

Power Electronics (E030521)

Course size *(nominal values; actual values may depend on programme)*

Credits 4.0

Study time 120 h

Course offerings and teaching methods in academic year 2024-2025

A (semester 2)

English

Gent

lecture

practical

seminar

Lecturers in academic year 2024-2025

Vansompel, Hendrik

TW08

lecturer-in-charge

Offered in the following programmes in 2024-2025

crdts

offering

[Master of Science in Electrical Engineering \(main subject Electronic Circuits and Systems\)](#)

4

A

Teaching languages

English

Keywords

Power electronics, converters, passive components

Position of the course

Basic topologies, design and applications of power electronics.

Contents

- Components: Power-electronic components, Passive components
- Systems and architectures: Pulse width modulation, Choppers for power drive supplies, DC/DC converters with galvanic isolation, Inverter circuits, Control of power electronic components, Resonant converters
- Physical aspects: Lay-out and EMC, Thermal aspects

Initial competences

LC networks, Fourier series, basic electronics, electrical drives

Final competences

- 1 CONCEPTS: simple designs of converters and passive components inductors and transformers with ferrite.
- 2 INSIGHTS: Understanding voltage and current waveforms.
- 3 SKILLS: electronic and thermal aspects.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Seminar, Lecture, Practical

Extra information on the teaching methods

Classroom lectures; Classroom problem solving sessions; Lab sessions

Study material

None

References

- The Power Electronics: Handbook Edited by TIMOTHY L. SKVARENINA Purdue

- University West Lafayette, Indiana
- ISBN 0-8493-7336-0
 - ISBN 0-471-58408-8

Course content-related study coaching

Assessment moments

end-of-term and continuous assessment

Examination methods in case of periodic assessment during the first examination period

Written assessment with open-ended questions

Examination methods in case of periodic assessment during the second examination period

Written assessment with open-ended questions

Examination methods in case of permanent assessment

Assignment

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

The written exam comprises a theoretical part and exercises.

Calculation of the examination mark

The theoretical part accounts for 3/5 in the final score, the exercises part for 1/5 and the project/practical on 1/5.