Linnæus University

Dnr: 2020/1060-3.1.2.2

Course syllabus

Faculty of Technology

Department of Physics and Electrical Engineering

1FY808 Elektricitetslära och magnetism, 7,5 högskolepoäng
1FY808 Electricity and Magnetism, 7.5 credits

Main field of study
Physics

Subject Group
Physics

Level of classification
First Level

Progression
G1N

Date of Ratification
Approved 2010-12-10
Revised 2020-03-13 by Faculty of Technology. Assessment methods are revised.
The course syllabus is valid from autumn semester 2020

Prerequisites
General entry requirements and Mathematics 3c, Physics 2 or Mathematics D, Physics B (Field-specific entry requirements 8/A8).

Objectives
Having completed the course the student is expected to have:

- basic knowledge in electricity and electro magnetism
- basic knowledge and skills in experimental methodology and didactics.
- skills in use of basic mathematical methods

Content
Electricity

- electrical charging, electric fields, Coulomb's Law, electric dipole
- electric flows, Gauss' law, the field surrounding symmetrical charge distributions
- electric potential, voltage
- capacity, dielectric, condenser combinations, the energy content of condensers, transient course of events
- direct current, resistance, resistivity, effect, effect adjustment in direct currents,

Kirchhoff's Laws

Electromagnetism

- magnetic field intensity, forces affecting live conductors and charges in movement, Hall effect

Induction

- Lentz' Law, Faraday's Law, physical bases for generators and transformers
- self-induction, the energy content of inductors, iron losses

Alternating current

- alternating current circuits
- alternating current effect, resonance circuits

Other

- Electric power production and energy systems
- Electrical safety
- Dimensional analysis

Type of Instruction

Lectures, assignments and concept related laboratory work. The laboratory work is conducted independently or in groups and attendance is obligatory.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

Written and/or verbal tests and/or presentations of obligatory assignments. The main form of examination is decided at the start of the course.

Repeat examination is offered in accordance with Local regulations for courses and examination at the first and second-cycle level at Linnaeus University.

If the university has decided that a student is entitled to special pedagogical support due to a disability, the examiner has the right to give a customised exam or to have the student conduct the exam in an alternative way.

Course Evaluation

During the implementation of the course or in close conjunction with the course, a course evaluation is to be carried out. Results and analysis of the course evaluation are to be promptly presented as feedback to the students who have completed the course. Students who participate during the next course instance receive feedback at the start of the course. The course evaluation is to be carried out anonymously.

Required Reading and Additional Study Material

Required reading

Lars Bergström och Lars Nordlund, Ellära - krets och fältteori, senaste upplagan, Liber

Excerpts from the Swedish Energy Agency and Swedish Electrical safety Agency publications