

**Study and Examination Regulations
for the Master's Degree Programme
Electromobility
at Deggendorf Institute of Technology**

of 15 November 2022

Based on Art. 13(2) Sentence 2, 58(1), 61(2) Sentence 1 of the Bavarian Higher Education Act (BayHSchG) of 23 May 2006 (GVBl. [law and official gazette] p. 245, BayRS 2210-1-1-WK), last amended by Section 2 of the Act of 23 December 2021 (GVBl. p. 669)

**Section 1
Aim of the study programme**

The master's degree programme Electromobility is designed to enable graduates of a bachelor's or diploma programme to further supplement the knowledge and skills that they have acquired to date with theoretical, simulative and application-oriented knowledge in order to meet the specific demands posed by modern development tasks in this high-tech field. Building on the preceding course of study, the programme provides balanced instruction in conveying essential, advanced specialist knowledge in the sub-areas of urban and mobile electrification. The aim of doing so is to further train the graduates' abilities to work creatively in the area of applied research and development.

**Section 2
Admission requirements, proof of language proficiency,
aptitude for the degree programme**

- (1) The qualifications required in order to be admitted to the master's programme are:
1. Successful graduation from a bachelor's or diploma programme in Electrical Engineering, Information Technology or a related field where the student has attained 210 ECTS credits, or a comparable degree. The examination committee shall decide on the equivalence of the degree qualifications and grade

and

 2. proof of eligibility for the course in question pursuant to Section 7 of these statutes

Section 3

Structure of the programme, standard period of study

- (1) The standard period of study is three semesters.
- (2) A total of 90 ECTS credits are to be acquired.
- (3) Two potential specialisations are offered so as to enable students to determine themselves the direction they wish to take in pursuit of their envisaged field of work. Students have to choose one of the following two specialisations at the time of application:
 - simulation of electromobility systems (SE)
 - realisation of electromobility systems (RE)
- (4) No rights or entitlement exist to the master's programme being held in the event that an insufficient number of qualified students enrol. Likewise, no rights or entitlement exist to all elective modules being offered each semester.

Section 4

Proof of missing ECTS credits

Applicants submitting a university degree, as proof of qualification for admission, for which fewer than 210 ECTS credits, but at least 180 ECTS credits, have been awarded or which are to be considered as equivalent thereto shall be required to furnish proof of the missing ECTS credits in order to pass their master's examination. Missing ECTS credits that need to be submitted by the beginning of the third semester may, further to application to the examination board, be furnished in the shape of an additional internship/work placement or attendance of subject-relevant university courses. The aforementioned forms of proof may only be submitted once in each case. No more than 30 ECTS credits shall be accepted as proof.

The following conditions apply in respect of the submission of proof:

1. Relevant work experience. Two years' relevant, subject-related work experience shall equate to up to 30 ECTS credits. The work experience must be relevant and subject-related. The content of the work undertaken must be consistent with the completed or envisaged degree.
2. Subject-related internship/work placement. A six-month, full-time internship/work placement in electrical engineering or information technology, or comparable fields, shall equate to up to 30 ECTS credits and can, upon consultation with the relevant academic advisor, be credited towards the degree programme.
3. Relevant university modules. Upon consultation with the relevant academic advisor, students may select electrical engineering and information technology modules from those being offered, provided that their content does not primarily equate to content already taught in the undergraduate programme. This provision relates solely and exclusively to the undergraduate degree specifically submitted by the applicant. The relevant study and examination regulations in effect at the time shall be decisive.

Section 5 Modules and courses

- (1) The degree programme comprises modules that may consist of courses on connected subjects. Each module is allotted ECTS credits in keeping with the workload students need to invest in order to complete them
- (2) Compulsory and compulsory elective modules, the types of courses, their number of hours, their forms of instruction, the examinations, and the awardable ECTS credits are defined in the appendix to these statutes. The regulations governing compulsory elective modules of a general and a subject-specific nature are supplemented by the curriculum.
- (3) All modules comprise compulsory modules, compulsory elective modules or optional modules:
 1. Compulsory modules are those modules held during the degree programme which are binding for all students.
 2. Compulsory elective modules are alternative modules offered individually or in groups. Students are required to select a certain number of modules based on these study and examination regulations. The selected modules will be treated as compulsory modules.
 3. Optional modules are modules that are not necessarily required in order to achieve the study goals. They may be additionally selected from the courses offered by the university.
- (4) No rights or entitlement exist to all of the envisaged specialisations, compulsory elective modules or optional modules actually being offered. Similarly, no rights or entitlement exist to the accompanying classes taking place in the event of insufficient student numbers.

Section 6 Curriculum

The relevant faculty, currently the Faculty of Electrical Engineering and Media Technology (EMT), will prepare a curriculum that ensures the relevant courses are offered and that students are aware of these.

The curriculum is set by the Faculty Board and made public at the university prior to the semester commencing. Any amendments or new regulations that need to be announced will be made public no later than at the beginning of the lecture period to which they relate. In particular, the curriculum will contain regulations and information regarding:

1. the time allocated for the semester periods per week, per module and semester, including the attainable ECTS credits
2. the names of the compulsory elective and elective modules as well as their respective number of semester hours per week
3. the subject-related compulsory elective modules, including the number of hours involved
4. the form of instruction used in each individual module, provided that this has not been conclusively specified in Appendix 2
5. the examination format and exam duration
6. more detailed provisions concerning the examinations, academic performance and attendance records.

Section 7

Aptitude and suitability for the degree programme

- (1) An applicant's aptitude and suitability for the degree programme will be ascertained through a written test, which may also be taken online where applicable. The test involves complex tasks on subjects of relevance to Mathematics, Physics, and Fundamentals of Electrical Engineering and Information Technology. The tasks are prepared and assessed by a selection committee, which consists of at least two faculty professors and is appointed for a period of two years by the Faculty Board of the Faculty of Electrical Engineering and Media Technology. The applicant's aptitude and suitability for the degree programme is deemed demonstrated if the test is passed successfully ("mit Erfolg").
- (2) The selection committee may exempt an applicant from sitting the aptitude test if the applicant can demonstrate that their bachelor's degree or diploma was awarded in the field of electrical engineering, information technology or a related specialist field and that they graduated from the programme in question with a grade no lower than 2.5, or the applicant can demonstrate above-average knowledge in the Mathematics, Physics or Fundamentals of Electrical Engineering modules.
- (3) The aptitude test procedure for the degree programme in question is conducted every semester. Participants will receive an invitation by e-mail.
- (4) Applicants who do not pass the aptitude test for the degree programme may register to sit the test one further time in the following semester. In justified, exceptional cases, registrations for a later test date may be accepted. No further attempts shall be possible after re-sitting the test.

Section 8

Examination performance and overall examination grade

- (1) ECTS credits are awarded for each successfully passed examination. The number of attainable credits per exam is shown in the appendix.
- (2) ¹A student's overall grade is calculated using a weighted arithmetic average of their individual grades. ²The weighting of each individual grade equates to the number of ECTS credits allocated to the course for which the grade was awarded.
- (3) In addition to the overall grade assigned as per para. 2, a relative grade is awarded based on the numerical value attained, in keeping with the ECTS User Guide, as per the provisions of Section 8(6) General Examination Regulations of Deggendorf Institute of Technology.
- (4) Should an end-of-module examination comprise multiple module component examinations, a grade of "insufficient" ("nicht ausreichend") awarded in one module component examination may not be offset by a higher grade in another.

Section 9

Master's thesis

- (1) Attainment of the master's degree is contingent on a master's thesis being written. The aim of the thesis is to enable students to demonstrate, through a self-written academic paper, their ability to apply the knowledge and skills acquired

during the course to tasks of a complex nature.

- (2) Students wishing to register to write their master's thesis must have attained at least 25 ECTS credits.
- (3) The time between the topic being assigned and the master's thesis being submitted shall be six months. The submission deadline may be extended by the examination board upon application of a corresponding application and agreement with the examiner where pressing reasons apply.
- (4) The master's thesis may be repeated once if the student does not pass on their first attempt.
- (5) The master's thesis may be written in English or German.

Section 10 Certificate

On passing the master's examination, a corresponding certificate is issued in accordance with the template shown in the appendix to the General Examination Regulations of Deggendorf Institute of Technology.

Section 11 Academic degree and diploma supplement

- (1) Upon successfully passing the master's examination, the academic degree "Master of Science", in short: "M.Sc.", is awarded.
- (2) A certificate conferring the awarding of the academic degree will be issued in line with the sample shown in the appendix to the General Examination Regulations of Deggendorf Institute of Technology.
- (3) The certificate will be accompanied by an English translation as well as a bilingual Diploma Supplement outlining, in particular, the essential course content forming the basis of the degree, the progression of the studies, and the qualification obtained by virtue of the degree.

Section 12 Coming into effect

These study and examination regulations shall enter into effect on 15 November 2022. They apply to all students commencing the degree programme as of the 2023 summer semester.

Appendix 1

To the study and examination regulations for the Electromobility Master's Programme

Overview of the modules and courses at Deggendorf Institute of Technology:

Master's Programme Electromobility				Semester periods per week (SWS)							Examinations		
Module No.	Module Name	Course No.	Course Name	SWS	1st sem.	2nd sem.	3rd sem.	ECTS per course	ECTS	Teaching method	Admission requirements	Exam format	Exam duration
MEM-01	Drive technologies	MEM 1101		4	4				5	SU/Ü		schrP	90 min.
MEM-02	Fuel cell technologies	MEM 1102		4	4			2	5	SU/Ü/Pr		schrP	90 min.
	Practical course- fuel cells	MEM 1103					3	PB					
MEM-03	Electrification of different transport sectors	MEM 1104		4	4				5	SU/Ü		schrP	90 min.
MEM-04	Model-based requirement management and hardware design	MEM 1105		4	4				5	SU/Ü		schrP	90 min.
MEM-05	Batteries and super-capacitors for advanced students	MEM 2101		4		4			5	SU/Ü		schrP	90 min.
MEM-06	Modern methods of control engineering	MEM 2102		4		4			5	SU/Ü		schrP	90 min.
MEM-07	Charging stations and charging management	MEM 2103		4		4		2	5	SU/Ü/Pr		schrP	90 min.
	Practical course - charging stations	MEM 2104					3	PB					
MEM-08	Intelligent power grid and electrical system architectures	MEM 2105		4		4			5	SU/Ü		schrP	90 min.
Field of specialisation – Simulation of electromobility systems (SE)													
MEM-09	Modelling and simulation of mobile systems	MEM 1106		4	4				5	SU/Ü		schrP	90 min.
MEM-10	Electromagnetic simulation (FEM)	MEM 1107		4	4				5	SU/Ü		schrP	90 min.
MEM-11	Model-based controller design and protection (CPU and FPGA)	MEM 2106		4		4		2	5	SU/Ü/Pr		schrP	90 min.
	Practical course - controller design	MEM 2107					3	PrA					
MEM-12	Subject-specific compulsory elective subject 1	MEM 2108		4		4			5	SU/Ü		*	
Field of specialisation – Realisation of electromobility systems (RE)													
MEM-13	Power electronics in electric and fuel cell vehicles	MEM 1108		4	4				5	SU/Ü/Pr		schrP	90 min.
MEM-14	Subject-specific compulsory elective subject 2	MEM 1109		4	4				5	SU/Ü		*	
MEM-15	Electrochemical energy storage systems in practice	MEM 2108		4		4			5	SU/Ü/Pr		PStA	
MEM-16	Thermal management	MEM 2109		4		4			5	SU/Ü		schrP	90 min.
MEM-17	Societal challenges of electromobility & reliability, maintainability, sustainability	MEM 3101		4			4		5	SU/Ü		PoP	90 min.
MEM-18	Master's module	MEM 3102	Master's seminar	2			2		25	S		mP	30 min.
		MEM 3103	Master's thesis									MA	
	Total SWS			54	24	24	6						
	Total ECTS			90	30	30	30						
Valid as of: 16/05/2022													

* The examination format results from the corresponding study and examination regulations governing the selected subject-related elective course (FWP)

Issued based on the resolution passed by the Senate of Deggendorf Institute of Technology on 6 July 2022, the degree programme announcement lodged on 3 August 2022 with the Bavarian State Ministry for Science and the Arts as well as the supervisory approval of the Vice-President of Deggendorf Institute of Technology of 15 November 2022.

Signed
Prof. Waldemar Berg
Vice-President

The statutes were recorded at Deggendorf Institute of Technology on 15 November 2022. The recorded statutes were duly posted on the notice boards on 15 November 2022. Their date of publication is therefore 15 November 2022.