



Course syllabus

Faculty of Technology
Department of Mathematics

4MA401 Analytiska funktioner, 7,5 högskolepoäng
Analytic Functions, 7.5 credits

Main field of study

Mathematics

Subject Group

Mathematics

Level of classification

Second Level

Progression

A1N

Date of Ratification

Approved 2014-10-03

Revised 2019-03-13 by Faculty of Technology. Assessment methods are revised.
The course syllabus is valid from autumn semester 2019

Prerequisites

60 credits mathematics including 1MA453 Vector analysis 7.5 credits or equivalent.

Objectives

After completing the course, the student should be able to

- independently and with adequate techniques solve problems, perform calculations, and conduct lines of reasoning within the part of mathematics that is covered by the course, and to clearly communicate these solutions, calculations, and reasonings in writing
- describe terminology and definitions, along with formulating, proving and analyzing theorems that are central to the course.

Content

The course comprises:

- Analytic, harmonic and meromorphic functions
- Complex integration of analytic functions
- Series representation for analytic functions
- Residue theory
- Zeros of analytic functions
- Conformal mappings
- The maximum modulus principle

Type of Instruction

Lectures and seminars.

Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.

The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

The student's knowledge is assessed in the form of a written exam.

Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

Credit Overlap

The course cannot be included in a degree along with the following courses of which the content fully, or partly, corresponds to the content of this course: 4MA101 Analytic Functions, 7.5 credits

Other

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Required Reading and Additional Study Material

Required reading

- Gamelin, T. *Complex Analysis*, Springer, 2001.
- Handouts.

Supplementary literature

- Chen, W. W. L. *Introduction to Complex Analysis*, available online.
- Osborne, A. *Complex Variables and their Applications*, Pearson, 1999.
- Rudin, W. *Real and Complex Analysis*, McGraw-Hill, 1987. 400 pages.