# SF2745 Advanced Complex Analysis 7.5 credits

**Avancerad komplex analys**

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

## Establishment

Course syllabus for SF2745 valid from Spring 2020

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

Mathematics

## Specific prerequisites

Completed courses SF1677 Foundations of mathematical analysis and SF1691 Complex 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 and prove theorems concerning analytic functions such as, e.g., the generalized Cauchy integral formula and the Riemann mapping theorem;
- use and analyze conformal maps;
- discuss the theory of analytic continuation and properties of solutions to complex differential equations;
- be able to use this knowledge in the context of further applications

## Course contents

Generalizations of Cauchy's integral formula, analytic continuation, normal families and the Riemann mapping theorem, special classes of conformal maps, complex differential equations.

Suggested applications:

- Hardy spaces
- Boundary behavior of analytic functions
- Riemann-Hilbert problems
- Harmonic functions and harmonic measure
- Infinite products of analytic functions

## Course literature

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

## Examination

- TEN1 - Exam, 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.

The examiner decides about adapted examination for students with documented, severe disabilities in consultation with the contact person for disabilities at KTH (Funka). The examiner may allow a different 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.