



# MF2079 Mechatronics, Business and Management, extended course 18.0 credits

Mekatronik, ekonomi och ledarskap, utökad kurs

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

## Establishment

On 10/15/2019, the Dean of the ITM school has decided to establish this official course syllabus to apply from spring term 2020 (registration number M-2019-0596)

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

Industrial Management, Mechanical Engineering

## Specific prerequisites

Bachelor of Science Degree in Mechanical engineering or the equivalent.

DD1321 Applied Programming and Computer Science, MF2030 Mechatronics basic Course, and MF2007 Dynamics and Motion Control or MF2103 Embedded Systems for Mechatronics, or the equivalent.

# Language of instruction

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

## Intended learning outcomes

The course intends to give students the professional skills that are needed to solve mechatronic problems and develop mechatronic products that are so composite and complex that they for his solution require knowledge both within mechatronics and within industrial economics.

On completion of the course, the student should be able to:

- Apply knowledge and skills from earlier courses and learn to acquire new knowledge when necessary
- Identify, compare and critically assess aspects of a composite mechatronic problem that requires knowledge both within mechatronics and within industrial economics for its solution
- Apply models and practical methods to prepare and suggest a solution on a composite mechatronic problem that requires knowledge both within mechatronics and within industrial economics for its solution
- Describe, compare and critically review different product realisation processes and their properties
- Use professional tools and processes that are necessary for the development of mechatronic products

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

- Modelling, simulation and visualisation of dynamic products and systems
- Methods and tools for co-design and optimisation of mechatronic systems
- Work with all aspects of a technical development process
- Design and production of prototypes
- Use of model-based development and a relevant approach to mechatronic product development
- Application of basic test processes
- Application of methods for requirement handling

Furthermore, the student should after the course have good skills in:

- Organising, handling and leading a complex project that runs over a long period of time, in collaboration with employers and project members
- Presenting the work both in writing and orally in a scientific and convincing way
- Argumentation for the chosen working methods and the reliability of the results when they are exposed to criticism, and give constructive criticism to an equivalent project task

## 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 and distributed systems. The course is based on problem-based learning and work in larger projects, where ability to be involved in professional development while developing cooperation, communication and project management skills are practised.

In the learning environment, team-building, teamwork and industrial cooperation are integrated parts. The student teams work in collaboration with representatives from industry to decide the specific factors that govern the product requirements, and its design and realisation. The teams focus on product needs, design, performance requirements, testing and validation.

The project is carried out as a cooperation between KTH and a company that is the provider of the project. The emphasis of the project is within the production engineering related field, i.e. it is mainly of technical character, but it also contains important aspects of business and management.

Problem formulation and intermediate seminars are included, besides the final presentation that is done both in writing and orally. Furthermore, an oral review of another project work is required.

## Examination

- PRO2 - Project, 7.5 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Project, 3.0 credits, grading scale: P, F
- PRO4 - Project, 1.0 credits, grading scale: P, F
- PRO3 - Project, 6.5 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.

## 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.