

Course Manual GE1

Fundamentals of Electrical Engineering 1

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– General information

Long name	Fundamentals of Electrical Engineering 1
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Approving CModule	<u>GE1_BaET</u>
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Responsible	Prof. Dr. Eberhard Waffenschmidt Professor Fakultät IME
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Valid from	winter semester 2020/21
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Level	Bachelor
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Semester in the year	summer semester
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Duration	Semester
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Hours in self-study	126
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ECTS	9
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Professors	Prof. Dr. Eberhard Waffenschmidt Professor Fakultät IME
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Requirements	keine
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Language	German, English if necessary
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Separate final exam	Yes
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Literature

Gert Hagman, Grundlagen der Elektrotechnik, AULA-Verlag, ISBN 978-3-89104-747-7

Final exam

Details

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

Minimum standard	Grade 4,0
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Exam Type	EN Klausur
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– Lecture / Exercises

Learning goals

Goal type	Description
Knowledge	<p>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 representations. They can especially perform calculations for the following topics.</p> <ul style="list-style-type: none">- Resistance and power- Voltage and current sources- measurement devices- Kirchhoff's laws, series and parallel connections- Power and efficiency- Real power sources- Real and nonlinear resistances- Thermal resistance- Electrical field- Magnetic field

Special requirements

none

Accompanying material	- Lecture presentations (pdf format) - Script for exercises
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Separate exam	No
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Expenditure classroom teaching

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

– Practical training

Learning goals

Goal type	Description
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 electrical circuit simulation software as virtual experiments. This way, they obtain a further possibility to compare measurements and calculations.

Expenditure classroom teaching

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

Special requirements

none

Accompanying material	- Explanations of the lab experiments and report templates
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Separate exam	Yes
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Separate exam

Exam Type	EN praxisnahes Szenario bearbeiten (z.B. im Praktikum)
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Details	- Final discussion after each lab date - Writing of lab reports
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Minimum standard	Successful participation of the lab courses
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