

## § 41 **Master's** Program Electrical Engineering and Embedded Systems

### (1) Consecutive study

The consecutive Master program of Electrical Engineering and Embedded Systems comprises three semesters and has been designed especially for graduates of electrical engineering and computer science programs having at least a Bachelor or a Diplom degree.

The curriculum for the Master program Electrical Engineering and Embedded Systems is shown in tables 1 and 2.

One elective course has been scheduled for the second semester (EMM2). At the beginning of the lecture period (no later than three weeks after lecture start), the examination committee will publish the permissible elective subjects with a notice on the bulletin board.

There are two course specialization possible: Autonomous Driving and IoT (Internet of Things). The students have to choose one of both.

Students are required to complete a scientific project work (engineering project) in one of the university's laboratories. The project must be finished by the end of the second semester (EMM2) and must be performed alongside the lectures or in the lecture-free period. The project shall comprise a part from the field of engineering science, i.e. the student shall work on an issue related to electrical engineering. In an introductory part, aspects of project management shall be presented and tested. The engineering projects shall close with a report summarizing the results achieved. The results shall be presented in a talk open to all members of the university.

The third semester (EMM3) shall be dedicated primarily to the completion of the **Master's** thesis.

#### ECTS

Courses as well as related course achievements and accredited examinations corresponding to at least 90 ECTS are required for successful graduation from the consecutive study program. ECTS are earned according to tables 1 and 2.

### (2) Language of instruction

Courses are offered in the English language.

### (3) Accredited examinations

The accredited examinations provided for semesters EMM1, EMM2 and EMM3 are specified in tables 1 and 2. The type of examination and coursework required for the courses accompanying the studies as well as their scope is determined as follows:

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Type of course	Type of exam	Scope of exam
V Lecture	MT <b>Master's thesis</b>	SWS Semester hours
L Laboratory / practical course	PR Project work	ECTS ECTS points in compliance with the European Credit Transfer System
Ü Exercise	PF Portfolio	
P Project	K(xx) Written test with a duration of xx minutes	
S Seminar/tutorial held	M Oral examination	
	R Seminar Paper and presentation	
	PA Practical work (lab, term paper, exercise or seminar paper)	
	RPA Practical work documented by a seminar paper and presentation (PF: 50% PA graded and 50% R graded)	

For tutorials held by the student, the corresponding ECTS earned may not exceed a total of 5 ECTS. In case of doubt the responsible examination committee will decide upon the number of ECTS to be granted.

(4) **Master's Thesis**

The Master's thesis can only be commenced if mandatory courses and related coursework have been completed with at least 45 ECTS points. The Master's thesis shall have a duration of 6 months.

Amendment to § 10 (9) of the "General Part of this Study and Examination Regulations": Second examiner can also be a scientific assistant, who has been conferred upon the authority to examine, according to legal regulations.

After completion of the Master's thesis the results shall be presented at the Hochschule Ravensburg-Weingarten – University of Applied Sciences in an event open to all members of the university.

(5) **Master's Certificate**

The **Master's certificate** will be issued in the English language. The certificate will show all module examinations passed as per **tables 1 and 2**, as well as the **Master's thesis**. Upon application, additional **modules can be included in the Master's certificate**, however without being taken into account for the calculation of the overall grade.

(6) Overall grade

The module examinations passed as well as the **Master's thesis** will be entered into the calculation of the average grade, weighted according to the ECTS points earned.

(7) Validity

This SPO is valid starting from winter semester 2022/23.

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Table 1: Master's Program Electrical Engineering and Embedded Systems

Module	Course	Curricular semester assigned				Accredited examination
			1	2	3	
		Typ	ECTS/ SWS	ECTS/ SWS	ECTS/ SWS	
Mathematics	Advanced Mathematics for Engineers	V	10/8			PF
	Advanced Mathematics for Engineers - Lab	L				
Communication 1	Wireless Communication	V		5/4		K90
Communication 2	Nearfield Communication	V+P		5/4		K90
Circuit & Systems 1	System-On-Chip	V+P	5/4			PF
Profile 1	Profile 1	s.M.	5			see Modules
Signalprocessing 1	Signalprocessing 1	V	5/4			K90
	Signalprocessing 1 Lab	L				
Profile 2	Profile 2	s.M.		5		see Modules
Advanced Control Systems	Digital Control	V/3		5/5		K60
	Digital Control Lab	L/2				
Embedded Control	Embedded Control Seminar	R			5/4	RPA
	Embedded Control Lab	L				
Embedded Computing	Embedded Computing	V/4	5	5		PF
	Embedded Computing Lab	L/2				
	Embedded Project	P/3				
Optional Module	Elective	s.M.		5		see Modules
Master's thesis	Master's thesis incl. Colloquium (15% of grade)				25	MT + R
summary ECTS / SWS			30/	30/	30/4	

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Table 2: Master Program Electrical Engineering and Embedded Systems  
Profile - Autonomous rofile - Autonomous Driving

Module	Course	SS or WS			Accredited examination
			ECTS/ SWS	ECTS/ SWS	
		Typ	SS	WS	
Computer Vision	Computer Vision	V+P	5/4		PF
Lidar and Radar Systems	Lidar and Radar Systems	V+P		5/4	PF
summary ECTS / SWS			5/4	5/4	

Table 3: Master Program Electrical Engineering and Embedded Systems  
Profile - IoT

Module	Course	SS oder WS			Accredited examination
			ECTS/ SWS	ECTS/ SWS	
		Typ	SS	WS	
SW-HW-Design	SW-HW-Design	V+P		5/4	PF
Computer Architecture	Computer Architecture	V+P	5/4		PF or K90
summary ECTS / SWS			5/4	5/4	