Linnæus University

Dnr: UGA 2013/2646-3.1.3

Course syllabus

Faculty of Technology

Department of Mathematics

1MA11U Matematisk modellering I, 7,5 högskolepoäng
1MA11U 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 by Faculty of Technology 2013-11-12
The course syllabus is valid from autumn semester 2013

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).

On request, students may have their credits translated to ECTS-marks. Such a request must be sent to the examiner before the grading process starts.

The student's knowledge is assessed in the form of oral and/or written examinations. The principal assessment method for the course is determined at the beginning of the course.

Course Evaluation
A course evaluation will be carried out and compiled after the course is completed. The compilation will be presented to the current board as well as to the students and filed by the coordinating 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).