SF100X Degree Project in Applied Mathematics and Industrial Economics, First Cycle 15.0 credits

Examensarbete inom tillämpad matematik och industriell ekonomi, grundnivå

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: 2026-10-15

Grading scale

P, F

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Prerequisites for admission to the course:

- Completion of courses corresponding to 120 credits, provided that the courses from Period 1 of Year 3 have been reported in Ladok.
- If the above requirement is not met, 120 credits must have been completed by the start of the course.

The examiner is responsible for ensuring that the student has an appropriate level of subject-specific specialisation and has completed a sufficient proportion of their studies before commencing the degree project. The degree project should normally be carried out during the final semester of the programme.

Intended learning outcomes

Demonstrate knowledge of the scientific foundations and applicable methods of the chosen subject area, familiarity with current research and development, and in-depth knowledge of a specific part of the subject area.

1. Demonstrate the ability to critically search for, collect, and use relevant information, and to identify the need for further knowledge.
2. Demonstrate the ability to formulate, assess, and address problems, and to critically discuss phenomena, issues, and situations.
3. Demonstrate the ability to plan and carry out tasks using appropriate methods within specified time frames.
4. Demonstrate the ability to present and discuss information, problems, and solutions, both orally and in writing, in dialogue with different groups.
5. Demonstrate the ability to make assessments with due consideration of relevant scientific, societal, and ethical aspects.
6. Demonstrate the skills required to work independently at the interface between applied mathematics and industrial engineering and management within the main field of technology.

Course contents

The degree project consists of an independent study within a problem area determined by the examiner. It should normally form part of a specialisation at first-cycle level. The degree project shall correspond to 10 weeks of full-time study. The work shall be documented in a written report and presented orally at an open seminar.

Examination

- XUPP - Examination Question, 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 degree project is carried out individually or in collaboration with another student. In the latter case, the examiner is responsible for ensuring that each student's contribution meets the requirements for an individual degree project. The degree project is presented in writing and orally in English or Swedish. Depending on the student's degree programme, reviewing another degree project and participating in a review of one's own degree project may be required to complete the course.

The degree project is assessed based on the extent to which the intended learning outcomes, as specified above, have been achieved. The grade is awarded by the examiner based on an overall assessment, after the degree project report has undergone plagiarism screening. To receive a passing grade, the student's performance must meet the requirements for a pass in all assessment criteria.

Students who have not completed their degree project within eight months risk receiving a failing grade for the course. Where applicable, the decision is made in consultation between the examiner and the programme director.

Achievement of the Intended Learning Outcomes

Learning Outcome 1

Pass: A literature review has been conducted, including a description of applicable methods within the subject area and an overview of current research and development. The selected method is justified and based on scientific evidence or established professional practice. Relevant knowledge acquired in the programme's courses is applied appropriately.

Fail: The literature review is insufficient. The connection to current research and development is missing or inadequate. The justification for the selected method is insufficient. The work demonstrates inadequate knowledge of subjects covered in previous courses within the programme.

Learning Outcome 2

Pass: The degree project task is carried out largely independently. Appropriate databases and search tools are used. Relevant literature and knowledge are integrated into the degree project. The need for further knowledge is discussed.

Fail: Relevant literature is largely absent or has not been integrated into the work. The work does not build on previous knowledge in the subject area. There is no discussion of how the work could be developed further.

Learning Outcome 3

Pass: The degree project contains a clearly formulated problem statement and demonstrates progression in addressing it. Relevant phenomena, issues, and situations related to the work are critically discussed. Appropriate assessments related to the degree project's research question(s) are carried out.

Fail: The problem statement is inadequate, as is the development of the approach to addressing it. Relevant phenomena, issues, or situations are not discussed in the degree project. Appropriate assessments related to the degree project's research question(s) are lacking.

Learning Outcome 4

Pass: The work plan established at the beginning of the degree project has been followed. The work has been completed within the agreed timeframe and using the agreed methodology. Any changes to the plan or the work have been agreed upon by the student and supervisor.

Fail: The work does not meet the standard established at the outset or any subsequently agreed standard. The agreed work plan, with regard to time and methodology, has not been followed.

Learning Outcome 5

Pass: The report is well structured, clearly written, and coherent. Summaries of sources are relevant, independently formulated, and well integrated into the report. The oral presentation, the review of another degree project, and communication throughout the project demonstrate the ability to present and discuss the work attentively and constructively with different stakeholders, such as clients, supervisors, teachers, researchers, and students.

Fail: The content is not presented systematically, and the written text or oral presentation is difficult to understand. Summaries have an unclear purpose, adhere too closely to the original sources, or are presented consecutively without a clear connection. The written report lacks linguistic clarity or coherence. Ongoing communication or the oral presentation fails to demonstrate attentiveness, clarity, or the ability to discuss the work effectively.

Learning Outcome 6

Pass: The degree project demonstrates the ability to make assessments, for example, by explaining, justifying, critically evaluating, and making recommendations. Relevant subject-specific assessments based on scientific evidence or established professional practice have been made. The degree project includes reflection on societal and ethical aspects, unless their relevance has been reasonably ruled out.

Fail: Assessments are missing or inadequate. The work demonstrates an inability to place the study in a broader context. The degree project does not address ethical and societal aspects, even though these may be relevant to the project topic, or fails to justify why such aspects have not been addressed.

Learning Outcome 7

Pass: The student develops a thorough understanding of the task and demonstrates the ability to participate in the working culture in which the task is to be carried out. The student demonstrates the ability to critically examine and evaluate information when discussing the task. The student takes initiative and is receptive to supervision and criticism. The degree project is carried out largely independently.

Fail: Despite supervision and guidance, the student fails to demonstrate the ability or willingness to participate and collaborate within the established working culture. The student does not contribute constructive ideas in discussions with the supervisor and shows little interest in advice or new suggestions. The student fails to demonstrate independent and creative work between supervision meetings.

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.