EH2710 Power System Control and Operation 7.5 credits

Styrning och drift av kraftsystem

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 EH2710 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

Language of instruction

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

Intended learning outcomes

After completing the course, the students shall :

- Be able to explain the functional content of SCADA, EMS, DMS, NIS and related systems
- Be able to create simple architectures for substation automation using IEC 61850 Create data models of utility wide information system architectures.
- Create simple system architectures involving central as well as distributed systems for power system operation and control.
- Be able to apply appropriate parts of the IEC Common Information Model to system integration problems.
- Understand importance of non-functional aspects of the systems such as data quality, performance and availability.
- Understanding of the importance of Cyber Security.
- Have knowledge of emerging trends in systems used for Power system Operation & Control

Course contents

The course contains:

Presentation of basic functionality and data for communication, data acquisition, system supervision and operation, generation control and distribution management

Presentation of functionality and data of other types of systems necessary for operation and control of power systems, such as maintenance, GIS, ERP and decision support.

Systems for substation automation based on IEC 61850, and also automation of generation plants, and distribution systems

System integration as a tool to achieve overall management of the power system, including standards and techniques to achieves this.

Developing technologies for advanced control of market based transmission systems such as PMUs and WAMC.

Methods for analysis of non-functional aspects of information systems architectures.

Course literature

Control and Automation of Power Distribution Netoworks, James Northcote-green, Robert G Wilson and hand-outs

Examination

- INL1 - Exercise, 1.5 credits, grading scale: P, F
- INL2 - Exercise, 3.0 credits, grading scale: P, F

- KON1 - Examination, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 0.8 credits, grading scale: P, F
- SEM1 - Seminar, 0.7 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.

Other requirements for final grade

Exam
Approved Project Assignments
Approved experiment

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.