



# HE1010 Sensors and Measurement Technology 7.5 credits

Sensorer och mätteknik

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 HE1010 valid from Spring 2009

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Electrical Engineering, Technology

## Specific prerequisites

Basic knowledge of electrical circuits and electronics.

## Language of instruction

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

## Intended learning outcomes

The main purpose of the course is to provide the student knowledge of how to use different types of sensors and to plan measurements with computer controlled instruments. Measurements with different interfaces to computers are dealt with and of great importance are practical laboratory exercises.

After completing the course, the student should be able to:

- describe fundamental definitions in measurement technology and use standard measuring instruments .
- do advanced measurements for example with oscilloscopes and spectrum analyzers.
- describe and use amplifiers and signal processing tools and know how to deal with different interference problems of current interest with sensors.
- use computer programs for data acquisition and signal processing.
- explain different sensors and their interfaces and practical use.
- Analyze and design interfaces between sensors and microcontrollers and connect a number of sensors in practise.

## Course contents

- Different types of sensors, management and use
- Modern computer programs for simulation and modelling of components and subsystems
- Laboratory exercises with computer controlled instruments and interfaces
- Modern computerized instruments
- Measurements in an environment with interferences

## Course literature

Bengtsson, Lars: Elektriska mätsystem och mätmetoder, Studentlitteratur. ISBN 91-44-02903-9

Textmaterial from the institution

## Examination

- LAB1 - Laboratory Work, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, 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.

## Other requirements for final grade

Written exam (TEN1; 3 cr.), grading A-F.

Practical exercises (LAB1; 4.5 cr.), grading A-F.

The final grade is based on the two parts. Grading A-F.

## 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.