Technology
Arts Sciences
TH Köln

Course
EG - Basic Electrical Engineering for Computer Science and Engineering

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General information

Long name	Basic Electrical Engineering for Computer Science and Engineering
Approving CModule	EG_BaTIN
Responsible	Prof. Dr. Lothar Thieling Professor Fakultät IME
Level	Bachelor
Semester in the year	winter semester
Duration	Semester
Hours in self-study	60
ECTS	5
Professors	Prof. Dr. Lothar Thieling Professor Fakultät IME
Requirements	none
Language	German
Separate final exam	Yes

Final exam

Details

The students should demonstrate the following competencies in a written exam: 1.) Safe handling of concepts and mechanisms. 2.) Analysis of given electrical and electronic circuits.

Minimum standard

At least 50% of the total number of points

Exam Type

The students should demonstrate the following competencies in a written exam: 1.) Safe handling of concepts and mechanisms. 2.) Analysis of given electrical and electronic circuits.

Lecture / Exercises

Learning goals

Knowledge

The students are able to analyze electrical and electronic systems in respect to the essential functionality and to classify and estimate their behavior. In particular, students are able perform these analyzes according to following topics:
- resistor
- voltage and current sources
- Kirchhoff's circuit laws, serial and parallel
- electrical power and efficiency
- real electrical sources including operating point
- network analysis
- electric field
- magnetic field

- inductors and capacitors
- apparent power and reactive power
- Switching in simple RCL networks
- AC
- transformer
- generator
- DC motor

- ideal diode
- real diode (modeled using an ideal diode and voltage source and resistor)
- ideal transistor
- real transistor
- operational amplifier and corresponding basic wirings

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Lecture	2
Exercises (whole course)	1
Exercises (shared course)	1
Tutorial (voluntary)	0

Separate exam

none

Practical training

Learning goals

Skills

The students carry out electrotechnical experiments in related projects. The aim of the given experiments is the understanding of the function and the measurement of an electrotechnical and / or electronical system.

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Practical training	1
Tutorial (voluntary)	0

Separate exam

none