FEI3362 Power System Mathematical Statistics 8.0 credits

Matematisk statistisk för elkraftsystem

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

Establishment

Course syllabus for FEI3362 valid from Autumn 2014

Grading scale

G

Education cycle

Third cycle

Specific prerequisites

PhD Student

Language of instruction

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

Intended learning outcomes

The course is aimed to you that need a statistical toolbox for power system analysis, with respect to design, operation and maintenance of the systems. After completed course the participants should have reached such level of knowledge that he/she can publish own work

(peer-reviewed conference paper) on the topic of power system statistical analysis, within one or more of the following areas:

· Statistical inference

· Markov Chains

· Game Theory

· Convergence criterias in simulations

· Statistical finance applications to power system modeling

· Bayesian networks

· Filtering techniques

· Measurement techniques from a statistical viewpoint

Monte Carlo techniques

Course contents

Definitions and concepts in statistical theory for power systems

Network reliability

Component reliability

Control system reliability

Project work on statistical analysis of academic or real world problem.

Disposition

Lectures (52h), project work (80h), presentations of project, exam.

Course literature

Depending on project assignment, one or more of:

· Rausand Höyland: System Reliability Theory, 2nd ed.

· J. R. Norris: Markov Chains, Cambridge Series in Statistical and Probabilistic Mathematics, Cambridge University Press.

· T. Koski & J.Noble: Bayesian Networks and Causal Probability Calculus. 2009.Bayesian Networks: An Introduction (2009) published by Wiley.

· Statistical Inference 2nd ed., G. Casella and R. Berger, Duxbury, 2002.

· Theory of Statistics, M. Schervish, Springer, 1995.

· Information Theory, Inference, and Learning Algorithms, D. Mackay, Cambridge University Press, 2003.

Examination

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

· Exam

· Oral presentation

· Project approved and delivered before deadline

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.