



# SF259X Degree Project in Scientific Computing, Second Cycle

## 30.0 credits

Examensarbete inom beräkningsteknik, avancerad nivå

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

### Establishment

Course syllabus for SF259X valid from Autumn 2016

### Grading scale

A, B, C, D, E, FX, F

### Education cycle

Second cycle

### Main field of study

Mathematics

### Specific prerequisites

The student should do the master project within his/her area of specialization since a solid background of the field is necessary in order to achieve a high quality work. The master project is normally performed during the final semester of studies.

## Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

## Intended learning outcomes

The overlying goal with the thesis work is that the student after finished work in scientific computing/numerical analysis has achieved knowledge about and can apply methods and computer tools to solve a larger scientific or engineering computing problem coming from industry, university or government administration. A further goal is that the student is able to plan, perform and orally present and defend the thesis in a seminar and a professionally written report.

After the thesis work the student has shown that he/she can independently

- apply relevant knowledge and skills, which are acquired within the main area, to a given problem
- find and study references such as textbooks, articles, etc necessary for the prerequisites of the solution of the problem
- collect and work out demands on and wishes for the result of the thesis work and judge the reasonableness of these considering available resources and the demand of independent work
- choose a course of action and work out, follow and persue a plan for the solution of the problem in collaboration with the problem giver
- reflect on, evaluate, and critically assess one's own and others' scientific results
- write a professional report in English or Swedish containing established norms concerning structure, language and contents
- give an oral presentation of the thesis with professional demands on preparation, structure style and timing
- identify one's need for further knowledge and continuously develop one's own competencies in an area within scientific computing/numerical analysis.

## Course contents

The master project must treat a problem within numerical analysis. The problem must focus on questions from the field of numerical analysis that are of interest to investigate and analyze. The main part of the work should be investigation and analysis. If programming is involved its purpose should be to verify methods and theories that have been developed in the project. Projects often result in a prototype but very seldom in a finished product. It must be obvious that the student has completed at least five months of qualified work. A detailed specification and a time schedule for the project must be made. A search for relevant literature in the field must be made and relevant literature must be studied as a foundation for the work. The work is presented in a written report and in an oral presentation. There are some mandatory seminars.

The work is done individually.

## Course literature

To be decided individually.

## Examination

- XUPP - Examination Question, 30.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

In this course all the regulations of the code of honor apply, see:

<http://www.sci.kth.se/institutioner/math/avd/na/utbildning/hederskodex-for-student-och-larare-vid-kurser-pa-avdelningen-for-numerisk-analys-1.357185>

## Other requirements for final grade

The following elements are approved: presence at a research seminar in Scientific Computing, acting as an opponent of another degree defence on advanced level, written thesis, oral presentation.

## Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.