Module 641 Electronics

1	Module Code	Degree Program / Target Group(s)	Semester	Starts in the	Duration	Module Type	Workload (h)	ECTS Credits
	641	WNB	4	☒Winter Term ☒ Summer T.	1 Semester	Mandatory	150	5

2	Courses	Type of Instruction / Form of Learning	Language of Instruction	Contact Time (h) weekly | total		Self Study (h)	ECTS Credits
	a) Electronics	Lecture	English	4	60	60	4
	b) Electronics Laboratory	Laboratory	English	1	15	15	1

3	Table of Qualifications	Expertise	Methodological Skills	Personal & Social Skills
	Knowledge & Understanding	☒	☒	☐
	Applying Knowl. & Understanding	☒	☒	☐
	Making Judgements & Analyzing	☒	☒	☐
	Creating & Extending Knowledge	☐	☐	☐

4 **Learning Outcomes and Competences**

On completion of the module the students are expected to be able to:

Knowledge and Understanding (Knowledge)

- distinguish and use appropriately the variations of devices and sub-circuits.
- check constructive designs in terms of behavior and determine characteristic values.
- understand the selection and arrangement of devices in sub-circuits in terms of electrical behavior and characteristic values.

Applying Knowledge and Understanding (Skills)

- do the design calculations of selected sub-circuits.
- modify situational selected sub-circuits.
- practically dimension, use and determine characteristic values of selected sub-circuits.

Making Judgements and Analyzing (Competences)

- Analyzing the functionallity of existing circuits

Creating and Extending Knowledge (Competences)

- none

5 **Syllabus/Contents**

- Devices: diodes, bipolar transistors, JFET and MOS transistors
- Amplifier: OPAMP-circuits, differential amplifier and instrumental amplifier
- Digital Circuits: combinatorial and sequential logic
- Voltage and current references
- Analog-to-digital and digital-to-analog converters

6 **Prerequisites**

According to the Examination Regulations (Studien- und Prüfungsordnung):

- none

Recommended:

- 614 Electrical Engineering

7 **Type of Assessment (Examinations) and Requirements for Credits**

a) and b) Exam of 90 minutes
To b) Attestation

8 **Module can be used in the following Degree Programs**

WNB

9 **Module Director and other Lecturers involved**

Prof. Dr.-Ing. Stephan Thiel

Module 641 Electronics

10	**Recommended Reading** • Schmidt: Sensorschaltungstechnik, Vogel-Verlag 2007 • Siegl: Schaltungstechnik, Springer-Verlag
11	**Contribution of the Module to the Educational Aims of the Degree Program** • Enhancing technical skills • Application of electronical systems in enterprices
12	**Date of last Modifications** 25.04.2016