MF223X Degree Project in Machine Design, Second Cycle 30.0 credits

Examensarbete inom maskinkonstruktion, avancerad nivå

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

Establishment

The official course syllabus is valid from spring semester 2027 as decided by the Director of First and Second Cycle Education. Decision date: 2026-10-22

Grading scale

P, F

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

To begin the degree project, second cycle, requires:

- completed courses corresponding to at least 60 credits at the second cycle.
- completed course in scientific research methodology
- exhibit sufficient subject depth in relation to the chosen area for the thesis work

Intended learning outcomes

Based on the objectives set by KTH for the Master's thesis, the student should be able to:

1\. demonstrate knowledge of the scientific foundations and established practice within the chosen subject area, in-depth insight into current research and development work, and in-depth methodological knowledge.
2\. demonstrate the ability to search for, gather and integrate knowledge in a holistic, critical and systematic manner, and to identify their need for further knowledge
3\. demonstrate the ability to identify, analyse, assess and manage complex phenomena, issues and situations, even with limited information
4\. demonstrate the ability to plan and, using appropriate methods, carry out advanced tasks within given timeframes, and to evaluate this work
5\. demonstrate the ability to clearly present and discuss, both orally and in writing and in dialogue with various groups, their conclusions and the knowledge and arguments on which these are based
6\. demonstrate the ability to make judgements taking into account relevant scientific, societal and ethical aspects
7\. demonstrate the skills required to participate in research and development work or to work independently in other specialised fields

Course contents

The programme concludes with a final-year project in which the student is expected to demonstrate their ability to independently solve a mechanical engineering problem using an engineering approach. The project must be based on relevant theories and presented in the form of a written report and an oral presentation. The degree project also involves attending the public presentations of two other degree projects at KTH, as well as acting as an external examiner for another student's degree project.

The degree project must have significant mechanical engineering content, whilst the focus may vary considerably between different degree projects. Examples of different focuses may include:

- developing a new concept for a technical system,

- designing and evaluating a new component in an existing technical system,

- investigating and developing new design methods and/or tools.

Provided that the degree project meets the above requirements – as determined by the course coordinator or examiner – and provided that appropriate supervision is available during the degree project period, the student may choose to carry out the degree project either at an academic institution, within an industrial company, or at a consultancy firm, in Sweden or abroad.

Examination

- EXAM - Thesis Project, 15.0 credits, grading scale: P, F

• INL1 - Half time report, 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.

The course coordinator manages the thesis process: in consultation with the examiner, they appoint a supervisor at KTH, select an external examiner for the thesis, and are responsible for the registration and publication of the thesis.

Other requirements for final grade

The criteria established by KTH for a Master's thesis to be awarded a pass are:

The literature review is well conducted. Current research and developments relevant to the thesis are presented clearly. The chosen methodology is well justified, based on scientific evidence or proven experience, and evaluated in comparison with other methods. Relevant knowledge from the programme's courses is applied appropriately.
The thesis topic is addressed independently and systematically, based on critical analysis and synthesis of relevant literature. The thesis demonstrates a holistic approach. Well-chosen databases and search tools are utilised. The need for further knowledge is discussed.
Relevant complex phenomena, issues and situations are identified in the degree project. The project clearly demonstrates that these are well addressed and analysed, even where available information is limited. Appropriate assessments linked to the degree project's research question(s) and its findings are carried out.
The work plan drawn up at the start of the degree project has been followed. A high-quality piece of work has been completed within the agreed timeframe and using the agreed methodology. Any changes to the plan or the work itself have been agreed between the student and the supervisor. The strengths and limitations of the work carried out are clearly presented.

The report is well-organised, well-written and coherent. The reasoning behind the conclusions is sound. The summaries of the sources are relevant, independently formulated and well integrated. Both the oral presentation and the defence, as well as communication throughout the course of the work, demonstrate the ability to present and discuss the work and its conclusions in a responsive manner with various parties, such as the client, supervisor, teachers, researchers and students.

The degree project demonstrates the ability to make judgements, for example, the ability to explain, justify, criticise and make recommendations. Relevant subject-specific assessments, based on scientific evidence or proven experience, have been made in the degree project. The degree project includes reflection on societal and ethical aspects, unless this has been justified as irrelevant.

The student familiarises themselves thoroughly with the assignment and demonstrates an ability to participate in the prevailing work culture where the assignment is to be carried out. The student demonstrates an ability to test, evaluate and even reject ideas and solutions in

discussions of the assignment. The student demonstrates initiative and is open to supervision and criticism. The degree project is carried out largely independently.

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.