



## DEPARTMENT OF MATHEMATICAL SCIENCES

### **MMA920 Thesis in Mathematics for the two-year Masters Program in Mathematical Sciences, specialisation Applied Mathematics, 30 higher education credits**

Examensarbete i matematik vid Masterprogrammet i matematiska vetenskaper, inriktning Tillämpad matematik, 30 högskolepoäng

*Second Cycle*

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#### **Confirmation**

This course syllabus was confirmed by Department of Mathematical Sciences on 2016-08-17 to be valid from 2016-09-01, autumn semester of 2016.

*Field of education:* Science 100%

*Department:* Department of Mathematical Sciences

#### **Position in the educational system**

The course can only be taken as a part of the two-year Master's Programme in Mathematical Sciences. The course constitutes a degree project for a Master's degree (120 credits) in Mathematics.

The course can be part of the following programme: 1) Mathematical Sciences, Master's Programme (N2MAT)

*Main field of studies*

Mathematics

*Specialization*

A2E, Second cycle, contains degree project for Master of Arts/Master of Science (120 credits)

#### **Entry requirements**

To be eligible for the course it is necessary to be registered in the two-year Master's Programme in Mathematical Sciences. The courses within the specialization requirements for the specialization Applied Mathematics, specified in the programme syllabus, must be completed.

### **Learning outcomes**

After completing the course, students should

- have a good ability to structure realistic problems into mathematical models and analyze them numerically and analytically
- be well acquainted with mathematical software, programming, and the computer's role within mathematical applications
- have thorough knowledge and understanding of, and insight into current research in the field of the thesis
- have the ability to critically, independently, and creatively identify and formulate issues, and to plan and carry out advanced tasks within specified time limits
- be able to present and discuss their own and others' results orally and in writing
- be able to evaluate their own knowledge, to identify the need for further knowledge, and to take responsibility for obtaining such knowledge.

### **Course content**

A supervisor and a separate examiner is appointed for each student. A project to be performed by the student is formulated within applied mathematics in consultation with the supervisor and the examiner. This usually means that students study scientific texts, implement various algorithms, and obtain their own results. The work is presented in a written report and presented and discussed at a seminar. The report is written and presented in English. The work can be done individually or in groups of two. Students must also act as an opponent at a Master's thesis presentation of another student.

### **Form of teaching**

Teaching consists of tutoring for about 20 hours while the student's total work time is about 800 hours.

The course shall be conducted such that it fills at least half the time of full-time studies and shall be completed within one year from the start. Initially, the student, in consultation with the supervisor, sets up a project plan containing a project description and a schedule. In cases where the student and the supervisor want a timetable extending over more than one year, special reasons must be given, and the plan must be approved by the director of studies before the start of the work.

The timetable may be revised in case of special circumstances (prolonged illness, etc.). In such cases, relevant persons must be notified immediately and the revised plan must be approved by the director of studies. Students who do not finish their thesis according to the agreed (possibly revised) schedule are not entitled to further supervision.

The student should attend at least three other presentations of Master's projects, and the student must be an opponent at one of these occasions.

*Language of instruction:* English

### **Assessment**

The examiner sets a grade based on an overall assessment of the work performance, in the written report, during the oral presentation, and in the subsequent discussion. In case of a pair project, each student's contributions should be clearly stated in the written report.

To pass, an approved opposition to another Master's thesis presentation and attendance at two other Master's thesis presentations is also required.

### **Grades**

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).

### **Course evaluation**

Course evaluation takes place in cooperation between the student, supervisor, examiner and director of studies during and after the course.

### **Additional information**

The syllabus for MMA920 was originally established to take effect from 2008-12-01.