EJ212X Degree Project in Electrical Energy Conversion, Second Cycle 30.0 credits

Examensarbete inom elektrisk energiomvandling, avancerad nivå

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

Establishment

Course syllabus for EJ212X valid from Autumn 2016

Grading scale

P, F

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

- All courses required for the Degree of Bachelor and a minimum of 60 credits of courses for second-cycle studies must be fully completed. These 60 credits should include all courses in the program [1] relevant to the degree project and a course in theory of knowledge.
- A course in scientific methodology must be finally reported as completed with a passing grade.

(1) or programs, when the student is enrolled in both a program for engineering and a master program.

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 degree project (1) is for the student to apply and deepen knowledge, understanding, abilities and approach within the context of the program area. The degree project should be carried out at the end of the masters program and provide a specialised study and synthesis of earlier acquired knowledge. In the degree project, both technical/scientific content and method are emphasised.

After having completed the degree project, the student shall demonstrate the knowledge and skills required to work independently as a graduate engineer, as detailed in the national goals specified in the Higher Education Ordinance for the Degree of Master of Science in Engineering, as well as for the Degree of Master of Science. These include:

- considerably advanced knowledge within the program's main field of study/specialisation, including advanced insight into current research and development work,
- specialised knowledge of method within the program's main field of study/specialisation,
- the ability to participate in research and development work and so contribute to the advancement of science
- demonstrate, with a comprehensive approach, the ability to critically, independently and creatively identify, formulate, analyse, assess and deal with complex phenomena, issues and situations even with limited information,
- the ability to plan and with adequate methods carry out advanced tasks within given parameters, as well as the ability to evaluate this work,
- the ability to create, analyse and critically evaluate various technological/architectural solutions,
- the ability to integrate knowledge critically and systematically, as well as the ability to identify the need for additional knowledge,
- the ability to identify within the framework of the degree project, the role of science and the role of the engineer in society
- the ability to identify within the framework of the specific degree project, which issues need to be adressed in order to respect relevant dimensions of sustainable development, and
- the ability, within the framework of the degree project, to assess and show awareness of ethical aspects of research and development as regards means, methods and results of the degree project
- to orally and in writing be able to clearly present and discuss one's conclusions, as well as the science and reasoning these are based on.

[1] Also referred to as independent project

Course contents

Before beginning work with the degree project, the student must have identified an appropriate subject or task for such a project and must have presented a project proposal to the examiner for approval. The project must be chosen, so that it is a natural progression of the knowledge and skills that have been acquired during the program of studies, and if such is the case, from the specialisation pursued by the student.

The student must write an individual plan for the degree project which specifies the problem description or task undertaken as well as the conditions for carrying out the work. The individual plan for the degree project should contain background information including a problem description and scientific questions, purpose, objective, limitations, relevance of the project [1], methods and time plan for the completion of the degree project. The plan should also include a brief self-reflection where the student gives an account of his or her knowledge and ability to complete the project [2]. The individual plan for the degree project shall be approved by the examiner.

The student carries out an in-depth preliminary study including discussion of choice of method and theoretical background as well as a literature survey which serves as part of a draft of a preliminary version of the written degree project report.

The student carries out an individual independent project, where knowledge and methods from the program of education are applied.

The student plans and carries out an oral presentation and defence of his or her degree project.

The student carries out an oral and written review of another degree project on the same level.

The student writes and presents a written degree project report, where the student clearly presents and discusses his or her conclusions from the degree project and the knowledge and reasoning that support them.

The student carries out a self-assessment of the degree project according to the model of "Assessment of the quality of degree project for Degree of Master of Science in Engineering and Degree of Master of Science".

[1] Relevance here means relevance in relation to the program of education, current research and development, in relation to the specialisation that the student is studying as well as relevance for stakeholders and society.

[2] The student should submit a draft of this part together with the initial project proposal prior to admission to the Degree Project course. A plan for completion of outstanding incomplete courses neccessary for the program of education should be included in the plan for the degree project. All courses must be completed by the time the degree project is finished, at the latest.

Disposition

- The degree project is an individual independent project that is carried out by one student. Although several students may work within the same project, it shall result in individual reports, where each report must satisfy the requirements for a degree project.
- The student must contact an appropriate examiner before starting work on the project. Alternatively, the director of studies for degree projects or programme co-ordinator may propose an examiner.
- The student makes a brief written proposal which describes the project. The written proposal shall be attached to the registration documentation. The written proposal shall contain background information, purpose, objective and method.
- The examiner verifies that the students satisfy the general and specific prerequisites for the degree project and that the proposed degree project will satisfy expected learning outcomes for a degree project. The examiner verifies that the degree project falls within the degree programme's subject area and that the issues studied show appropriate educational progress. The examiner signs the documentation for registration [1].
- The examiner appoints a supervisor at KTH and, where it is neccessary, an on-site supervisor, in consultation with the director of studies for degree projects.
- When the examiner has approved the project proposal the degree project is then registered (as a course). [2].
- The student writes a detailed individual plan for the degree project [3] which is turned in to the examiner for approval.
- The student makes a preliminary study, investigation into and choice of method, as well as a literature survey, which are handed in to the supervisor at KTH for approval.
- During the course of the degree project, while working independently, the student shall report regularly (at least every second week) on progress to the supervisor at KTH.
- During the degree project, the student shall continuously document the work in writing and work on the preliminary version of the written report.
- When the supervisor at KTH deems that the student has achieved the objectives, according to the plan for the degree project, and that the preliminary written report is of high quality, the student shall write a self-assessment of the degree project according to the model for "Assessment of the quality of degree project for Degree of Master of Science in Engineering and Degree of Master of Science". The supervisor gives feedback on the self evaluation, and the student is given opportunity to remedy any deficiencies.
- The report and self evaluation shall be submitted to the examiner for preliminary approval, together with a summary of the KTH supervisor's assessment of the degree project report, according to the template for "Assessment of the quality of the degree project".
- The student must agree with another student presenting a degree project on the same level, to lead a public discussion on the degree project. Each student must lead discussion of another students presentation and report, and have another student to do the same at his or her own presentation. The date for leading this discussion [4] and choice of degree project report to publicly discuss must be approved by the examiner. Each student must carry out an oral and written review of the other student's presentation of his or her degree project. Leading of the public discussion is assessed and approved by the examiner of the student presenting.
- The student shall make an oral presentation and defence of his or her report.

- After the presentation the student presents a final report to the examiner. The student will enclose an updated self-reflection based on the template for the "Assessment of the quality of the degree project for Bachelor and Master of Science degree."
- The examiner is responsible to make sure that the thesis is reviewed for plagiarism.
- The examiner must fill in the template for the "Assessment of the quality of the degree project for Bachelor and Master of Science degree."
- The grade for the thesis should be decided by a specially appointed teacher (examiner).
- KTH's policy for disclosure is applicable to the thesis and to the publishing of the report. The thesis must be electronically published in Diva according to the rules for electronic publication of theses at KTH.

[1] The documentation for registration is the documentation on which for course registration is based.

[2] this registration is normally done by the administration.

[3] Please see the the section on Learning activities.

[4] The public presentation may not be held before the student is admitted to the course, and registration is completed.

Examination

- XUPP - Degree Project, 30.0 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.

- An individual plan for the degree project
- Active attendance at two oral presentations of degree projects for second-cycle studies. [1]
- Preliminary study, discussion of method choices and literature survey
- Self-assessment report
- Oral presentation
- Written and oral review of another student's degree project on second-cycle level
- Written report with summary/abstract in both Swedish and English

[1] It is recommended that active attendance at oral presentations take place early in the process. Credit may be given for this element if it has been included in earlier courses. Attendance at presentations may also take place at the student's own initiative before the course is started; then there must be some written documentation of this attendance.

Other requirements for final grade

Requirements for degree projects specified by KTH's regulations, as well as all requirements stated here must be fulfilled within a year from the start of the degree project. Otherwise, the degree project will be ended with a failing grade, except in case of special circumstances.

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.