Technology
Arts Sciences
TH Köln

Course
GE1 - Fundamentals of Electrical Engineering 1

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General information

Long name	Fundamentals of Electrical Engineering 1
Approving CModule	GE1_BaET
Responsible	Prof. Dr. Eberhard Waffenschmidt Professor Fakultät IME
Level	Bachelor
Semester in the year	summer semester
Duration	Semester
Hours in self-study	126
ECTS	9
Professors	Prof. Dr. Eberhard Waffenschmidt Professor Fakultät IME
Requirements	keine
Language	German, English if necessary
Separate final exam	Yes

Final exam

Details

Written exam:

The exam consists of three parts A, B, C:

Part A ask for basic skills (knowlege and simple application)

Part B ask for required skills (application and evaluation)

Part C saks for extended skills (creativity and combination of the aquired knowlede)

Shortly after the first exam date follwowing the lecture an additional (3rd.) written exam is scheduled.

Minimum standard

Grade 4,0

Exam Type

Written exam:
The exam consists of three parts A, B, C:
Part A ask for basic skills (knowlege and simple application)
Part B ask for required skills (application and evaluation)
Part C saks for extended skills (creativity and combination of the aquired knowlede)
Shortly after the first exam date follwowing the lecture an additional (3rd.) written exam is scheduled.

Lecture / Exercises

Learning goals

Knowledge

The students are able to calculate and analyze electrotechnical systems with constant currents and voltages. They can calculate the behaviour of non-linear components and are able to use appropriate graphical reperesentations. They can especially perform calculations for the following topics.
- Resistance and power
- Voltage and current sources
- measurement devices
- Kirchhoff's laws, series and parallel connections
- Power and effiiency
- Real power sources
- Real and nonlinear resitances
- Thermal resitance
- Elecrtrical field
- Magnetic field

Expenditure classroom teaching

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

Separate exam

none

Practical training

Learning goals

Knowledge

The students perform electrotechnical experiments in the lab. The experiments relate to lectures and exercises. The aim of the pre-defined experiments is to understand and evaluate the function of electrotechnical components. They compare the measurement results to previously made calculations. Furthermore, they perform simulations with electriocal circuit simulation software as virtual experiments. This way, they obtain a further possibiity to compare measueremnets and calculations.

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Practical training	4
Tutorial (voluntary)	0

Separate exam

Exam Type

working on practical scenarion (e.g. in a lab)

Details

- Final discussion after each lab date
- Writing of lab reports

Minimum standard

Succesful participation of the lab courses