

Module Handbook

TUK MODHB Homepage

Module EIT-EMS-654-M-4

Microelectronic Circuit and System Design I (M, 4.0 LP)

Module Identification

Module Number	Module Name	CP (Effort)
EIT-EMS-654-M-4	<i>Microelectronic Circuit and System Design I</i>	4.0 CP (120 h)

Basedata

CP, Effort	4.0 CP = 120 h
Position of the semester	1 Sem. in WiSe
Level	[4] Bachelor (Specialization)
Language	[EN] English
Module Manager	Wehn, Norbert, Prof. Dr.-Ing. (PROF DEPT: EIT)
Lecturers	Wehn, Norbert, Prof. Dr.-Ing. (PROF DEPT: EIT)
Area of study	[EIT-EMS] Microelectronic Systems Design
Reference course of study	[EIT-82.781-SG#2019] B.Sc. Electrical and Computer Engineering [2019]
Lifecycle-State	[NORM] Active

Courses

Type/SWS	Course Number	Choice in Module-Part	SL	PL	CP	Sem.
2V+1U	EIT-EMS-654-K-4	P	-	PL1	4.0	WiSe

- About [EIT-EMS-654-K-4]: Title: "Microelectronic Circuit and System Design I"; Presence-Time: 42 h; Self-Study: 78 h

Examination achievement PL1

- Form of examination: **written exam (Klausur) (90 Min.)**

- Examination Frequency: each semester

Evaluation of grades

The grade of the module examination is also the module grade.

Contents

From [EIT-EMS-654-K-4] Microelectronic Circuit and System Design I:

- Latest Trends in System-on-Chip Design in advanced technology Nodes
- MOS Transistor and its electrical Behavior
- Deep Submicron Effects and new technologies
- CMOS Manufacturing
- Reliability Challenges
- Digital Implementation Styles for ASICs and FPGAs
- Combinatorial Circuit Techniques
- Sequential Circuit Techniques

Competencies / intended learning achievements

After completing this module you can...

- ... explain, design and analyze digital circuits for embedded systems in state-of-the-art technologies and circuit techniques.
- ... explain and assess current technology- and methodology trends in advanced System-on-chip design.
- ... read, summarize and assess scientific publications in this field.
- ... use modern EDA tools in practical exercises.

Requirements for attendance of the module (informal)

Modules:

- [EIT-EIS-314-M-2] Fundamentals of Information Processing (M, 6.0 LP)
- [EIT-ISE-701-M-2] Electronics I (M, 6.0 LP)

Requirements for attendance of the module (formal)

None

References to Module / Module Number [EIT-EMS-654-M-4]

Course of Study	Section	Choice/Obligation
[EIT-82.781-SG#2019] B.Sc. Electrical and Computer Engineering [2019]	[Specialisation] Major-Specific Advanced Subjects	[P] Compulsory
[EIT-82.781-SG#2019] B.Sc. Electrical and Computer Engineering [2019]	[Specialisation] Major-Specific Advanced Subjects	[P] Compulsory
[EIT-88.A20-SG#2021] M.Sc. European Master in Embedded Computing Systems (EMECS) [2021]	[Core Modules (non specialised)] Core Subjects	[WP] Compulsory Elective
[EIT-88.D55-SG#2021] M.Sc. Embedded Computing Systems (ESY) [2021]	[Core Modules (non specialised)] Core Program	[WP] Compulsory Elective
[EIT-82.781-SG#2021] B.Sc. Electrical and Computer Engineering [2021]	[Specialisation] Major-Specific Advanced Subjects	[P] Compulsory

Module-Pool

Name

[EIT-AC-MSC-CAS-WP-CORE-MPOOL-7]

CAS Core Electives

[EIT-AC-MSC-TW-MPOOL-7]

General Elective Modules Master A&C

[EIT-SIAK-DT-ENG-MPOOL]

SIAC Certificate "Digital Transformation" - Modules EIT "Engineering"