



# MF2043 Robust Mechatronics

## 6.0 credits

Robust mekatronik

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

### Establishment

Course syllabus for MF2043 valid from Autumn 2011

### Grading scale

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

### Education cycle

Second cycle

### Main field of study

Mechanical Engineering

### Specific prerequisites

CMAST4, CDEPR4, CFATE4: SG1130/SG1131, SG1140, MF1016, EL1120/EL1000, DD1321/(DD1322+DD1324) or similar

CDATE, TIPUM, TIPDM, CDATE, TAEEM, TEBSM with First level course(s) in mechanics, basic electronics, basic microcontroller knowledge and c-programming

### Language of instruction

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

## Intended learning outcomes

After this course you should be able to:

1. Design a mechatronic system that is robust and takes into account EMC.
2. Design power supply modules and analogue/digital signal conditioning for microcontrollers
3. Take into account the interference between mechanical and electrical design
4. Design and implement analogue and digital filters

After this course you should have knowledge about:

1. Standards and directives
2. Environmental sustainability for electronics
3. When in the development process it is necessary to take the robustness into account
4. Structured fault diagnosis.
5. Printed circuit board design and soldering
6. Signal conditioning inside the microcontroller

## Course contents

The overall aim of the course is to provide deeper understanding of mechatronic design with respect to hardware

## Disposition

The course is built upon lectures, exercises. For some experiments you are building your own equipment. Models of modules is brought out which later could be simulated and designed.

The experiments are ended with short questionings in front of a laboratory assistant. The course is ended with a written examination.

## Course literature

Handouts during course

## Examination

- TEN1 - Written Examination, 4.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 2.0 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.

## **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.