MF1035 Electrical Engineering, Basic Course Media 6.0 credits

Elektroteknik, media

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

Establishment

Course syllabus for MF1035 valid from Spring 2012

Grading scale

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

Education cycle

First cycle

Main field of study

Technology, Electrical Engineering

Specific prerequisites

CMETE1: SF1624,SF1625/SF1608, SF1609

CLMDA2: CF1623

Language of instruction

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

Intended learning outcomes

After the course the student will be able to

- Analyze the conditions in simple circuits such as DC, AC and transient events of the first order.
- Use a microcontroller to solve simple tasks such as controlling the voltage to an electric DC-motor.
- Design a digital design to solve a combinatorial problem.
- Estimate the deviations in the measurement results.
- Connect simple electrical circuits.
- Connect electric measuring instruments such as multimeter and oscilloscopes to simple electrical circuits. Performing measurements with these instruments.
- Experimentally determine the current-voltage-characteristics of a device or component.
- Determine whether the various electrical devices and components can be connected.
- Solve simple problems and show the solution function by performing an experiment.
- Give a short oral presentation about the outcome of an experiment or a laboratory exercise.
- Translate the substance technical terms into English.
- Work constructively in a group of 2-3 persons with laboratory and experimenta.

All together you will be able to

- facilitating active cooperation with specialists in electrical engineering
- provide a basis for further studies in this area.

Course contents

Electrical circuits: DC, AC and transients.

Analog cirquits for signalcondition of sensorsignals before ADC (analog to digital conversion).

Electrical measurements: Measuring with multimeter and oscilloscope. Use of LabVIEW

Sensors: Sensors for light, mechanical and thermal quantities.

Digital electronics and microcontrollers: Analysis and synthesis of combinatorical and orientation on sequence cirquits. The functionality of a microprocessor and a microcontroller. Use of microcontrollers in simple applications.

Circuit and network theory. Elementary electronic circuits. Operational amplifiers. Measuring instruments and measurements.

Transducers for mechanical and thermal quantities. Fundamentals of digital systems. Introduction to microprocessor computer systems and assembly language programming.

Disposition

Period 4
Lectures 12h
Tutorials 24h
Laboration 13h

Course literature

Elektroteknik (Institutionen)

Examination

- INL1 - Hand in Task, 3.0 credits, grading scale: P, F
- TEN1 - Written examination, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 1.5 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.

Other requirements for final grade

Written exam (TEN1; 1,5 cr), hand in assignment (INL1; 3 credits),. Laboratory work (LAB1; 1,5 cr)

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.