



# IF1330 Electrical Principles 7.5 credits

Ellära

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 IF1330 valid from Spring 2019

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Electrical Engineering, Technology

## Specific prerequisites

## Language of instruction

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

## Intended learning outcomes

After completion of the course the student should be able to

- explain the basic electrical and magnetic concepts
- describe passive components and electrical networks
- perform network calculation and simulations of electrical nets
- analyze basic electrical circuits
- choose components and implement them in a circuit construction.
- conduct measurements on electrical circuits.

## Course contents

- Charge, voltage, current, power and energy.
- Electrical and magnetic fields.
- Kirchhoff's laws and Ohm's law
- Basic functions of components R,L,C, diode, transistor, operational amplifier and the transformer.
- DC and AC voltage/currents
- Independent and dependent sources
- Circuit analysis with mesh and node analysis, superposition and Thevenin/Norton equivalents.
- Transients in RC/RL-nets.
- Analyse RLC-nets including resonance circuits using the phasor method.

## Course literature

Electric Circuits, J. W. Nilsson and S. A. Riedel, 10TH edition, Pearson

## Examination

- LAB1 - Laboratory Work, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 6.0 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.