EG2200 Power Generation Operation and Planning 6.0 credits

Drift och planering av elproduktion

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 EG2200 valid from Autumn 2015

Grading scale

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

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

• SF1625 Calculus in one variable (or equivalent)

• MJ1520 Statistics and risk assessment or SF1901 Probability theory and statistics (or equivalent)

• English B/English 6 (or equivalent)

Language of instruction

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

Intended learning outcomes

The aim of the course is that the students learn methods and models for operation, planning and analysis of electric power generation. The course comprises background information about possible ways to design an electricity market, computation methods (for example applied optimisation theory and reliability analysis) as well as examples from reality.

To pass the course, the students should show that they are able to

• describe the principles of how an electricity market can be organised,

• perform rough estimations of electricity prices as well as analyse factors that have a large importance for the electricity pricing, and to indicate how these factors affect for example producers and consumers,

• explain how the balance between production and consumption is maintained in an electric power system, calculate how the frequency is affected by various events in the power system and design the frequency control so that there are sufficient margins in the power system,

• formulate short-term planning problems of hydro-thermal power systems,

• apply probabilistic production cost simulation to calculate the expected operation cost and risk of power deficit in an electricity market, and to use the results of an electricity market simulation to judge the consequences of various actions in the electricity market,

• give a short oral presentation of the solution to a problem within operation and planning of power generation.

Course contents

The course covers five main topics: a basic description of electricity markets, electricity pricing, frequency control, short-term planning of power generation, as well as simulation of electricity markets. Theory and examples are presented in lectures. The students are then applying the theory to a number of assignments. The course includes smaller assignments, which are mandatory and presented orally, as well as larger assignments, which are voluntary and presented in written reports.

Disposition

Lessons, seminars, project assignments.

Course literature

L. Söder & M. Amelin, "Efficient Operation and Planning of Power Systems"

Examination

- PRO1 - Project Assignments, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Exam, 3.0 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.

The final grade is equal to the grade of the project assignments.

Other requirements for final grade

Each part of the examination must be passed.

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.