EG2110 Power System Stability and Control 7.5 credits

Stabilitet och styrning av elkraftsystem

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 EG2110 valid from Spring 2019

Grading scale

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

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

EG2100 Power System Analysis (or equivalent)

EL1000 or EL1110 Automatic Control, General Course (or equivalent)

SF1519 Numerical Methods and Basic Programming (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

In order to pass the course, you need to show both orally and in written reports that you are able to

- explain the various power system instabilities and dynamics in power systems,
- explain and apply different methods for analyzing power system stability,
- create mathematical models for dynamic and stability analysis of power systems,
- demonstrate how the transient stability of a power system can be analyzed by using Equal Area Criterion,
- analyze electromechanical modes in power systems, and design excitation systems to improve transient stability, and power oscillations damping,
- perform frequency control,
- reflect on, evaluate, and critically assess others' scientific results.

Course contents

This course deals with power system stability and control. The course starts with a review of large power outages in the world. Then, different power system instabilities will be presented and discussed in the course. After that, we will be able to analyze the large power outages in the world presented in the first lecture. Also, different control algorithms for improving power system stability will be presented.

Disposition

The course includes lectures, project work hours, and examination.

Course literature

Course compendia:

M. Ghandhari: "Stability of Power Systems, An introduction"

Examination

- PRO1 - Project, 7.5 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.

The examination consists of

P1. individual written reports,

P2. written opposition, and also oral presentation and opposition.

Other requirements for final grade

Approved P1 and P2.

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.