SF1538 Project Course in Simulation Technology 7.5 credits

Projekt i simuleringsteknik

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

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

Establishment

Course syllabus for SF1538 valid from Spring 2014

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Basic courses in linear algebra, analysis, differential equations, probability theory, numerical methods, programming equivalent to SF1530, SF1625, SF1532, SF1536, SF1901 and DD1345.

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 communicate knowledge of the entire simulation pipeline to be able to solve complex problems. On completion of the course, the student can efficiently use computer simulation for modelling, analysis and optimisation of models with and without element of stochastics for some engineering applications. The models are brought from process technology, material science, movement, optimum design, flight dynamics and optimum reconstruction.

On completion of the course, the student can

- formulate some models in science and technology based on differential equations with and without random disturbances,
- use the simulation model for analysis and optimisation of design,
- choose appropriate computer simulation method for the model
- carry out simulation study and sensitivity analysis
- present model, results and construction studies orally and in writing.

Course contents

The course treats methods for simulations for differential equations models with and without stochastic elements. The simulations are used in project work for analysis and where is relevant, optimisation of a design or process, or of the model alone. Choice of simulation method and software (self-developed or already available), based on the aim of the model and its properties and identification of limitations are important elements.

Course literature

Announced no later than 4 weeks before the start of the course on the course web page.

Examination

- LABA - Laboratory Work, 2.5 credits, grading scale: P, F
- LABB - Project, 2.5 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 2.5 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.

In this course, the code of honour of the school is applied,
see: http://www.sci.kth.se/institutioner/math/avd/na/utbildning/hederskodex-for-studenter-och-larare-vid-kurser-pa-avdelningen-for-numerisk-analys-1.357185

Other requirements for final grade

An examination (TEN1; 2.5 credits). Laboratory assignments with presentation (LAB A+LAB B; 5.0 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.