



# KH1251 Electrical Measurements, Control Theory and Practice 6.0 credits

El-, mät- och reglerteknik

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 KH1251 valid from Autumn 2023

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Chemistry and Chemical Engineering, Technology

## Specific prerequisites

Completed upper secondary education including documented proficiency in Swedish corresponding to Swedish B and English corresponding to English A.

Completion of upper-secondary school from 1 July 2011 and adult education at upper-secondary level from 1 July 2012 (Gy2011)

**General entry requirements and Specific entry requirements:** Physics 2, Chemistry 1 and Mathematics 3c. A pass in each of the subjects is the lowest acceptable grade.

Completion of upper-secondary school before 1 July 2011 and adult education at upper-secondary level before 1 July 2012

**General entry requirements and specific entry requirements:** Mathematics D, Physics B and Chemistry A. The grade Passed or 3 in each of the subjects is required.

## Language of instruction

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

## Intended learning outcomes

### Course contents

Electrical circuits: DC, AC.

Electrical measurements: Measuring with multimeter (analog and digital) and oscilloscope. Use of LabVIEW

Analog circuits for signal condition of sensor signals before ADC (analog to digital conversion). Examples of sensors for measuring of temperature, force and strain.

Electrical motor drives: Single- and three- phase systems. Theory and properties of DC machines and AC machines. Principles for speed control of electrical machines.

Design of control circuits. On-Off control. PID regulator. Sensors, detectors and other measurement & control components. How computers are used to aid instrumentation, control and regulation.

## Examination

- INL1 - Assignment, 1.5 credits, grading scale: P, F
- LAB1 - Laboratory Work, 1.5 credits, grading scale: P, F
- TEN1 - Written 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.

## 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.