DD1354 Models and Simulation 6.0 credits

Modeller och simulering

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for DD1354 valid from Spring 2019

Grading scale

A, B, C, D, E, FX, F

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

For non-program students: General entry requirements.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

A general aim with the course is to help the student to develop a good understanding of mathematical models and numerical methods for ordinary differential equations and skills in designing and implement computer program for simulation of models that are too complex to study with analytical methods.

On completion of the course, the student should be able to

• account for basic mathematical concepts as ordinary differential equations, initial condition, the tidsstegning, stability

• formulate particle models and mass-fjädersystem as system of ordinary differential equations

• formulate solution methods for system of linear and non-linear equations

• formulate and implement a general tidsstegningsmetod for the solution of system of ordinary differential equations

• visualise and interpret results of a clear way by using completed software

Course contents

Basic ideas and concepts: particle model, the mass-fjädermodell, ordinary differential equation, stability, system of non-linear equations.

Algorithms and programming: the tidsstegning for the solution of general ordinary differential equation, fixed point iteration, Newton's method.

Examination

- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 3.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH’s coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

• LAB1 - Laboratory assignments, 3.0 credits, grading scale: A, B, C, D, E, FX, F

• TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F

Other requirements for final grade

A written examination (TEN1; 3 credits). Laboratory assignments with oral and written

presentation (LAB1; 3 credits).

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.