



Faculty of Health, Science and Technology
Electrical Engineering

Syllabus

Circuit Analysis 2

Course Code:	ELGA14
Course Title:	Circuit Analysis 2 <i>Kretsteknik 2</i>
Credits:	7.5
Degree Level:	Undergraduate level
Progressive Specialisation:	First cycle, has less than 60 credits in first-cycle course/s as entry requirements (G1F)

Major Field of Study:
ETA (Electrical Engineering)

Course Approval

The syllabus was approved by the Faculty of Health, Science and Technology 2023-02-02, and is valid from the Spring semester 2023 at Karlstad University.

Prerequisites

Circuit Analysis, 7.5 ECTS credits, and Mathematics for Engineers I, 7.5 ECTS credits, or equivalent

Learning Outcomes

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

- give an account of the function and use of passive components, operational amplifiers, transistors, diodes, and power electronics components,
- characterise an analogous system with system properties,
- give an account of the basic structure and function of simple filters, amplifiers, and transistors,
- describe the structure of operational amplifiers and their basic connections,
- analyse and construct simple filters and amplifiers, and
- give examples of applications in analogue electronics.

Content

Components:

Passive components

Semiconductors

Amplifiers:

Ideal amplifiers

Simple transistor amplifiers

Structure and properties of operational amplifiers

Operational amplifier connections

Signal properties of amplifiers

In and out impedance and distortion

Frequency dependence:

Frequency function

Bode diagrams

Basic filters

Frequency properties of simple amplifiers

Frequency properties of simple transistors

Applications:

Effect amplifiers

Simple rectifiers

Basic voltage and current regulation

Analogous simulation

Reading List

See separate document.

Examination

Assessment is based on a written exam and mandatory laboratory sessions, including lab reports.

If students have a decision from Karlstad University entitling them to Targeted Study Support due to a documented disability, the examiner has the right to give such students an adapted examination or to examine them in a different manner.

Grades

One of the grades Pass with Distinction (5), Pass with Some Distinction (4), Pass (3), or Fail (U) 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 and Master levels at Karlstad University stipulate the obligations and rights of students and staff.