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.

Establishment

Course syllabus for EG2110 valid from Autumn 2013

Grading scale

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

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

Three-phase system, load flow calculations, per unit system and basic control theory.

Also documented proficiency in English B or equivalent.

Language of instruction

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

Intended learning outcomes

- explain the various power system instabilities and dynamics in power systems,
- apply and explain different methods for analyzing power system stability,
- create mathematical models for dynamic and stability analysis of power systems,
- explain different power system controls, and their impact on the system stability,
- demonstrate how the transient stability of a power system can be analyzed by using Equal Area Criterion,
- analyze electromechanical modes in power systems,
- 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. During the project work hours, the teaching assistants will be available to assist the students with the assignments (home exam).

Course literature

Course compendia:

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

Examination

- TEN1 - Examination, 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.

If the course is discontinued, students may request to be examined during the following two academic years.

The examination consists of two parts, namely

Part A which is a scheduled written exam and Part B which is a project work (home exam).

Part A decides if you pass the course or not. However, Part B gives the student the opportunity to improve her/his grade.

Part B is comprised by individual written report and written opposition, and also oral presentation and opposition.

Other requirements for final grade

Examination 7,5 hp

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.