HE111X Degree Project in Electrical Engineering, First Cycle 15.0 credits

Examensarbete inom elektroteknik, grundnivå

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

Establishment

Course syllabus for HE111X valid from Spring 2019

Grading scale

P, F

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

To start a degree project it is required that all courses that are considered relevant to the degree project are passed and that at least 135 credits from the programme syllabus (consisting of satisfactorily completed courses) are completed. The student's eligibility, to carry out and complete the degree project, are assessed and accepted by an examiner before course registration.

Course registration and starting the degree project can at the earliest take place during the final semester in the degree programme.

Language of instruction

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

Intended learning outcomes

The purpose of the degree project is that the student shall apply and deepen his/her knowledge, understanding, abilities, and approaches within the context of the education. The degree project shall be carried out towards the conclusion of the education and imply a specialised study and synthesis of earlier acquired knowledge.

After completing the degree project, the student shall demonstrate the knowledge and skills required to work independently as a graduate engineer according to the national goals for an engineer in the Higher Education Ordinance. These include:

Knowledge and understanding

The student shall:

- demonstrate knowledge of the disciplinary basis of the engineering field chosen and its best practice as well as awareness of current research and development work, and
- demonstrate a broad knowledge in the chosen engineering field and relevant knowledge of mathematics and the natural sciences.

Skills and abilities

The student shall:

- demonstrate the ability to, independently and creatively, identify, formulate and deal with issues and to analyse and evaluate different technological solutions
- demonstrate the ability to use knowledge, critically and systematically, to model, simulate, predict and evaluate series of events on the basis of relevant information
- demonstrate the ability to plan and with appropriate methods undertake tasks within predetermined parameters
- demonstrate the ability to design and manage products, processes and systems while taking into account the circumstances and needs of individuals and the targets for economically, socially and ecologically sustainable development set by the community,
- demonstrate the capacity for teamwork and collaboration with various constellations, and
- demonstrate the ability to present and discuss information, problems and solutions in speech and writing and in dialogue with different audiences.

Judgement and approach

The student shall:

- demonstrate the ability to make assessments informed by relevant disciplinary, social and ethical aspects
- demonstrate an understanding in and insight into the possibilities and limitations of technology, its role in the society and the responsibility of the individual for how it is used, including social and economic aspects as well as environmental and occupational health and safety aspects and working environment aspects, and
- demonstrate the ability to identify the need for further knowledge and undertake ongoing development of his or her skills.

Course contents

The degree project, an independent activity, completes the degree programme. The work can be carried out at a department within the home higher education institution, in industry or at another higher education institution/university in Sweden or abroad.

The degree project is carried out in pairs with another student or, in exceptional cases, individually. If the degree project is carried out in pairs with another student, it is important that each individual's contributions can clearly be distinguished so fair grading can be made.

Before the degree project course starts, the student shall identify an appropriate degree project task and formulate a project proposal that can be presented to the examiner for approval. The assignment must be chosen so that it implies a natural progression of the knowledge and skills that have been acquired within the education.

After the project proposal has been passed, the student designs an individual plan for the degree project where knowledge and methods from the education are applied, whereupon the work is started.

The work must build on a scientific foundation and engineering experiences and contain examples of investigation and analysis. Practical construction work can be part of the work and shall mainly intend to verify set models and theories for solving the assignment, as well as be an application of the chosen scientific and engineering methodology.

The student completes the course with an oral presentation and defence of his work and a critical review on the degree project of another student and a self-assessment.

The language of instruction is Swedish or English.

The report, with appendices, can be written in Swedish or English. Title and summary are always stated in both languages.

Learning activities

Before the degree project course is started, the student should have identified an appropriate degree project task and formulated a project proposal so that this can be presented to the examiner for approval. The assignment must be chosen, so that it implies a natural progression of the knowledge and skills that have been acquired within the education.

The student should write an individual plan for the degree project in which the problem description/assignment and the preconditions for the implementation of the work should be specified. The individual plan for the degree project should include a background including a problem description and scientific aspects/question formulations, purpose(s), goals, limi-

tations, relevance of the project, methods and a time schedule for the implementation of the degree project. The individual plan shall also include a brief self-reflection where the student accounts for her/his knowledge to carry out the assignment and the planning for how any remaining courses, that are required for higher education qualification, shall be completed. The individual plan for the degree project shall be approved by the examiner.

The student shall carry out a specialised pilot study including discussion of method choice and theoretical background with a literature study, that is reported as part of a draft to a preliminary version of the written degree project report.

The student shall carry out an individual independent project, where knowledge and methods from the education are applied.

The student should write and present a written degree project report, where the student clearly accounts for and discusses his or her conclusions in the degree project and the knowledge and the arguments that underspin them.

The student should plan and carry out an oral presentation and defence of his or her degree project.

The student should carry out an oral and written review of another degree project at the same level.

The student carries out a self-assessment of the degree project according to the model for assessing quality of degree project for engineers.

Examination

- XUPP - Examination Question, 15.0 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.

- XUPP- Examination assignment, 15.0, grading scale: P, FThe course is presented as a 15 credit course.In the examination part, the following is included:
- Individual plan for degree project
- Pre-study, literature study and discussion of method choices
- Oral presentation
- Written and oral opposition of another student's degree project for first-cycle studies
- Written report with title and summary/abstract both in Swedish and English
- Self evaluation reportTime limitRequirements according to KTH's regulatory framework for degree projects and all examination parts as mentioned above shall be approved within a year from the starting date of the degree project. Otherwise, the degree project will be ended with a failed grade, unless special circumstances apply.

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.