



Faculty of Health, Science and Technology
Electrical Engineering

Syllabus

Introduction to Electrical Engineering

Course Code:	ELGA12
Course Title:	Introduction to Electrical Engineering <i>Introduction to Electrical Engineering</i>
Credits:	7.5
Degree Level:	Undergraduate level
Progressive Specialisation:	First cycle, has only upper-secondary level entry requirements (G1N)

Major Field of Study:
ETA (Electrical Engineering)

Course Approval

The syllabus was approved by the Faculty of Health, Science and Technology 2015-03-13, and is valid from the Autumn semester 2015 at Karlstad University.

Prerequisites

General admission requirements and upper secondary level Mathematics 3c, Physics 2, Chemistry 1 (field-specific eligibility A8, or standardised specific entry requirements E.3), or equivalent

Learning Outcomes

Upon completion of the course, students should be able to:

- give an account of some selected electrical engineering systems and the models of these,
- give an account of important issues and challenges regarding renewable electrical energy and sustainable development,
- give an account of basic concepts in electrical engineering,
- give an account of the function and use of the most common passive and active components,
- give an account of common electrical measuring instruments, measuring methods and measuring principles,
- use resistors, capacitors and diodes in basic circuits,
- use universal instrument, signal generator and oscilloscope,
- carry out a measuring series, process measuring data and present the result in a written report,
- retrieve, compile and present information, orally and in writing.

Content

Instruction is in the form of lectures, supervised exercises and mandatory seminars, field trips, laboratory sessions and project.

The course comprises the following components:

- introduction to the various functions of the engineer
- introduction to electrical engineering systems and model thinking
- renewable electrical energy and sustainable development

- project on renewable electric energy
- information retrieval, report writing and presentation techniques
- basic electrical engineering concepts (current, charge, potential, voltage, conductors and insulators, electric and magnetic fields),
- passive components (resistor, capacitor, inductor) and their uses
- active components (diode, transistor, operational amplifier) and their uses
- laboratory sessions and reports
- measuring principles and methods with electrical measuring instruments
- processing measuring data

Reading List

See separate document.

Examination

Assessment is based on a written exam, written and oral presentations and reports. Laboratory sessions, seminars, field trips and project are mandatory.

Grades

One of the grades Pass with Distinction (5), Pass with Some Distinction (4), Pass (3) or Fail is awarded in the examination of the course.

Quality Assurance

Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

Course Certificate

A course certificate will be provided upon request.

Additional information

The local regulations for studies at the Bachelor's and Master's levels at Karlstad University stipulate the obligations and rights of students and staff.