



Course syllabus

Faculty of Technology

Department of Mathematics

4MA441 Matematisk modellering 2, 7,5 högskolepoäng

4MA441 Mathematical Modelling 2, 7.5 credits

Main field of study

Mathematics

Subject Group

Mathematics

Level of classification

Second Level

Progression

A1F

Date of Ratification

Approved 2015-05-22

Revised 2022-10-24 by Faculty of Technology. Prerequisites, assessment methods, content and literature list are revised. Objectives are adjusted.

The course syllabus is valid from autumn semester 2023

Prerequisites

30 credits in mathematics at the advanced level including on of the courses 4MA423 Mathematical Cryptography, 4MA424 Coding Theory, or on of the courses 4MA412 Distribution Theory, 4MA430 Calculus Advanced Course II, or on of the courses 4MA503 Stochastic Analysis, 4MA502 Insurance Mathematics.

Objectives

The aim of the course is to improve the students knowledge about mathematical modelling and to establish a deeper knowledge in modelling techniques within a specific field.

After the course the student is expected to:

- understand and apply the principles of mathematical modelling
- plan and perform a modelling project
- be able to analyze, discuss, and critically evaluate obtained results
- be able to write reports according to the demands of publishing within the mathematical field
- present results orally.

Content

The course has an introductory part that contains the principles of mathematical modeling in general, how to design reports (IMRAD), presentation techniques, and mathematical writing.

The student should then immerse in a modeling project related to current research in one of the areas Algebra with Cryptography and Coding, Analysis and Mathematical Physics, or Mathematical Statistics and Financial Mathematics. This project should result in a written report that will also be presented orally at a seminar with opposition.

Type of Instruction

Teaching consists of lectures, seminars, and tutoring.

Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.

The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

The examination on the course consists of written assignments (1 credits, U/G), and a project (6.5 credits, A-F) in the form of a written report that also is to be presented orally. As a part of the project the student should write an opposition report.

Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

Credit Overlap

The course cannot be included in a degree along with the following course/courses of which the content fully, or partly, corresponds to the content of this course: 4MA141 Mathematical Modelling 2, 7.5 credits

Other

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Required Reading and Additional Study Material

Required reading

Material from the department (ca 50 pages)

Literature for the project is decided after consultation with the course director.