

SF280X Degree Project in Optimization and Systems Theory, Second Cycle 30.0 credits

Intended learning outcomes

The overall objective of the degree project work is that the student, after completion of the project, has knowledge of and is able to apply theory, models, and methods from optimization and systems theory to independently analyse and solve advanced problems from industry or academia, and also to, in a professional way, present and defend the work orally as well as in writing.

Eligibility

For students in Master's programme at least 60 credits must be completed before the degree project starts. For students within the Master's part of five-year degree (civilingenjör) at least 240 credits must be completed, and no more than 2 courses may be incomplete in the Bachelor part of the degree. It is the responsibility of the examiner to make sure that the student has an appropriate specialization and that the student has completed sufficient parts of the studies before the degree project is started. Exemption can, after assessment, be granted by the director of first and second cycle education. The degree project should normally be carried out during the last semester.

Specific requirements:

The specific requirements for starting a degree project in Optimization and systems theory is typically considered to be fulfilled if the student has passed

- **SF1811 Optimization** , 6 hp
- **SF2520 Applied Numerical Methods** , 7.5 hp
- At least four of the following courses:
 - **SF2812 Applied Linear Optimization** , 7.5 hp
 - **SF2822 Applied Nonlinear Optimization** , 7.5 hp
 - **SF2832 Mathematical Systems Theory** , 7.5 hp
 - **SF2842 Geometric Control Theory** , 7.5 hp
 - **SF2852 Optimal Control Theory** , 7.5 hp
 - **SF2863 Systems Engineering** , 7.5 hp
 - **SF2866 Applied Systems Engineering** , 7.5 hp

If the above requirement is not met, an individual assessment will be needed to determine if the student can start the project.

Course main content

The degree project, which should deal with a relevant problem in Optimization and systems theory, consists of an individual assignment with a topic that is accepted by the examiner. It should normally constitute a specialisation within the chosen field of technology and be at the level of second-cycle studies. The emphasis is placed on analysis and modelling, not programming and implementation. The extent of the project should correspond to at least 20 weeks of full time studies. The formulation of a detailed project description and plan is required. The degree project starts with literature studies in the first month. After that a brief oral presentation is normally required. The final work is presented in a written report and an oral presentation at an open seminar.

It is the student's own responsibility to choose a project. Thesis work is usually performed at a company, but it can also be performed for example at a foreign university or in some cases at the department. In any case the student should contact course responsible Xiaoming Hu first before accepting any project.

Here is a list of **contact persons at companies and external institutes**

Application

Application to start degree project should start with contacting the course responsible with a short description of the intended project. Once your proposed project is approved, you will be assigned an examiner. Before you can start the project, the following forms need to be filled and handed in to either the examiner or the course responsible: **Application form for the division** and **Application form for the program**.

Requirements for final grade

The degree project is carried out individually or together with another student. In the latter case, the examiner should make sure that each student's effort corresponds to the requirements for an individual degree project. The degree project is presented orally and in writing in English or Swedish. Depending on the student's degree programme, a public defense and participation in the evaluation of other degree project can be a requirement. The degree project will be assessed based on the learning objectives. The degree project must pass each of the requirements. The grade is assigned by examiner as an overall assessment after the written report has been checked for plagiarism. Students who have not completed the thesis within a year may fail the course. Such a decision is taken by the examiner after consultation with the programme co-ordinator.

Before the final grade can be reported, the student must fill in the following web form:

Web form

Opposition

You should be an opponent and give feedback to a fellow student (**Use this Form**) . The written report must be sent to the examiner as well.

Questions

If you have questions please in first hand contact:

Xiaoming Hu, Responsible for Optimization and Systems Theory Track.