysis I 7.5 credits

Fourieranalysis I

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 FSF3627 valid from Spring 2019

Grading scale

G

Education cycle

Third cycle

Specific prerequisites

A Master degree including at least 30 university credits (hp) in Mathematics.

Good knowledge equivalent courses SF1626 Calculus of several variables, SF1628 Complex Analysis, SF1629 Differential equations and transform methods.

Desirable to have taken also: SF2709 Integration theory, SF2707 Functional 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 have sufficient depth in the field to be able to read research articles in Fourier analysis/Harmonic analysis.

Course contents

- Fourierseries
- Integral kernels
- Cesaro and Abel summability
- Convergence of Fourier series
- The isoperimetric inequality
- Weyl's equidistribution theorem
- The Fourier transform on the line
- The Poisson summation formula
- Heisenberg's uncertainty principle
- The Fourier transform in higher dimensions
- Finite Fourier analysis
- Dirichlet's theorem

Disposition

Lectures and problem solving sessions.

Course literature

E. M. Stein and R. Shakarchi, Fourier Analysis, An introduction.

Examination

- TENM - Oral exam, 7.5 credits, grading scale: P, 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.

An oral examination

Other requirements for final grade

Passed oral examination.

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.