

## Module Handbook

TUK MODHB Homepage

# Course of Study "Embedded Computing Systems (ESY)" (M.Sc.)

[EIT-88.D55-SG#2021]

Department	[EIT] Elektrotechnik und Informationstechnik
Degree	[M.Sc.] Master (M.Sc.)
Course of Study	Embedded Computing Systems (ESY)
Version	2021
Short Name	M.Sc. Embedded Computing Systems (ESY)
State	[NORM] Active
Additional informations	<a href="#">Examination regulations [DE]</a> <a href="#">Homepage of the Course of Study</a>

## Section *Core Program*

[Core Modules \(non specialised\)](#)

## Embedded Systems Hardware and Software Architectures

WP	EIT-EIS-571-M-4	Architecture of Digital Systems I	4.0 CP
WP	EIT-EMS-546-M-4	Embedded Processor Lab	3.0 CP
WP	EIT-EIS-573-M-4	Architecture of Digital Systems II	4.0 CP
WP	EIT-EIS-521-M-7	Embedded Systems Laboratory	5.0 CP
WP	EIT-RTS-545-M-4	Operating Systems	4.0 CP
WP	EIT-RTS-540-M-4	Real-Time Systems I	4.0 CP
WP	INF-75-50-M-5	Machine Learning I - Theoretical Foundations	8.0 CP

## System-On-Chip Design

WP	EIT-EMS-654-M-4	Microelectronic Circuit and System Design I	4.0 CP
WP	EIT-EMS-655-M-7	Microelectronic Circuit and System Design II	5.0 CP
WP	EIT-EMS-657-M-7	Synthesis and Optimization of Microelectronic Systems I	4.0 CP
WP	EIT-EIS-660-M-7	Synthesis and Optimization of Microelectronic Systems II	3.0 CP
WP	EIT-EIS-560-M-7	Verification of Digital Systems	5.0 CP
WP	EIT-EIS-562-M-7	Class Project Verification of Digital Systems	3.0 CP
WP	EIT-EMS-732-M-7	FPGA-Based Hardware Accelerators and Hybrid Systems	4.0 CP

## Section *Elective Subjects*

Free Elective Area

## Embedded Systems Hardware Architectures

W	EIT-RTS-541-M-7	Real-Time Systems II	4.0 CP
W	EIT-RTS-446-M-7	Real-Time Systems Laboratory I	3.0 CP
W	EIT-RTS-447-M-7	Real-Time Systems Laboratory II	3.0 CP
W	EIT-EIS-560-M-7	Verification of Digital Systems	5.0 CP
W	EIT-EIS-566-M-7	Robust Digital Systems	3.0 CP
W	INF-61-53-M-6	Biologically Motivated Robots	6.0 CP
W	INF-61-33-M-6	Autonomous Mobile Robots	8.0 CP
W	INF-61-81-M-7	Service Robots and Assistance Systems (Project)	8.0 CP
W	INF-31-31-M-5	Software Project and Process Management	4.0 CP
W	INF-31-53-M-6	Empirical Model Formation and Methods	4.0 CP
W	INF-62-54-M-5	Parallel Computing	4.0 CP

<b>W</b>	<b>INF-62-36-M-6</b>	Model-based Design of Embedded Systems	<b>8.0 CP</b>
<b>W</b>	<b>INF-41-31-M-6</b>	Protocol Engineering	<b>4.0 CP</b>
<b>W</b>	<b>INF-41-53-M-6</b>	Algorithms in Ad-hoc Networks	<b>4.0 CP</b>
<b>W</b>	<b>INF-33-31-M-5</b>	Safety and Reliability of Embedded Systems	<b>4.0 CP</b>
<b>W</b>	<b>INF-65-51-M-6</b>	Power-Aware Embedded Systems	<b>4.0 CP</b>
<b>W</b>	<b>INF-64-52-M-5</b>	Automotive Software and Systems Engineering	<b>4.0 CP</b>
<b>W</b>	<b>EIT-EMS-659-M-7</b>	SystemC and Virtual Prototyping	<b>4.0 CP</b>
<b>W</b>	<b>EIT-EMS-653-M-6</b>	Enterprise Data Science	<b>3.0 CP</b>

## Communication and Signal Processing

<b>W</b>	<b>EIT-FUN-405-M-4</b>	Wireless and Multimedia Systems	<b>3.0 CP</b>
<b>W</b>	<b>EIT-FUN-402-M-4</b>	Wireless Communication	<b>5.0 CP</b>
<b>W</b>	<b>EIT-NAT-305-M-4</b>	Communications Engineering	<b>5.0 CP</b>
<b>W</b>	<b>EIT-NAT-301-M-4</b>	Introduction to Communication Networks	<b>4.0 CP</b>
<b>W</b>	<b>EIT-DSV-531-M-4</b>	Digital Signal Processing	<b>4.0 CP</b>
<b>W</b>	<b>EIT-DSV-532-M-4</b>	Digital Filters	<b>3.0 CP</b>
<b>W</b>	<b>EIT-DSV-534-M-7</b>	Digital Signal Processing: Algorithms and their Implementation	<b>3.0 CP</b>

## Automation and Control

<b>W</b>	<b>EIT-LRS-505-M-7</b>	Nonlinear and Adaptive Control	<b>5.0 CP</b>
<b>W</b>	<b>EIT-LRS-426-M-7</b>	Robot and Motion Control	<b>4.0 CP</b>
<b>W</b>	<b>EIT-LRS-509-M-7</b>	Control in Power Electronics	<b>3.0 CP</b>
<b>W</b>	<b>EIT-AUT-452-M-4</b>	Process Automation	<b>3.0 CP</b>
<b>W</b>	<b>EIT-AUT-457-M-4</b>	Fundamentals of Automation	<b>5.0 CP</b>
<b>W</b>	<b>EIT-AUT-453-M-7</b>	Methods of Soft Control	<b>3.0 CP</b>
<b>W</b>	<b>EIT-JEM-515-M-7</b>	Model Predictive Control	<b>4.0 CP</b>
<b>W</b>	<b>EIT-JEM-517-M-7</b>	Electric and Hybrid Vehicles	<b>3.0 CP</b>

## Microelectronics / Microsystems

<b>W</b>	<b>EIT-ISE-110-M-7</b>	Neurocomputing	<b>4.0 CP</b>
<b>W</b>	<b>EIT-ISE-112-M-7</b>	Sensor Signal Processing	<b>5.0 CP</b>
<b>W</b>	<b>EIT-ISE-651-M-4</b>	Technology and Design of Integrated Mixed-Signal Circuits and Systems (TESYS)	<b>5.0 CP</b>
<b>W</b>	<b>EIT-ISE-650-M-7</b>	Manufacturing and Design of Integrated Sensors Systems (HEIS)	<b>5.0 CP</b>

<b>W</b>	<b>EIT-EMS-655-M-7</b>	Microelectronic Circuit and System Design II	<b>5.0 CP</b>
<b>W</b>	<b>EIT-EMS-657-M-7</b>	Synthesis and Optimization of Microelectronic Systems I	<b>4.0 CP</b>
<b>W</b>	<b>EIT-EIS-660-M-7</b>	Synthesis and Optimization of Microelectronic Systems II	<b>3.0 CP</b>
<b>W</b>	<b>EIT-EMS-732-M-7</b>	FPGA-Based Hardware Accelerators and Hybrid Systems	<b>4.0 CP</b>

### Artificial Intelligence

<b>W</b>	<b>INF-75-50-M-5</b>	Machine Learning I - Theoretical Foundations	<b>8.0 CP</b>
<b>W</b>	<b>INF-75-51-M-6</b>	Machine Learning II - Statistical ML	<b>8.0 CP</b>
<b>W</b>	<b>INF-71-57-M-6</b>	Very Deep Learning - Recent Methods and Technologies	<b>4.0 CP</b>
<b>W</b>	<b>INF-71-56-M-6</b>	Applications of Machine Learning and Data Science	<b>4.0 CP</b>
<b>W</b>	<b>INF-74-51-M-6</b>	Embedded Intelligence	<b>4.0 CP</b>

### Section *Master's Thesis*

Thesis
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<b>P</b>	<b>EIT-DEK-008-M-7</b>	Master's Thesis ESY	<b>30.0 CP</b>
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