FSF3714 Real and Complex Analysis 15.0 credits

Reell och komplex analys

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 FSF3714 valid from Spring 2019

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

Good knowledge in basic mathematical analysis on the level of e.g.Rudin's "Principles of Mathematical Analysis".

Language of instruction

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

Intended learning outcomes

Afte rcompleting the course students should be able to give statements and the main ideas of the proofs for the main theorems in Chapters 1-19 in Rudin's "Real and Complex Analysis" and apply the theory to solve relevant problems.

Course contents

Part 1: Real analysis

- Integration theory
- Borel measures
- L^p spaces
- Basic theory of Hilbert spaces and Banach spaces
- Complex measures
- Differentiation
- Fourier transform

Part 2: Complex analysis

- Analytic functions
- Harmonic functions
- Maximum principles
- Approximation
- Conformal maps
- Analytic continuation
- H^p spaces

Course literature

Walter Rudin, "Real and ComplexAnalysis, 3rd edition" (ISBN 9780070542341)

Examination

- INL1 - Assignment, 7.5 credits, grading scale: P, F
- 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.

Written homework assignments and an oral exam.

Other requirements for final grade

Written homework assignments completed

Oral exam passed

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.