

## MATM12, Mathematics: Analytic Functions, 15 credits

*Matematik: Analytiska funktioner, 15 högskolepoäng*

Second Cycle / Avancerad nivå

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### Details of approval

The syllabus is an old version, approved by Study programmes board, Faculty of Science on 2012-01-16 and was valid from 2012-01-16 , spring semester 2012.

### General Information

The course is included in the main education area of mathematics at the Faculty of Science. The course is an elective course for second-cycle studies for a Degree of Master of Science (120 credits) in mathematics. The course is also given as a free-standing course.

*Language of instruction:* Swedish and English

The course may be given in English.

*Main field of studies*

Mathematics

Mathematics

*Depth of study relative to the degree requirements*

A1N, Second cycle, has only first-cycle course/s as entry requirements

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### Learning outcomes

The aim of the course is to enable students to acquire the following knowledge and skills on completion of the course.

### Knowledge and understanding

On completion of the course, the student should:

- be familiar with the theory and applications of analytic functions of one variable,

- have acquired basic knowledge for further studies in mathematics.

### **Competence and skills**

On completion of the course, the student should:

- have developed the ability to communicate mathematics in speech and writing.

### **Course content**

Basic theory of analytic functions. The Cauchy integral theorem and power series expansions. The argument principle, residue calculus. Möbius transformations. Normal families. The Riemann mapping theorem. Poisson integrals and harmonic functions. Laurent series expansions. Factorisation.

### **Course design**

#### **Assessment**

The teaching consists of seminars and lectures. Compulsory assignments may occur during the course.

The examination consists of a written examination followed by an oral examination. The oral examination may only be taken by those students who passed the written examination.

Students who fail the ordinary written examination are offered a resit examination shortly thereafter.

*Subcourses that are part of this course can be found in an appendix at the end of this document.*

### **Grades**

Marking scale: Fail, Pass, Pass with distinction.

Applied marking scale: Pass with distinction, Pass and Fail.

### **Entry requirements**

For admission to the course, at least 90 credits are required, of which at least 60 credits should be in pure mathematics.

### **Further information**

The course may not be included in degree together with MAT331 Analytic functions, 10 credits or MATC11 Analytic functions, 15 credits.

## Subcourses in MATM12, Mathematics: Analytic Functions

Applies from H20

2001 Written examination, 7,5 hp

Grading scale: Fail, Pass

2002 Oral examination, 7,5 hp

Grading scale: Fail, Pass

Applies from H12

1201 Examination, 15,0 hp

Grading scale: Fail, Pass, Pass with distinction