



## Course syllabus

Faculty of Technology

Department of Mathematics

1MA411 Matematisk modellering I, 7,5 högskolepoäng

Mathematical Modeling I, 7.5 credits

### Main field of study

Mathematics

### Subject Group

Mathematics

### Level of classification

First Level

### Progression

G1N

### Date of Ratification

Approved 2014-10-03

Revised 2016-06-15 by Faculty of Technology.

The course syllabus is valid from autumn semester 2016

### Prerequisites

Mathematics D or Mathematics 4 or the equivalent

## Objectives

After completing the course, the student should be able to

- in writing present result and analyses of mathematical modelling problems
- apply methods and strategies of problem solving
- construct, analyze, and present mathematical models for describe different phenomena
- use some common modelling tools.

## Content

The course contents are:

- introduction to recurrence and differential equations
- methods for problem solving and mathematical modeling
- dimensional analysis
- computer aids in mathematics, especially the softwares *Mathematica* and *LaTeX*
- working with a larger mathematical modeling project
- written and oral presentation of mathematics.

## Type of Instruction

Lectures and seminars. Compulsory assignments may be given during the course.

Written and oral presentations are compulsory.

## 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 student's knowledge is assessed in the form of assignments, computer laboratories, and a project. The project is accounted in writing, as well as orally.

## 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: 1MA111 Mathematical Modeling I, 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**

Handouts from the department, about 50 pages

### **Additional Reading**

Dilywn Edwards & Michael Hanson, Guide to Mathematical Modelling, Industrial Press, 2nd Ed. 2007 or later, 190 pages (326).

Kevin Houston, "How to think like a Mathematician", Cambridge Uni. Press, 2009