



# ML1607 Electrical and Control Engineering 6.0 credits

Ellära och styrteknik

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 ML1607 valid from Autumn 2018

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Electrical Engineering, Technology

## Specific prerequisites

Specific entry requirements: The courses ML1600 and ML1000 or the equivalent

## Language of instruction

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

## Intended learning outcomes

After completing the course, within electrical engineering, the student should be able to:

- Calculate and measure electrical quantities in circuits.
- Explain how voltage and current of coils and capacitors are affected when the circuit is supplied with sine-wave AC voltage or experience a voltage surge.
- Explain the terms active, apparent and reactive effect.
- Be able to build an electrical circuit following a circuit diagram.
- Explain the most important rules and components for electrical safety.

After completing the course, within the field of control technology, the student should be able to:

- Explain technical applications in industrial production and discuss technical maintenance in relation to these
- Explain how Boolean algebra can be used to describe and specify digital connections
- Explain, calculate and connect circuits with operational amplifiers
- Select signal transducer for different applications
- Explain the different pneumatic components and their function
- Explain how programmable logic controllers (PLC) and microcomputers can be used in control technology applications
- Program a simple PLC and document its function

## Course contents

- DC current and voltage
- AC current and voltage
- Three Phase
- OP amplifier (operational amplifier)
- Digital circuits
- Electric machines
- Hydraulics and pneumatics
- signal generators
- Simple control system
- PLC (programmable logic controllers), ladder diagram

## Course literature

"Elektroteknik" och "Elektroteknik Övningsbok", KTH, Institutionen för Maskinkonstruktion, avd. för mekatronik.

Boken kommer att finnas tillgänglig som pdf, och kommer också att säljas i receptionen.

## Examination

- INL1 - Assignments, 1.5 credits, grading scale: P, F
- LAB1 - Laborations and exercises, 4.5 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.