Module name

Electronics

Module nr.	Credit points	Workload	Self-study	Module duration	Module cycle
18-ho-1010	4 CP	120 h	75 h	1 Term	Winter term

Language	Module owner
German	Prof. Dr.-Ing. Klaus Hofmann

1 Teaching content

Semiconductor Devices: Diode, MOSFET, Bipolar Transistor; Design of Electronic Circuits;
Analog Circuits: Basic Properties, Properties and Application of Operational Amplifiers, Circuit Simulation with SPICE, Small Signal Gain, Single Stage Amplifiers; Frequency Response;
Digital Circuits: CMOS Logic Circuits

2 Learning objectives

A student is, after successful completion of this module, able to

1. analyse Diodes, MOS- und Bipolartransistors in simple circuits
2. calculate the properties of single transistor circuits, such as small signal gain, input and output resistance
3. design inverting and non-inverting amplifiers from operational amplifiers and knows their ideal and non-ideal properties
4. calculate the frequency behavior of simple transistor circuits
5. distinguish the different methods to construct a logical gate from basic transistors and explain their fundamental properties.

3 Recommended prerequisites for participation

Basics of Electrical Engineering

4 Form of examination

DefaultModule exam:

- DefaultModule exam (Technical examination, Examination, DefaultDuration: 90 Min., Default RS)

5 Prerequisite for the award of credit points

Passing the final module examination

6 Grading

DefaultModule exam:

- DefaultModule exam (Technical examination, Examination, Weighting: 100 %)

7 Usability of the module

BSc ETiT, BSc Wi-ETiT,BSc iST, BEd

8 Grade bonus compliant to §25 (2)

A grade improvement of up to 0,4 due to a bonus is possible, which can be earned with tests.

9 References

Lecture Slide Copies; Richard Jaeger: Microelectronic Circuit Design

Courses

DefaultCourse nr.	Course name
18-ho-1011-vl	Electronics

Instructor	Type	SWS
Prof. Dr.-Ing. Klaus Hofmann, M.Sc. Oliver Bachmann	Lecture	2

	DefaultCourse nr. 18-ho-1011-ue	**Course name** Electronics		
	Instructor Prof. Dr.-Ing. Klaus Hofmann, M.Sc. Oliver Bachmann		**Type** Practice	**SWS** 1