EH2745 Computer Applications in Power Systems 4.5 credits

Datortillämpningar i elkraftsystemet

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

Establishment

Course syllabus for EH2745 valid from Spring 2019

Grading scale

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

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

Bachelor degree corresponding to 180 ECTS and Eglish level 6.

EH2741 communication and control in electric power systems

Language of instruction

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

Intended learning outcomes

The aim of the course is to train the students in developing computer systems for advanced planning, operation and control of electric power systems.

On completion of the course, the student will be able to:

· Analyze a control problem and suggest appropriate system architecture.

· Analyze the need for information exchange and suggest appropriate information models and protocols.

· Develop simple software for a controller.

· Analyze the information needed for a given automation and control function for power systems.

· Create consistent information models for power systems control

Course contents

The course consists of two blocks, each consisting of a project assignment, lectures and exercise sessions. Block one includes analysis and modeling of the need for Information exchange for power system control. The aim is to train the students to analyze different perspectives on information necessary for power system control. The project assignment in the block includes implementation of a simple information model for the exchange of data on power systems. Block two includes basics in programming techniques and computer science focusing on machine learning methods with applications in power systems. The project assignment in the block consists of developing machine learning algorithms for forecasting.

Disposition

The course is to a large extent performed as project assignments in which information models and analysis methods are developed.

Course literature

Artifical Intelligence a Modern Approach, Russel & Norvig

IntelliGrid Common Information Model Primer, EPRI Technical Report 2013

Equipment

None

Examination

- PRO2 - Project Assigment 2, 3.0 credits, grading scale: P, F
- PRO1 - Project Assigment 1, 1.5 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.

The examination consists of two project assignments

Project 1 involves requirements analysis and information modeling for control of electric power systems

Project 2 involves analysis, design and implementation of a applicaiton in Java

Other requirements for final grade

Passed all examination components

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.