Course: Circuit Analysis and Electronics 1 — credits: 5

Course code	ELVP22AE1
Name	Circuit Analysis and Electronics 1
Study year	2026-2027
ECTS credits	5
Language	Dutch, with parts in English, English
Coordinator	J. Bout
Modes of delivery	Problem-based learning
Assessments	Circuit Analysis and Electronics 1 - Assignment

Learning outcomes

Defining

The student clearly identifies a problem or customer need, contextualizes it, consults relevant sources, and converts it into a goal, problem statement, and electrical engineering requirements.

Designing

The student considers various solution directions to arrive at a detailed and well-founded electrical engineered product/service/process based on the program of requirements, using appropriate design methodologies and taking into account societal interests and engineering standards.

Realizing

The student realizes and validates a (prototype of) a product/service/process based on a technical design, using the appropriate materials/techniques/instruments.

Content

This course addresses the concepts of current, voltage, power, energy, and basic electronic components (resistors, capacitors, diodes, transistors, linear voltage regulators, and operational amplifiers).

Futher topics:

- Mathematical modelling is taught using Ohm's law and other techniques like Kirchhoff’s laws, superposition, Thevenin's, and Norton theorems to analyze, design, and simulate circuit prototypes.
- Ideal and non-ideal current and voltage sources (DC and AC) are addressed in connection with rectifier circuits and linear power supplies.
- Practical measurements are made with lab equipment (such as a multimeter) to analyze circuits and write a test report.

Included in programme(s)

Electrical Engineering Major Mechatronics
Electrical Engineering Major Sensors & Smart Systems
Electrical Engineering Major Energy & Power Electronics

School(s)

Engineering, Life Sciences & ICT

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