



# FEG3214 Power System Stability and Control 10.0 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 FEG3214 valid from Spring 2013

## Grading scale

## Education cycle

Third cycle

## Specific prerequisites

The course is intended for Ph.D. students in electric power systems, but can also be interesting for students from other fields of electrical engineering.

## Language of instruction

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

# Intended learning outcomes

Upon completion of the course the student should be able to

- 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

The course is given in English, and treats models and computation methods for power system stability and control. In the course assignments these models and methods are applied to solve realistic problems with computer programs written in MATLAB.

The following areas are treated in the course:

- Stability: voltage stability, transient and smallsignal stability, and simulation models.
- Control: power oscillation damping and frequency control.

## Disposition

Lectures, assignments, exam and project.

## Course literature

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

## 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.

The result of the project is reported in a technical report.

## Other requirements for final grade

- Approved exam.
- Approved technical report.

## 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.