



Course syllabus

Faculty of Technology

Department of Mathematics

1MA111 Matematisk modellering I, 7,5 högskolepoäng

1MA111 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 2009-12-15

Revised 2014-09-03 by Faculty of Technology. Examination is revised.

The course syllabus is valid from autumn semester 2015

Prerequisites

General entry requirements and Mathematics 3c or Mathematics D (Field-specific entry requirements 8/A8).

Objectives

The student should be able to:

- interpret and understand the meaning of a mathematical text
- formulate own mathematical texts
- communicate and argue with mathematical forms of representation
- use computer programs, which are common in the mathematical world
- use problem solving strategies
- derive simple recurrence and differential equations for mathematical models
- use different modeling methods.

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 Fail (U) or Pass (G).

The student's knowledge is assessed in the form of assignments, computer lab work and project work. These are presented orally and in writing.

Course Evaluation

A written course evaluation will be carried out at the end of the course in accordance with the guidelines of the University. The course evaluation will be filed at the department.

Required Reading and Additional Study Material

Required reading

If the course is lectured in Swedish, then the literature is this:

DFM, Handouts, Linnaeus University, current year. Approximately 100 pages.

If the course is lectured in English then the literature is this:

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