

Electronic Measurements and EMC (E735033)

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

Credits 3.0

Study time 90 h

Course offerings and teaching methods in academic year 2023-2024

A (semester 2)	Dutch	Gent	lecture
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Lecturers in academic year 2023-2024

Torfs, Guy	TW05	lecturer-in-charge
Bauwelinck, Johan	TW05	co-lecturer

Offered in the following programmes in 2023-2024

	crdts	offering
Master of Science in Electronics and ICT Engineering Technology(main subject Electronics Engineering)	3	A
Master of Science in Electronics and ICT Engineering Technology(main subject Embedded Systems)	3	A
Master of Science in Electronics and ICT Engineering Technology(main subject ICT)	3	A
Exchange Programme Electronics and ICT Engineering Technology	3	A

Teaching languages

Dutch

Keywords

Measuring electronically

Position of the course

This course will focus on different measurement methods to determine the performance of electronic circuits and systems. The strengths and weaknesses of frequency and time domain measurements will be discussed. Performance measures for analog and RF circuits will be defined and studied with respect to overall system specifications. Last, the importance and implications of EMC aware design of circuits and printed circuit boards will be elucidated.

Contents

- Analog to digital converters.
- Measurement of voltages and currents with analog and digital multimeter.
- Measurement of impedances. Equivalent circuits of passive components.
- Measurement of systems and networks: Network analyzer, time-domain reflectometer, oscilloscope, eye diagrams.
- Measurement of the spectrum, distortion, noise. Cascade analysis of complex circuits.
- Typical errors in electronic measurements.
- EMC aspects.

Initial competences

Analoge Elektronica II

Final competences

- 1 Understand the operation and limitations of electronic measurement equipment.
- 2 Perform measurements on complex circuits and systems and interpret the results.
- 3 Comprehend and apply models for high frequency components and systems.
- 4 Analyze noise and distortion in electronic subsystems.
- 5 Design PCBs aware of EMC implications.

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

Lecture, Practical

Learning materials and price

Course text

References

Course content-related study coaching

After agreement

Assessment moments

end-of-term and continuous assessment

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

Oral assessment open-book

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

Oral assessment open-book

Examination methods in case of permanent assessment

Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is not possible

Extra information on the examination methods

Oral examination with written preparation, closed books, exercises with open book, evaluation of the project.

Calculation of the examination mark

Continuous assessment 40%, end-of-term assessment 60%.

If the score of the end-of-term assessment turns out to be a mark of less than 8/20, the weighted average is reduced to 7/20 (if it happens to be higher than this).