



# GÖTEBORG UNIVERSITY

Faculty Board of Science

## MMG700 Analytic Function Theory

**7.5 credits**

*First Cycle*

This syllabus is a translation of the binding document in Swedish.

### 1. Confirmation

The syllabus was confirmed by the Department of Mathematical Sciences on June 27, 2007 to be valid from July 1, 2007.

Field of education: Science. Responsible department: Mathematical Sciences.

### 2. Position in the educational system

The course Analytic Function Theory, 7.5 credits, is one of several single subject courses included in the Bachelor Program in Mathematics. The course is also open for eligible students outside the program. The course is considered advanced according to the requirements for the Degree of Bachelor in Mathematics.

### 3. Entrance qualifications

The prerequisite for the course Analytic Function Theory is the equivalent of 60 credits in Mathematics.

### 4. Course content

The Cauchy-Riemann equations, elementary functions, branch points, conformal mapping, The Cauchy Integral Theorem, The Cauchy Integral Formula, The Maximum principle, Liouville's theorem, Taylor's Formula, Laurent Series, Cauchy's Estimates, singularities and zeros, The Residue Theorem, calculus of residues, The Argument Principle, Rouché's theorem, analytic continuation.

### 5. Learning outcomes

After completing the course, the student will be able to

- recognize fundamental properties of analytic functions such as uniqueness, zeros, poles, and the maximum principle
- be able to calculate complex integrals as well as real integrals using the calculus of resi-

dues

- be able to apply representation formulas and deform contours
- be able to construct simple conformal maps.

## **6. Required reading**

List of required reading enclosed.

## **7. Assessment**

An examination will be given at the end of the course.

A student who has failed a test twice has the right to change examiner, unless weighty arguments can be invoked. For this, the student must send a written request to the board of the department.

## **8. Grading scale**

The grades are Fail (U), Pass (G), and Pass with Distinction (VG).

Students who are contractually entitled to ECTS grades should inform the examiner about this no later than one week after the start of the course.

Students without such entitlement will not be awarded ECTS grades. Grades will be converted into ECTS terminology according to a standard model approved by the University President.

## **9. Course evaluation**

Oral and/or written course evaluation will be performed.

## **10. Additional information**