EH2751 Communication and Control in Power Systems - Project Course 9.0 credits

Kommunikation och styrning i elkraftsystem - projektkurs

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

Establishment

Course syllabus for EH2751 valid from Autumn 2015

Grading scale

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

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

Students in 2nd year Master education.

Language of instruction

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

Intended learning outcomes

The course goals are that the participants after compelting the course shall be able define, plan and exectue a development project with advanced fucntions for automation, control and/or optimsaition of electric power systems. After completing the course, the student shall be able to:

Organise a project team able to complete a complex task

Plan the work of a project team in consideration of team-members responsibilities and tasks.

Plan the work in time, so that the work is completed according to plan and the work load is evenly distributed among team members.

Present written reports of progress at pre-defined intervals.

Write a project report presenting background, method, exectuion, results and conclusions from the project.

Evaluate a projects quality

Orally present the result of the project to teachers, peers, the public and to future employers.

Course contents

The course consists of two blocks, that run partly in parallel throughout the course. The two blocks are Projectexecution, and System design and implementation.

The project execution block consists of lectures and assignments on project planning, execution and documnetation. The contents of the block is strongly connected to the system design and implementation task that is the main part of the course. It is the intention that the students during this Project execution block plans and documents the proejct work necessary to complete the system design and implementation task. The goal is to develop project plans including time and resources plans and contiuously during the exectution of the project update and plans and reports. At teh end of the project and system design, the goal is to present the results and document the work according to project management principles.

The system design and implementation task consists of analysing requirements on an advnaced function for optmisation, automation or control of a electric power system. Examples of such functions are automatic fault restoration, demand response, distributed voltage control or similar. The task is conducted in the course lab using simplified power system models as the target environment. The task invovles, in addition to requirements identification and analysis, design of automation and control functions and implementation of these in a embedded controllers, e.g. Raspberry Pi. The task invovles programming of distributed systems.

Disposition

The course consists of a project invovling requirements analysis, system design and implementation of a computer application for automation, control and/or optimsation of power systems. The students work in groups to complete the project.

Course literature

Course compendium

Artificial Intelligence - A Modern Approach, Russel & Norvig.

Equipment

None

Examination

- PRO2 - System Design, 7.0 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Project Work, 2.0 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 main component of the course is the system desin and implementation task. The project esxectuion task is a supplement to this. Both components must however be completed, and the grade for the course is based on the grade of both components.

Other requirements for final grade

All course components completed with at least grade E.

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.