



MF2059 Mechatronics, Advanced Course, Fall semester

15.0 credits

Mekatronik högre kurs, hösttermin

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

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for MF2059 valid from Autumn 2018

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Accepted to Masters Program Industrial Design (TIPUM), track Mechatronics (IPUC).

Eligible for studies in year 2.

Approved of the course MF2058 or equivalent.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

Mechatronics Advanced Course aims to provide the student with the professional skills needed to create innovative mechatronics products and work with complex product development. This multidisciplinary work is realized by combining mechanical design, with control-, electronics- and software engineering. In this course, the students will be exposed to real-life industrial needs and situations through close cooperation with industrial partners.

The student should after the course be able to:

- apply knowledge and skills from earlier courses, as well as learn to acquire new ones on demand;
- identify, compare and critically assess aspects of an engineering problem, towards making design decisions;
- describe, compare and critically examine various product development processes and their properties;
- apply and evaluate support methods in complex product development;
- use professional tools and processes necessary for the development of mechatronics products;
- learn to get organised, manage, lead and become part of a cross technical and complex development project.

The student should after the course have good technical understanding, knowledge and skill in

- modelling, simulation and visualization of dynamic products and systems;
- methods and tools for co-design and optimization of mechatronic systems;
- working through all aspects of an engineering development process;
- designing and implementing prototypes.

Further, the student should be able to work through all aspects of an engineering development process:

- apply and use professional tools and methods for product development;
- use modern and relevant working methods;
- apply a Model-based development approach to mechatronics product development;

- apply a fundamental test process;
- apply a requirements management method.

Course contents

The course focuses on product development, of mechatronic products, in large projects. Innovative and intelligent products are created by developing knowledge and skills in motion control, robotics, embedded systems, real-time programming, distributed systems. The course is based on problem based learning and work in large projects, where the ability to engage in professional development while developing cooperation, communication and project management is practiced.

In the learning environment, team formation, teamwork and industrial collaboration are an integrated part. The student teams work in collaboration with industrial representatives to determine the specific factors that govern product requirements, design and realization. They focus on product-needs, design requirements, performance requirements and testing and validation.

Examination

- PRO1 - Project, 7.5 credits, grading scale: P, F
- PRO2 - Project, 6.5 credits, grading scale: P, F
- PRO3 - Project Work, 1.0 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.

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.