EG2080 Monte Carlo Methods in Engineering 6.0 credits

Monte Carlo-metoder inom ingenjörskonsten

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

Establishment

Course syllabus for EG2080 valid from Autumn 2010

Grading scale

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

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

Courses in mathematics (including probabiliy theory) 30 HEC, courses in programming or numerical methods 15 HEC. English B or equivalent.

Language of instruction

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

Intended learning outcomes

The students should after the course be able to use given model of a technical system and appropriate software (for example Matlab) to write a program , which in an efficient manner can simulate the system using Monte Carlo methods.

Course contents

Theory and examples are presented during the lectures and are then applied by the students in a number of home assignments, which are to be solved using appropriate software (for example Matlab). The course will include the following topics:

- general probability theory
- random variables
- random number generation
- simple sampling
- complementary random numbers
- dagger sampling
- control variates
- correlated sampling
- stratified sampling
- importance sampling

Course literature

"Monte Carlo Simulation", course compendium, Electric Power Systems Lab, KTH.

Examination

- TEN1 - Examination, 6.0 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.

Other requirements for final grade

Written exam.

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.