HE1027 Electrical Principals 7.0 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 HE1027 valid from Spring 2019

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Basic knowledge in mathematics

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.
- descibe passive components and electrical networks.
- perform network calculation and simulation.
- analyze basic circuits.
- dimension circuits using passive components
- measure electrical circuits

Course contents

- Charge, voltage, current, power, and energy.
- Direct and alternating current.
- Ohm's law and Kirchhoff's laws. Series and parallel circuits.
- Knowledge of components (R, L, C) and ideal transformer.
- Phasor notation. Mathematical operations with complex numbers.
- Frequency and amplitude functions for linear systems
- Superposition, Thévenin's Theorem, Norton's Theorem and Nodal analysis.
- R-C and R-L circuits and response circuits
- Electric and magnetic fields.
- Diode, rectifying, zener diode and power supply
- An overview on symmetrical three phase systems

Course literature

Boylestad, Introductory Circuit Analysis,13:e upplagan, Pearson New International Edition, ISBN 978-1-292-09895-1

Examination

- LAB1 - Laboratory Work, 2.0 credits, grading scale: P, F
- TEN1 - Examination, 5.0 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.

Approved laboratory work, 2.0 hp (LAB1)
Passed written exam, 5.0 hp (TEN1)

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.