



EI3353 Electrotechnical Design, Ph D. Course 10.0 credits

Elektroteknisk konstruktion, doktorandkurs

Course syllabus for EI3353 valid from Spring 13

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

Grading scale:

Education cycle: Third cycle

Intended learning outcomes

After completing the course, course participants will be able to

- describe the function of some electrical components and function and the properties of the - included magnetic, dielectric and conductor materials,
- describe and explain how electric and magnetic fields affect the operation of electrical equipment,
- use analytical methods, dynamic simulation and the finite element method for the design of electrical equipment.

Course main content

Basic principles, issues, methods, and tools for the design of electrical systems that includes, electric and magnetic fields, electric and magnetic materials, mechanical and thermal system, and multiphysical systems.

Most of the course is focused on the implementation of design tasks that includes the methodology for problem formulation and presentation of model algorithms, use of finite element software, and dynamic simulation. The design objects can be an electromechanical actuator, magnetic device as a transformer, a loudspeaker and/or a high voltage device as a HV cable, bushing and/or cable termination, where electrical, magnetic, thermal and mechanical aspects has to be accounted for. The design tasks that will be performed are decided by the course examiner.

Disposition

Lectures, self studies, Seminars, software exercises, project work, presentation of project, written report

Language of instruction

Language of instruction is specified in the course offering information in the course and programme directory.

Eligibility

The participant must a registered PhD student in the program of Electrical Engineering

Literature

G. Engdahl: Electrotechnical modeling and design

Handbooks

Examination

Requirements for final grade

- Written examination
- Oral presentation at a seminar at KTH or at a conference/symposium outside KTH
- Approved project report

The project report should comprise background, and introduction of a selected design problem, description of the approach to manage the problem, the carrying out, results, assessment of the result, and a conclusion regarding the obtained results.