



# EG2050 System Planning 7.5 credits

Systemplanering

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

## Establishment

Course syllabus for EG2050 valid from Autumn 2007

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

Electrical Engineering

## Specific prerequisites

General admission requirements

## 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

- describe the structure of an electricity market,
- perform rough estimations of electricity prices,
- describe how the balance between production and consumption is maintained in a power system,
- calculate how the frequency is affected by various events in the power system,
- formulate simple models for short-term planning of hydro-thermal power systems,
- apply probabilistic production cost simulation,
- apply simple methods for Monte Carlo simulation of electricity markets.

## Course contents

Theory and examples are presented during the lectures and are then applied by the students in a computer assignment and three home assignments, which cover the central parts of the course contents. The computer assignments treat electricity pricing and demonstrate which factors affect the electricity price. The following home assignments are given:

- Frequency control. In this home assignment it is studied if a small system has sufficient reserves to maintain the frequency 50 Hz.
- Short-term planning of power generation. The objective of the assignment is to schedule the operation of a few power plants. An optimization problem is formulated and then solved in for example GAMS.
- Simulation of an electricity market. Here a small electricity market is analyzed using two different simulation methods (one analytical and one Monte Carlo method).

## Course literature

“Efficient Operation and Planning of Power Systems”, Electric Power Systems Lab.

## Examination

- TEN1 - Examination, 7.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Assignment, 0.5 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.

## Other requirements for final grade

Written exam, approved computer 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.