FEG3131 Monte Carlo Methods in Electric Power Research 10.0 credits

Monte carlo-metoder inom elkraftforskning

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

Establishment

Course syllabus for FEG3131 valid from Spring 2019

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

The course is intended for Ph.D. students in electrical engineering, but can also be interesting for students from other fields of engineering.

Language of instruction

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

Intended learning outcomes

After the course, the student should be able to

- state basic definitions concerning probability theory, random variables and sampling techniques,
- apply computation methods for random number generation, simple sampling and variance reduction techniques,
- formulate mathematical models appropriate for Monte Carlo simulation,
- analyse a simulation problem related to electric power research and design an efficient Monte Carlo simulation method for that problem.

Course contents

Definition of Monte Carlo simulation, random numbers, random number generation, simple sampling, complementary random numbers, dagger sampling, control variates, correlated sampling, importance sampling, stratified sampling, simulation design.

Examination

- EXA1 - Examination, 10.0 credits, grading scale: P, 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.

The project assignments are chosen by students in agreement with their supervisors and the examiner of the course.

Other requirements for final grade

- Approved home assignments.
- Passed the exam.
- Approved project assignment.

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.