IL142X Degree Project in Electronics and Computer Engineering, First Cycle 15.0 credits

Examensarbete inom elektronik och datorteknik, grundnivå

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

Establishment

Course syllabus for IL142X 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 courses, that are considered relevant to the degree project, have been passed and that at least 120 credits from the programme syllabus of the program (consisting of completely completed courses) are completed. The student's preconditions, to carry out and complete the degree project, are assessed and accepted by an examiner before course registration. Course registration and starting of 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 knowledge, understanding, abilities, and approaches within the contexts of the education. The degree project should be carried out at the end 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 autonomously as a graduate engineer according to the national goals for engineer in Higher Education Ordinance. These include:

Knowledge and understanding

The student shall:

- demonstrate knowledge of the disciplinary foundation of the engineering field chosen and proven experience in this field as well as awareness of current research and development work, and
- demonstrate broad knowledge in the engineering field chosen and relevant knowledge of mathematics and the natural sciences.

Skills and abilities

The student shall:

- demonstrate the ability to, and with overall view, identify, formulate and deal with issues autonomously and creatively 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 the technology, its role in the society and the responsibility of the individual for how it is used, included 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 complete the degree programme. The work can be carried out at a department within the higher education institution, in the industry or at other higher education institution/university in Sweden or abroad.

The degree project is carried out in pair with other student or, in exceptional cases, individually. If the degree project is carried out in pairs with other 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 project proposal has been accepted, the student designs an individual plan for the degree project and starts the work where knowledge and methods from the education are applied.

The work must build on a scientific foundation and engineering experiences and contain parts of investigation and analysis. Practically 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 chosen scientific and engineering methodology.

The student completes the course with an oral presentation and defend own work, as well as an opposition on other student's degree project work and a self-assessment.

Language of instruction are 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 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.

The student must write an individual plan for the degree project in which the problem description/assignment and the preconditions for the implementation of the work are specified. The individual plan for the degree project should include a background including a problem description and scientific aspects/question formulations, purpose(s), goals, delimitations, the relevance of the project, methods and time schedule for the implementation of the degree project. The individual plan shall also include a brief self-reflection where the student accounts for his knowledge to carry out the assignment and the planning for how

potential 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 carries out an in-depth pre-study including discussions of method choice and theoretical background with a literature study that is reported as a part of a draft to a preliminary version of the written degree project report.

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

The student plans and carries out 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 own conclusions in the degree project and the knowledge and the arguments that support them.

The student carries out a self-assessment of the degree project according to the model for "Assessment of quality of degree project for Bachelor of Science in Engineering". The self-assessment is enclosed as appendix in the degree project report.

Disposition

- The degree project is one individual degree project that is carried out by one or two students.
- The student/the students contact appropriate examiner before course registration can take place and work can start. Alternatively, the director of studies for degree projects may propose an examiner.
- The student(s) prepares a brief written project proposal that describes the work. This description shall be enclosed to the registration material. The description shall contain background, purpose, objective and method description as well as a self-evalutation of the own preconditions to carry out the assignment.
- The examiner verifies that the students satisfy the general and specific entry requirements for degree project and that the suggested degree project can satisfy the expected learning outcomes for the degree project course. The examiner verifies that the degree project falls within the degree programme/s subject area and that the questions at issue indicate appropriate progression within the education. The examiner signs the registration form.
- The examiner appoints a supervisor at KTH and approves a possible industry supervisor in consultation with the director of studies for degree project.
- Examiner is responsible for getting the degree project registered in LADOK.

- The student writes an individual plan for the degree project and deliver it to the examiner for approval. The individual plan for the degree project should contain a background including a problem description and scientific aspects/question formulations, purpose(s), goals, delimitations, the relevance of the project, methods and time schedule for the implementation of the degree project. The individual plan shall also contain a brief self-reflection where the student accounts for his knowledge to carry out the assignment and the planning for how potential 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 carries out a pre-study, chooses method(s), method description and literature study that is delivered for an approval of the supervisor at KTH. The student carries out an in-depth pre-study including discussion of method choices and theoretical background with literature study which is reported to the supervisor at KTH as a part of a draft to a preliminary version of the written degree project report. The draft must be approved by the supervisor.
- During the implementation of the degree project, the student shall regularly (at least every second week) report how the work progresses to the supervisor at KTH.
- The student shall continuously during the degree project, document the work in writing and work on the preliminary version of the written report.
- When the supervisor at KTH assesses that the student has reached the goals according to the plan for the degree project and that the quality of the preliminary written report holds high quality, the student writes a self-assessment of the degree project according to the template for "Assessment of quality of degree project for Bachelor of Science in Engineering". The supervisor gives feedback on the self evaluation, and the student will be given the opportunity to remedy possible deficiencies.
- The report and self evaluation shall be delivered, together with the supervisor's summary of the assessment of the degree project report, according to the template for "Assessment of the quality of the degree project" to the examiner for a preliminary approval.
- The student of the degree project is assigned another degree project student, for first-cycle studies, to publicly discuss the degree project. The date for opposition and the choice of degree project, to publicly discuss, shall be approved by the examiner. The student shall carry out an oral and written review of the other student's presentation of his or her degree project. The opposition is assessed by the examiner of the other student.
- The student shall carry out an oral presentation and a defence of his or her report.
- After the presentation, and no later than one week (or two weeks for half time studies) after presentation, the student shall deliver a final report to examiner. To the report, the student shall enclose an updated self-reflection based on the template "Assessment of quality of degree project for Bachelor of Science in Engineering".
- The examiner is responsible for the plagiarism checking of the degree project report.
- The examiner fills out the template "Assessment of quality of degree project for Bachelor of Science in Engineering".
- The grade shall be determined by a teacher (examiner), particularly appointed by the higher education institution.
- The examiner shall acquire support for grading from at least one other teacher on KTH, competent in the subject area, (who constitutes reviewer for the degree project).
- The final assessment and grading of degree project is made examiner with support from a group of qualified assessors.

- KTH's policy for public attendance applies to the implementation of the degree project and for publication of the report. The degree project report will be published electronically in Diva, according to the rules that apply to electronic publication of degree projects at KTH.

Course literature

Compulsory literature.

Examination

- XUPP - Degree Project, 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.

Other requirements for final grade

The course is presented as a 15 credits course.

In the examination part is included the following:

- Individual plan for degree project
- Active attendance at two oral presentations of degree project for first-cycle studies
- Pilot study, literature study and discussion of method choices
- Oral presentation
- Written and oral review of another student's degree project for first-cycle studies
- Written report with title and summary/abstract both in Swedish and English
- Self-assessment report

Time limit

Requirements 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 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.