

# Course Electronic Circuits 1

## Course

Meets requirements of following modules(MID)

Course Organization

Assessment

Course components

Lecture/Exercise

Lab

**Responsible:** Prof. Dr. Schneider

## Course

### Meets requirements of following modules(MID)

- in active programs
  - Ba ET2012 EL1

## Course Organization

Version		Course identifiers	
created	2013-06-20	Long name	Electronic Circuits 1
VID	1	CID	F07_EL1
valid from	WS 2012/13	CEID (exam identifier)	
valid to			

Contact hours per week (SWS)		Total contact hours		Max. capacity	
Lecture	2	Lecture	30	Exercise (unsplit)	
Exercise (unsplit)	1	Exercise (unsplit)	15	Exercise (split)	40
Exercise (split)		Exercise (split)		Lab	
Lab	1	Lab	15	Project	
Project		Project		Seminar	
Seminar		Seminar			
Tutorial(voluntary)		Tutorial (voluntary)			

**Total effort (hours):** 150

## Instruction language

- German

## Study Level

- Undergraduate

## Prerequisites

- basic skills in calculating electric circuits, resistor, capacitor, inductor
- good knowledge in mathematics, linear equations, calculations with complex terms

## Textbooks, Recommended Reading

- none

## Instructors

- Prof. Dr. Schneider
- Prof. Dr. Brunner

## Supporting Scientific Staff

- Dipl.-Ing. Goldenberg

## Transcript Entry

Electronic Circuits 1

## Assessment

Type	
oE	normal case (large number of assessments: wE)

Total effort [hours]	
oE	10

**Frequency:** 2-3/year

## Course components

### Lecture/Exercise

## Objectives

### Contents

- linear passive circuits
  - calculation of frequency dependent behaviour
  - graphical representation using the bode plot
- transferfunctions of linear circuits
  - analysis of input and output resistance
  - derivation of the voltage and current amplification, transimpedance, transconductance
  - derivation of the cut off frequency
- diode, diode-circuits
  - description of the PN-junction
  - PN-diode, characteristics and equations
  - Z-diode, photo-diode, LED, describe and explain the function
  - explain rectifier circuits
- bipolar transistor and basic amplifier circuits
  - function of bip transistors
  - setting of the operating point
  - transistor small signal model
  - calculation of the transfer characteristics
    - emitter circuit
    - collector circuit
    - base circuit
  - special transistor circuits
  - transistor as a switching element

## Acquired Skills

- describe and analyse circuit behaviour
- build models and calculate real circuits
- calculate element values

## Additional Component Assessment

Type	
fPS	exercise (on course and self study)

Contribution to course grade	
fPS	not rated

**Frequency:** 1/year

## Lab

### Objectives

#### Acquired Skills

- read and understand technical instructions
- connect circuits and demonstrate the function

#### Operational Competences

- work on complex task in limited time
- transfer theoretic knowledge into working circuits
- discuss the results
- work with typical measurement equipment
- explain technical basics and their interdependence

### Additional Component Assessment

Type	
fSC	lab experiment (4h)
fSC	not rated

Contribution to course grade	
fSC	Attestation
fSC	written report

**Frequency:** 1/year

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