Hochschule Aalen

Please note: This is a courtesy translation. The sole legally binding document remains the currently valid version oft he original German Statute!

Study and Examination Regulations for the Master's Degree Program in Electrical Engineering (Part MA-TB-MRE/MTE-32)

Based on § 8 para. 5 in conjunction with §§ 19 para. 1 sentence 2 no. 9, 32 para. 3 of the Law on Universities in the State of Baden-Württemberg (Landeshochschulgesetz - LHG) of January 1, 2005 (GBl. p. 1), last amended by Art. 8 of the Law of February 7, 2023 (GBl. p. 26, 43), the Senate of Aalen University - Technology and Economics adopted the following statutes on November 20, 2024. The Rector approved these study and examination regulations (part MA-TB-MRE/MTE-32) by decree dated November 26, 2024.

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§ 1 General

The regulations of the Study and Examination Regulations for Master's degree programs at Aalen University (MA-TA-20-1) in the currently valid version apply in addition to these regulations. In the event of any contradictions, these regulations shall take precedence.

§ 2 Master's degree program in Electrical Engineering (Master of Engineering)

I - Preamble - Qualification goals

Target group

The Master's degree course in Electrical Engineering is aimed at graduates from an engineering degree course, primarily in Electrical Engineering or a related field.

Course content

The overarching aim of the degree course is to enable graduates to establish new solutions in a field of electrical engineering. They acquire an in-depth understanding of electrical engineering, its possibilities and the associated applications. After completing their studies, graduates are able to take on challenging activities in the fields of development and realization of complex electrical engineering systems.

Graduates

- are able to independently solve and develop questions for scientific problems in the field of electrical engineering with the help of suitable research methods and implement them in practice. Furthermore, they can design basic systems engineering research questions and plan and process the visualization of results. They are able to assess and evaluate the results and predict influences with regard to modifications and are thus able to conduct research.
- are also able to apply methods of machine learning & predictive analytics and reflect on the possible consequences of their decisions.
- are able to plan and develop sophisticated application-oriented embedded systems.
- are able to apply, analyze and design intelligent methods. They can also plan and develop intelligent systems.
- are able to use the acquisition, conversion, transmission, switching, networking and distribution of information-bearing signals to solve novel problems.
- are able to be scientifically and socially innovative and are particularly able to apply this within their area of application or competence.
- are able to interpret research results and complex issues, present them precisely in writing and orally, defend them and discuss them constructively with both laypersons and experts.
- are prepared to develop questions and their solutions independently, both in a team and in project responsibility, or to drive their development forward through innovative contributions.
- are able to discuss current and historical topics, critically reflect on social processes, develop an understanding of different points of view and help shape social processes with a sense of responsibility and a democratic sense of community. They can apply

soft skills and interdisciplinary competencies in their later professional life. These skills shape the personal development and also the future civic engagement as well as the political and cultural role of graduates.

As a result, the course qualifies students for a career in electrical engineering, particularly in the following fields of work:

- Development and research department
- Technical support in development, production, quality management and service
- Supporting the company in the creation of electrotechnical concepts and methods
- Research institutes for electrical engineering technologies

The Master's degree course qualifies students to work in the scientific field and offers the opportunity to gain further specialist qualifications through a subsequent doctorate.

II - Program structure and scope

(1) The standard duration of study for the Master's degree course in Electrical Engineering is 3 semesters. Deviating from this, the duration of the Master's degree course as a part-time course is 5 semesters.

(2) The total number of courses required to successfully complete the Master's degree program is 90 ECTS credits. Regarding the regulations for students with a Bachelor's degree of less than 210 ECTS credits, please refer to the statutes of Aalen University - Engineering and Business for the selection procedure in the Master's degree program in Electrical Engineering.

(3) The duration and structure of the Master's degree program, modules, courses with the number of weekly semester hours and the number of ECTS credits (CP) can be found in the following table and in the corresponding module handbook.

(4) In the Electrical Engineering degree program, the compulsory elective modules "Wahlpflicht 1", "Wahlpflicht 2" and "Wahlpflicht 3" must be completed. The selected compulsory electives may not already be included in your own curriculum. The possible compulsory electives are published on a list at the beginning of each semester. Additional modules can be selected for the compulsory elective courses upon application and approval by the Examination Board.

(5) Exclusion from the degree program:

a) Master's degree program regular:
The duration of the entire course of study, including the Master's thesis, is a maximum of 6 semesters. If the maximum duration is exceeded, admission to the degree program expires. Furthermore, admission and the right to participate in examinations expire if the student has achieved less than 40 CP after the 2nd semester of study, unless the student is not responsible for not achieving the minimum CP value or for exceeding the time limit.

b) Part-time Master's degree program:
The duration of the entire course, including the Master's thesis, is a maximum of 8 semesters. If the maximum duration is exceeded, admission to the course will be revoked. Furthermore, admission and the right to participate in examinations expire if the student has achieved less than 40 CP after the 4th semester, unless the student

is not responsible for not achieving the minimum CP value or for exceeding the time limit.

(6) Supplementary regulations:
Contrary to the regulations for the general studies of the general part "MA-TA-20-1", no separate workload has been defined in the curriculum, as this is already integrated in the standard course of studies in module 49001 "Project 1".

(7) After passing the Master's examination, Aalen University - Engineering and Business - awards the Master's degree "Master of Engineering", stating the specialization.

Curriculum - Master's degree program in Electrical Engineering

Start of studies in the winter semester Regular duration of studies						
No.	**Module /** Course	**Type**	**Semester hours per week / semester**			**CP** (ECTS points)
			1. winter semester	**2. summer semester**	**3.**	
49001	**Project 1**					**5**
49101	Project 1	P	2			5
49002	**Predictive analytics**					**5**
49102	Predictive Analytics	V,Ü	4			5
49003	**Physical Computing**					**5**
49103	Physical Computing	V,L	4			5
49004	**Signal Processing and Modern Wireless Communications**					**5**
49104	Signal Processing and Modern Wireless Communications	V,Ü	4			5
49005	**Compulsory elective 1**					**5**
49105	Compulsory elective 1		X			5
49006	**Compulsory elective 2**					**5**
49106	Compulsory elective 2		X			5
49007	**Project 2**					**5**
49207	Project 2	P		2		5
49008	**Machine Learning & Deep Learning**					**5**
49208	Machine Learning & Deep Learning	V,Ü		4		5
49009	**Programming Internet of Things**					**5**
49209	Programming Internet of Things	P		4		5
49010	**Modern Methods of Networks**					**5**
49210	Modern Methods of Networks	V,Ü		4		5

Start of studies in the winter semester Regular duration of studies						
No.	**Module /** Course	**Type**	**Semester hours per week / semester**			**CP** (ECTS points)
			1. winter semester	**2. summer semester**	**3.**	
49011	**Smart Systems Engineering and Advanced Techniques**					**5**
49211	Smart Systems Engineering and Advanced Techniques	V,Ü		4		5
49012	**Compulsory elective 3**					**5**
49212	Compulsory elective 3			X		5
9999	**Master Thesis**				**X**	**30**
	Total SWS		**14 WP*+**	**18+ WP***		
	Total CP		**30**	**30**	**30**	**90**
	Total examinations		**6**	**6**	**1**	

*WP = compulsory elective (modules)

Start of studies in the summer semester Regular duration of studies						
No.	**Module /** Course	**Type**	**Semester hours per week / semester**			**CP** (ECTS points)
			1. summer semester	**2. winter semester**	**3.**	
49001	**Project 1**					**5**
49101	Project 1	P	2			5
49008	**Machine Learning & Deep Learning**					**5**
49208	Machine Learning & Deep Learning	V,Ü	4			5
49009	**Programming Internet of Things**					**5**
49209	Programming Internet of Things	P	4			5
49010	**Modern Methods of Networks**					**5**
49210	Modern Methods of Networks	V,Ü	4			5
49011	**Smart Systems Engineering and Advanced Techniques**					**5**
49211	Smart Systems Engineering and Advanced Techniques	V,Ü	4			5
49005	**Compulsory elective 1**					**5**
49105	Compulsory elective 1		X			5
49007	**Project 2**					**5**
49207	Project 2	P		2		5
49002	**Predictive analytics**					**5**
49102	Predictive Analytics	V,Ü		4		5
49003	**Physical Computing**					**5**
49103	Physical Computing	V,L		4		5
49004	**Signal Processing and Modern Wireless Communications**					**5**
49104	Signal Processing and Modern Wireless Communications	V,Ü		4		5

Start of studies in the summer semester Regular duration of studies						
No.	**Module /** Course	**Type**	**Semester hours per week / semester**			**CP** (ECTS points)
			1. summer semester	**2. winter semester**	**3.**	
49006	**Compulsory elective 2**					**5**
49106	Compulsory elective 2			X		5
49012	**Compulsory elective 3**					**5**
49212	Compulsory elective 3			X		5
9999	**Master Thesis**				**X**	**30**
	Total SWS		**18+ WP***	**14 WP*+**		
	Total CP		**30**	**30**	**30**	**90**
	Total examinations		**6**	**6**	**1**	

*WP = compulsory elective (modules)

Start of studies in the winter semester Part-time degree course								
No.	**Module /** Course	**Type**	**Semester hours per week / semester**					**CP** (ECTS points)
			1. winter semester	**2.** summer semester	**3.** winter semester	**4.** SoSe	**5.**	
49001	**Project 1**							**5**
49101	Project 1	P	2					5
49002	**Predictive analytics**							**5**
49102	Predictive Analytics	V,Ü	4					5
49003	**Physical Computing**							**5**
49103	Physical Computing	V,L	4					5
49007	**Project 2**							**5**
49207	Project 2	P		2				5
49008	**Machine Learning & Deep Learning**							**5**
49208	Machine Learning & Deep Learning	V,Ü		4				5
49009	**Programming Internet of Things**							**5**
49209	Programming Internet of Things	P		4				5
49004	**Signal Processing and Modern Wireless Communications**							**5**
49104	Signal Processing and Modern Wireless Communications	V,Ü			4			5
49005	**Compulsory elective 1**							**5**
49105	Compulsory elective 1				X			5
49006	**Compulsory elective 2**							**5**
49106	Compulsory elective 2				X			5
49010	**Modern Methods of Networks**							**5**
49210	Modern Methods of Networks	V,Ü				4		5
49011	**Smart Systems Engineering and Advanced Techniques**							**5**
49211	Smart Systems Engineering and Advanced	V,Ü				4		5

Start of studies in the winter semester Part-time degree course								
No.	**Module /** Course	**Type**	**Semester hours per week / semester**					**CP** (ECTS points)
			1. winter semester	**2.** summer semester	**3.** winter semester	**4.** SoSe	**5.**	
	Techniques							
49012	**Compulsory elective 3**							**5**
49212	Compulsory elective 3					X		5
9999	**Master Thesis**						**X**	**30**
	Total SWS		**10**	**10**	**4+ WP***	**8+ WP***		
	Total CP		**15**	**15**	**15**	**15**	**30**	**90**
	Total exams		**3**	**3**	**3**	**3**	**1**	

*WP = Compulsory elective (modules)

Start of studies in the summer semester Part-time degree course								
No.	**Module /** Course	**Type**	**Semester hours per week / semester**					**CP** (ECTS-points)
			1. summer semester	**2.** winter semester	**3.** summer semester	**4.** winter semester	**5.**	
49001	**Project 1**							**5**
49101	Project 1	P	2					5
49008	**Machine Learning & Deep Learning**							**5**
49208	Machine Learning & Deep Learning	V,Ü	4					5
49009	**Programming Internet of Things**							**5**
49209	Programming Internet of Things	P	4					5
49007	**Project 2**							**5**
49207	Project 2	P		2				5
49002	**Predictive analytics**							**5**
49102	Predictive Analytics	V,Ü		4				5
49003	**Physical Computing**							**5**
49103	Physical Computing	V,L		4				5
49010	**Modern Methods of Networks**							**5**
49210	Modern Methods of Networks	V,Ü			4			5
49011	**Smart Systems Engineering and Advanced Techniques**							**5**
49211	Smart Systems Engineering and Advanced Techniques	V,Ü			4			5
49005	**Compulsory elective 1**							**5**
49105	Compulsory elective 1				X			5
49004	**Signal Processing and Modern Wireless Communications**							**5**
49104	Signal Processing and Modern Wireless Communications	V,Ü				4		5
49006	**Compulsory elective 2**							**5**
49106	Compulsory elective 2					X		5

Start of studies in the summer semester Part-time degree course								
No.	**Module /** Course	**Type**	**Semester hours per week / semester**					**CP** (ECTS-points)
			1. summer semester	**2.** winter semester	**3.** summer semester	**4.** winter semester	**5.**	
49012	**Compulsory elective 3**							**5**
49212	Compulsory elective 3					X		5
9999	**Master Thesis**						**X**	**30**
	Total SWS		**10**	**10**	**8+ WP***	**4+ WP***		
	Total CP		**15**	**15**	**15**	**15**	**30**	**90**
	Total exams		**3**	**3**	**3**	**3**	**1**	

*WP = compulsory elective (modules)

§ 3 Entry into force

These statutes enter into force on the day after their publication and apply for the first time for the winter semester 2025/26.

Aalen, November 26, 2024

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Prof. Dr. Harald Riegel
Rector