Linnæus University

Jnr: 2015/1231–3.1.2

Course syllabus

Faculty of Technology
Department of Physics and Electrical Engineering

4ED453 Elkraft och smarta nät, 7,5 högskolepoäng
Electric Power and Smart Grid, 7.5 credits

Main field of study
Energy Technology, Electrical Engineering

Subject Group
Electrical Engineering

Level of classification
Second Level

Progression
A1N

Date of Ratification
Approved by Faculty of Technology 2015-04-28
The course syllabus is valid from spring semester 2016

Prerequisites
Basic eligibility for advanced level studies and special eligibility:

- Bachelor's degree or Bachelor of Science degree in Electrical Engineering or Energy technology or equivalent, 180 credits
- Knowledge in Electric power systems or equivalent, 15 credits
- English B/ English 6 or equivalent

Objectives
After completing the course the student should:

- Critically evaluate HVDC and HVAC systems and value their properties and limitations.
- Value different solutions for the electric grid and storage of electricity, and value terms such as voltage and frequency quality.
- Be able to critically assess scientific papers on the electric grid and smart grid developments.

Content
The course covers the following topics:

- HVAC and HVDC systems, cables, defects
- Quality in the power grid - load, voltage and frequency
- Storage
- Smart grid system

Type of Instruction
The teaching consists of lectures and self study. During the course, two reports shall be written by the students.

Examination
The course is assessed with the grades A, B, C, D, E, Fx or F.
The course is assessed with the grades A, B, C, D, E, or F. The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

The course is examined by the assessment of two reports.

Course Evaluation
During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

Other
Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Some elements of the course may incur costs that are to be paid by the course participant.

Required Reading and Additional Study Material

N. Mohan, Electric Power Systems - a first course. Wiley & sons, 2012. ISBN : 978-1-118-07479-4. Pages: 256.

S.F. Bush, Smart Grid: Communication-enabled Intelligence for the Electric Power Grid. Wiley - IEEE, 2014. ISBN-13: 978-1119975809. Pages: 570.

Other reading materials

Handouts, 50 pages.

At least two relevant scientific papers