Course F07_Leistungselektronik

Course
- Meets requirements of following modules(MID)
- Course Organization
- Assessment

Course components
- Lecture/Exercise
- Lab

Responsible: Prof.Dr.Dick

Course

Meets requirements of following modules(MID)

- in active programs
  - Ba ET2012 LE

Course Organization

Version	
created	2011-11-28
VID	1
valid from	WS 2012/13
valid to	

Course identifiers	
Long name	F07_Leistungselektronik
CID	F07_LE
CEID (exam identifier)	

Contact hours per week (SWS)	
Lecture	2
Exercise (unsplit)	
Exercise (split)	2
Lab	1
Project	
Seminar	
Tutorial(voluntary)	

Total contact hours	
Lecture	30
Exercise (unsplit)	
Exercise (split)	30
Lab	15
Project	
Seminar	
Tutorial (voluntary)	

Max. capacity	
Exercise (unsplit)	
Exercise (split)	60
Lab	100
Project	
Seminar	

Total effort (hours): 150

Instruction language

- Deutsch

Study Level

- Bachelor

Prerequisites

- Grundgebiete Elektrotechnik 1
- Grundgebiete Elektrotechnik 2
- Grundgebiete Elektrotechnik 3
- Mathematik 1
- Mathematik 2

Textbooks, Recommended Reading

- Mohan; Undeland; Robbins: Power Electronics – Converters, Applications and Design Wiley Verlag, USA
- Schröder: Elektrische Antriebe Band 4:Leistungselektronische SchaltungenSpringer Verlag, Stuttgart

Instructors

- Prof.Dr.Dick

Supporting Scientific Staff

- Dipl.-Ing. Dieter Pingel
- Dipl.-Ing. Michael Nixdorf

Transcipt Entry

Leistungselektronik

Assessment

Type	
sK	Regelfall, bei kleiner Prüfungszehl sMP

Total effort [hours]	
sK	Regelfall, bei kleiner Prüfungszehl sMP

Frequency: 3/Jahr

Course components

Lecture/Exercise

Objectives

Lerninhalte (Kenntnisse)

- Fundamentals of mathematic
- Rectifiers
- Inverters
- Grid perturbations
- Utilization of Semiconductor devices with turn-off capability: Bipolar Transistor, MOSFET, IGBT, GTO; Drivers
- Self-commutated DC-DC converters
- Sself-commutated rectifiers and inverters

Acquired Skills

- The student can answer the question:"What is power electronics" in detail. In practice the student can decide, whether for a specific technical application a power electronics solution is suitable. Thze student knows about the importance of power electronics for automation technology, electrical power enginnering and basically for efficiency improvements.
- Students know and understand the functionality of the most important line- and forced commutated converters. They are familiar with terms and definitions for the description and characterisation of converters.
- The student can derive a suitable circuit topology for a power electronics application (line- vs. forced commutated converters, important Topologies). The student can bot slitting the specifications info different questionarier to subsequently perform important steps of the converter sythesis.
- Students can analyse and discuss a given power electronics circuitry with regard to efficiency, power factor and device effort.
- The student is fully able to apply different toolbox-topics (THD-Calculations, Power Semiconductor Devices,...).

Additional Component Assessment

- kein

Lab

Objectives

Lerninhalte (Kenntnisse)

- Rectifiers
- Thyristor circuits
- simulation of selb-commutated converter

Operational Competences

- Handling of laboratory equipment like oscilloscope etc..
- Circuit installation
- Handling of a software simulation tool
- Technical writing of lab reports

Additional Component Assessment

Type	
bSZ	Praktikumstestat

Contribution to course grade	
bSZ	Ist Voraussetzung zur summarischen Modulprüfung

Frequency: 1/Jahr

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