

# Syllabus

for course at first level

**Mathematics II - Analysis, part A**

**Matematik II - Analys, del A**

**7.5 Higher Education**

**Credits**

**7.5 ECTS credits**

<b>Course code:</b>	MM5010
<b>Valid from:</b>	Spring 2016
<b>Date of approval:</b>	2014-08-22
<b>Changed:</b>	2015-10-05
<b>Department</b>	Department of Mathematics (incl. Math. Statistics)
<b>Main field:</b>	Mathematics/Applied Mathematics
<b>Specialisation:</b>	G1F - First cycle, has less than 60 credits in first-cycle course/s as entry requirements

## Decision

This syllabus has been approved by the Board of Faculty of Science at Stockholm University 2014-08-22 and has been revised 2015-10-05.

## Prerequisites and special admittance requirements

To qualify for the course, knowledge equivalent to Mathematics I, 30 ECTS credits (MM2001) or Mathematics for the Natural Sciences I, 15 ECTS credits (MM2002) and Mathematics for the Natural Sciences II, 15 ECTS credits (MM4001), or equivalent, is required.

## Course structure

Examination code	Name	Higher Education Credits
HELA	Mathematics II - Analysis, part A	7.5

## Course content

The course covers differential calculus in one variable (limits, continuity, derivatives, Taylor's formula), something about integral calculus in one variable, differential calculus in several variables (limits, continuity, differentiability, gradient, higher derivatives, Taylor's formula, min- and max problems with and without constraints), and series and generalized integrals in one variable.

## Learning outcomes

Upon completion of the course, the student is expected to be able to:

- \* define and explain basic concepts in differential calculus in one and several variables, integral calculus in one variable and in the theory of series and generalized integrals,
- \* present and prove basic theorems in differential calculus in one and several variables and in the theory of series and generalized integrals.
- \* explain and use methods in differential calculus in several variables to solve mathematical and applied problems,
- \* explain and use methods in the theory of series and generalized integrals.

## Education

Instruction is given in the form of lectures and exercise sessions.

## Forms of examination

a. The course is examined in the following manner: measurement of knowledge is carried out through written and oral exam.

b. Grading is carried out according to a 7-point scale related to the learning objectives of the course:

A = Excellent

B = Very Good

C = Good

D = Satisfactory

E = Sufficient

Fx = Fail (some more work is required)

F = Fail (a lot more work is required)

c. Grading criteria for the course will be distributed at the start of the course.

d. A grade of at least E is required to pass the course.

e. Students who fail an ordinary examination are entitled to take additional examinations as long as the course is offered. There is no restriction on the number of examinations. The term "examination" here is used to denominate also other compulsory elements of the course. Students who have achieved a pass grade on an examination may not retake this examination in order to attempt to achieve a higher grade. Students who have failed to reach a pass grade on a course, or on a part of a course, on two occasions have the right to request that a different teacher be appointed to grade the next exam, unless there are special reasons against it. A request for such appointment must be sent to the departmental board.

The course has at least two examinations for each academic year in the years in which instruction is provided. Intervening years include at least one examination.

f. An opportunity to make up from grade Fx to the grade E is given. The examiner decides which assignments should be carried out to make up and the criteria for passing said assignments. The making up must take place before the next examination.

### **Interim**

Students may request that the examination is carried out in accordance with this syllabus even after it has ceased to apply. This right is limited, however, to a maximum of three occasions within a two-year-period after the end of the course offering. A request for such examination must be sent to the departmental board. This provision is also valid in the case of revision of the syllabus.

### **Limitations**

The course may not be included in a degree together with the course Mathematical Analysis III (MM5001), or the equivalent.

### **Misc**

The course can be taken within the Bachelor's Programmes in Mathematics, Mathematics and Philosophy, Mathematics and Economy, Computer Science, Physics, Biomathematics and Computational Biology, Oceanography, Astronomy, Meteorology and the Master's Programme in Medical Physics. It can also be taken as an individual course.

### **Required reading**

Course literature is decided by the departmental board and is published on the web site of the Department of Mathematics at the latest 2 months before course start.