Linnæus University

Jnr: 2014/3180 -3.1.2

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 by Faculty of Technology 2014-10-03
The course syllabus is valid from autumn semester 2015

Prerequisites
Mathematics D or Mathematics 4 or the equivalent

Objectives
The student should be able to:
1 interpret and understand the meaning of a mathematical text
2 formulate own mathematical texts
3 communicate and argue with mathematical forms of representation
4 use computer programs, which are common in the mathematical world, for solving problems and building models
5 use problem solving strategies
6 derive simple recurrence and differential equations for mathematical models
7 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 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 (objectives 1,3,5,6), computor lab work(objective 4) and project work(objectives 1-7). Theses 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.

Credit Overlap

This course cannot be part of a degree in combination with another course in which the content fully or partly correspond 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

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