EG112V Introduction and Analysis of Sustainable electric Power Systems 6.0 credits

Introduktion och analys av uthålliga elkraftsystem

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

Establishment

The official course syllabus is valid from autumn term 2023 according to skolchefsbeslut J-2023-0048.Date of decision: 16/01/2023

Grading scale

P, F

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Knowledge in basic mathematics and statistics, 5 higher education credits.

The upper secondary course English B/6

Language of instruction

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

Intended learning outcomes

After passing the course, the student should be able to

- describe conceptually the technical basic properties and the performance of the electric power system with main function to deliver electricity between production, consumption and storing
- carry out basic modelling and analysis of electric circuits
- describe the basics of synchronous generators
- describe the basics of the three phase transmission system
- carry out calculations per unit in the electric power system
- describe the basic impact of different power loads on the electric power system
- formulate and solve current flow analysis problem
- describe the basic behaviour of the the electric power system based on simulation tools
- discuss and give examples of how an electric power system can be developed to contribute to a sustainable society.

Course contents

The course is divided into four parts as follows:

- Electric power systems as a part of a sustainable energy system.
- Basic modelling and analysis of the electric power systems: from physics of electricity, basic circuit analysis to modelling of AC systems to power flow assessment.
- Studies of the performance of the power system with for example analysis of integration of local electricity production and effect of the electricity market.
- Simulation of electric power system and handling of stability. Simulator tool PowerWorld.

Examination

- LAB1 - Laboratory work, 3.0 credits, grading scale: P, F
- TENA - Oral 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.

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

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.