HL205X Degree Project in Medical Engineering, Second Cycle 30.0 credits

Examensarbete inom medicinsk teknik, avancerad nivå

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

Establishment

Course syllabus for HL205X valid from Autumn 2015

Grading scale

P, F

Education cycle

Second cycle

Main field of study

Medical Engineering

Specific prerequisites

Number credits (completely completed courses): According to decision in the Education Committee

All courses that are required for issuing the Degree of Bachelor and at least 60 credits of courses for second-cycle studies should 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] In the case that the student is enrolled both on a Master of Science in Engineering and a Master's 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 or 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. In the degree project in an engineering programme is emphasised both the technical/scientific content and method knowledge.

After completed degree project, the student should show such proficiency that is required to work independently as a Master of Science in Engineering/Master of Science, according to the national qualitative targets for the Degree of Master of Science in Engineering and Degree of Master of Science in the Higher Education Ordinance. These include:

- considerably advanced knowledge within the main field of study/the specialisation for the education, including advanced insight into current research and development work,
- specialised methodological knowledge within the main field of study/the specialisation for the education,
- ability to participate in research and development work and so contribute to the formation of knowledge
- ability to holistically, critically, independently and creatively identify, formulate, analyse, assess and deal with complex phenomena, issues and situations even with restricted information,
- ability to plan and with adequate methods undertake advanced tasks within predetermined time frames as well as the ability to evaluate this work
- ability to create, analyse and critically evaluate different technical/architectural solutions,
- ability to critically and systematically integrate knowledge and ability to identify the need of additional knowledge
- ability to in English in speech and writing clearly report and discuss his or her conclusions and the knowledge and arguments on which they are based
- ability to within the frames of the degree project identify the role of the scholarship and the engineer in the society

- ability to within the frame of the specific degree project be able to identify which issues that need to be answered in order to observe relevant dimensions of sustainable development, and
- ability to within the frames of the degree project assess and show awareness of ethical aspects on research and development work with respect to methods, working method and results of the degree project.

Course contents

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 should be chosen, so that it implies a natural progression of the knowledge and skills that have been acquired within the education and in a possible specialisation 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 contain background including problem description and scientific issues, purpose, objective, demarcations, the project's relevance [1], methods and time plan 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 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 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 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 accounts for and discusses own conclusions in the degree project and the knowledge and the arguments that underspin 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] With relevance we mean relevance in relation to the education, current research and development in relation to the specialisation that the student is studying and relevance for stakeholders and society.

Disposition

- The degree project is an individual independent project that is carried out by one student. Works several students within the same project should it even so result in individual reports that all for oneself should satisfy the requirements for a degree project.
- The student shall prepare a brief written project proposal describing the work. This description shall be enclosed with the registration forms. The description shall contain background, 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.
- Examiner appoints supervisor at KTH and accepts possible other supervisor
- The degree project can be registered after the examiner has accepted the assignment.
- The student writes a detailed individual plan for the degree project and delivers it to the examiner for approval.
- The student carries out a pre-study, an investigation of choices of methods, as well as a literature study, which are delivered to the supervisor at KTH for approval.
- 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 objectives, according to the plan for the degree project, and that the quality of the preliminary written report holds 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 will give feedback on the self-assessment, and the student will be given the opportunity to remedy possible deficiencies.
- The report and self-assessment shall be delivered together with the supervisor's summary of the assessment of the degree project report, according to the model for "Assessment of the quality of the degree project", to the examiner for a preliminary approval.
- For opposition, the student is assigned another student's degree project report, who is working on a second-cycle degree project, to publicly discuss his or her report. The student shall carry out an oral and written review of the other student's project presentation of his or her degree. The opposition is assessed by the examiner of the other student.
- The student shall carry out an oral presentation and defence of his or her own report.
- After presentation, the student shall deliver a final report to the examiner. To the report, the student shall enclose an updated self-assessment based on 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 examiner is responsible for checking plagiarism of the degree project report.

- The examiner fills in the template of "Assessment of the quality of degree project for Degree of Master of Science in Engineering and Degree of Master of Science".
- The grade shall be determined by a teacher (examiner), especially appointed by the higher education institution.
- The examiner should get support for grading from at least one other teacher in the field at KTH (reviewer for the degree project)
- The directions for public access at KTH, apply for the implementation of the degree project and for publication of the report. The degree project report should be published electronically in DiVA, according to the rules that apply to electronic publication of degree projects at KTH.

Examination

- XUPP - Examination Question, 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.

Other requirements for final grade

- Individual plan for degree project
- Pre-study, discussion of method choice and literature study
- Self-assessment report
- Oral presentation
- Written and oral opposition of another student's degree project on second-cycle level
- Written report with summary/abstract in both Swedish and English

Time limit

Requirements according to KTH's regulatory framework for degree projects, and all examination parts as above should be approved within a year from the start 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.