

# Syllabus

for course at advanced level

**Mathematics, Degree Project**  
**Matematik, självständigt arbete**

**30.0 Higher Education  
Credits**  
**30.0 ECTS credits**

<b>Course code:</b>	MM9007
<b>Valid from:</b>	Autumn 2013
<b>Date of approval:</b>	2012-11-19
<b>Department</b>	Department of Mathematics (incl. Math. Statistics)
<b>Main field:</b>	Mathematics/Applied Mathematics
<b>Specialisation:</b>	A2E - Second cycle, contains degree project for Master of Arts/Master of Science (120 credits)

## Decision

This syllabus has been approved by the Board of the Faculty of Science at Stockholm University 2012-11-19.

## Prerequisites and special admittance requirements

A bachelors degree or similar is required to qualify for the course. Furthermore knowledge corresponding to 90 ECTS credits in mathematics is required, wherein the following courses or their counterparts should be included:

- \* Foundations of analysis, 7.5 ECTS credits (MM7001)
- \* Analytic functions I. 7-5 ECTS credits (MM7002)
- \* Algebra III, 7.5 ECTS credits (MM7003)
- \* Combinatorics II, 7.5 ECTS credits (MM7007)
- \* At least on of the courses Algebraic geometry and commutative algebra, 7.5 ECTS credits (MM8019), Homological algebra and algebraic topology, 7.5 ECTS credits (MM8020)
- \* At least one of the courses Integration theory, 7.5 ECTS credits (MM8001), Fourier analysis, 7.5 ECTS credits (MM8003), Functional analysis, 7.5 ECTS credits (MM8009), Partial differential equations, 7.5 ECTS credits (MM8008).
- \* At least one of the courses Enumerative combinatorics, 7.5 ECTS credits (MM8018), Combinatorics III, 7.5 ECTS credits (MM8011), Number theory, 7.5 ECTS credits (MM8012).
- \* Minst en av kurserna Enumerativ kombinatorik, AN 7.5 hp (MM8018), Kombinatorik III, AN 7.5 hp (MM8011), Talteori, AN 7.5 hp (MM8012).

Swedish upper secondary school course English B, or equivalent.

## Course structure

Examination code	Name	Higher Education Credits
HELA	Mathematics, Degree Project	30

## Course content

The content of the course is decided by the supervisor after consultation with the student. The course intends to provide experience and knowledge in the scientific approach and scientific work in mathematics. The course work should be given a detailed description in a work plan that shall be approved by the

supervisor.

### **Learning outcomes**

It is expected that the student after taking the course will be able to:

- independently gather in-depth knowledge in a mathematical subject matter
- present theoretical studies and own investigations in an independently written report
- orally present knowledge and obtained results

### **Education**

Instruction consists of lectures and seminars as well as supervision of thesis work.

The student has the right to 20 hours of individual supervision. The student may swap supervisor under certain circumstances. In such cases, a request shall be made to the department board.

### **Forms of examination**

a. Examination for the course is in the following manner: assessment of knowledge via a written report and an oral presentation at a seminar.

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

- A = Excellent
- B = Very Good
- C = Good
- D = Satisfactory
- E = Sufficient
- Fx = Insufficient
- F = Completely insufficient

Grading of PART2 is according to a 2-point scale: pass (G) or fail (U).

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

The basic assessment criteria for the grading are

1. Understanding of the task.
2. Implementation of the task.
3. Knowledge of the background.
4. Interpretation and analysis of results.
5. Independence.
6. Ability to keep the established schedule of work.
7. Presentation - oral presentation.
8. Presentation - written report.

d. A minimum grade of 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 two occasions have the right to request that a different teacher be appointed to set the grade of the course. 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. A student who receives the grade Fx will be given an opportunity to make up to grade E by successfully completing some extra task(s) assigned by the examiner, who also decides on the criteria to be fulfilled in order to pass. The completion must take place before the following examination session.

### **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 during a two-year-period after the end of giving the course. 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.

### **Misc**

The course is a component of the Master program in mathematics and it can also be taken as an individual

course.

**Required reading**

The course literature is based on scientific publications and reports in the present area chosen by the student through literature search as well as literature distributed by the supervisor.