Faculty of Health, Science and Technology
Electrical Engineering

Syllabus

Circuit Analysis 2

Course Code:	ELGA14
Course Title:	Circuit Analysis 2 *Kretsteknik 2*
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 2018-09-09, and is valid from the Spring semester 2019 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 and diodes,
- characterise an analogous system with system properties,
- give an account of the basics of the structure and function of filters and amplifiers,
- give an account of the structure of operational amplifiers and basic connections with operational amplifiers,
- give an account of the principles of negative feedback and stability,
- analyse different filters and amplifiers with the help of models and simulation programs,
- construct filters and amplifiers with the help of operational amplifiers.

Content
Passive components. Filter. Equivalent amplifier models. Ideal amplifiers. Signal properties. Structure and properties of operational amplifiers. Operational amplifier connections. Frequency properties, in and out impedance, and distortion of amplifiers. Part-linear models. Bode diagrams, feedback and stability. Differential stages, current mirrors and drives. Effect amplifier, push-pull connection and thermal effects. Rectifiers, voltage and current regulation, stabilisation and switched power supply. Analogous simulation.

Reading List
See separate document.

Examination
Assessment is based on a written exam and mandatory project and laboratory assignments.

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.