GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2015-2016

Electrical Circuits and Networks (E090320)

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

Credits	**6.0**	**Study time**	**180 h**
Contact hrs	60.0 h		

Course offerings and teaching methods in academic year 2016-2017

A (semester 1)	Dutch	lecture	30.0 h
	Dutch	seminar: coached	30.0 h

Lecturers in academic year 2016-2017

Neyts, Kristiaan	TW06	lecturer-in-charge

Offered in the following programmes in 2016-2017	crdts	offering
Bachelor of Science in Computer Science Engineering	6	A
Bachelor of Science in Electrical Engineering	6	A
Bachelor of Science in Engineering Physics	6	A
Bachelor of Science in Electromechanical Engineering	6	A
Bridging Programme Master of Science in Engineering Physics	6	A
Preparatory Course Master of Science in Industrial Engineering and Operations Research	6	A
Preparatory Course Master of Science in Photonics Engineering	6	A
Preparatory Course European Master of Science in Photonics	6	A

Teaching languages

Dutch

Keywords

electrical circuits, electronic components

Position of the course

A basic course for engineering students, it aims mainly at familiarize the students with electrical circuits, as well in DC and sine regime as with transient phenomena. It also aims at gaining practical skills for solving networks. An introduction to electronic basic components.

Contents

- General network methods.
- Dynamics of networks.
- Systematic analysis methods.
- Electrical power.
- Network functions.
- Some specific electrical networks.
- Numerical analysis of circuits with PSPICE.
- Electronic components.

Initial competences

Students have successfully taken the course 'Basis Mathematics Tools' ('Wiskundige basistechniek') (i.e. obtained a credit) or have acquired the aspired learning competences in another way (mandatory succession as defined in the Curriculum Rules of the Faculty of Engineering and Architecture, cf. http://www.ugent.be/ea/nl/onderwijs/studentenadministratie/curriculum.htm)

Final competences

1 Draw amplitude and phase Bode diagrams for transfer fucntions and determine the poles and zeros.

2 Analyze linear circuits with resistors, (coupled) inductors and capacitors in dc, in the periodic regime and during transients.
3 Determine the balance of active and reactive electrical power in a three-phase electrical network.
4 Analyze basic electrical circuits containing diodes, bipolar transistors and MOSFETs.

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, seminar: coached exercises

Learning materials and price

Lecture notes (distributed by VTK, cost about 8 euro)

References

- Howatson, "Electrical Circuits and Systems", Oxford University Press, 1996
- De Carlo and Lin, "Linear Circuit Analysis", 2nd. ed., Oxford University Press, New-York, 2001

Course content-related study coaching

Individual tutoring about the exercises is available during practical sessions. The lecturer is available before and after lectures. Additional personal coaching is available on request (e-mail).

Evaluation methods

end-of-term evaluation

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

Written examination

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

Written examination

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation

not applicable

Extra information on the examination methods

During examination period: written, closed-book examination. A limited set of forumlas is available.

Calculation of the examination mark

The final score is a weighted average of the scores on the exam exercises.