Study and Examination Regulations
for the Master's degree programme
Robotik / Robotics
at Deggendorf Institute of Technology

of 19 February 2025

Based on Art. 9, 80(1), 84(2) Clause 1 of the Bavarian Higher Education Innovation Act (BayHIG) of 5 August 2022 (German law and ordinance gazette (GVBl.) p. 414, BayRS 2210-1-3WK), last amended by Section 1 of the Act of 23 July 2024 (GVBl. p. 257), Deggendorf Institute of Technology enacts the following by-laws:

Section 1
Aim of the degree programme

(1) The master's degree programme of Robotics is designed to enable graduates of *Diplom* or bachelor's programmes to substantiate the knowledge that they have acquired so far with theoretical knowledge, and thereby be especially well-equipped to meet the requirements of modern tasks in research development. The degree programme is primarily aimed at graduates of *Diplom* or bachelor's degree programmes in robotics, mechatronics, mechanical engineering, electrical engineering, industrial engineering, production engineering, control engineering, computer science, electronics, bioinformatics, health informatics and automation technology, or related degree programmes.

(2) [1]The degree programme builds on a bachelor's or Diplom degree programme with more in-depth and subject-specific content. [2]Graduates of this programme are to be qualified for creative work in research and development departments and for activities in production and management in industry or in the healthcare sector.

(3) Particularly well-qualified students will furthermore learn the theoretical principles needed for them to pursue a doctoral programme and/or work in scientific fields.

Section 2
Admission requirements, proof of language proficiency, programme-specific aptitude

(1) To qualify for admission to the master's degree programme of Robotics students must

- [1]Completion of an undergraduate degree programme at a German or foreign higher education institution worth at least 210 ECTS points in the field of

robotics, mechatronics, mechanical engineering, electrical engineering, industrial engineering, production engineering, control engineering, computer science, electronics, bioinformatics, health informatics and automation technology, a related degree programme, or a degree that is equivalent to such a university degree. 2The examination committee shall determine whether the obtained degrees are of comparable standing.

and

- Proof of programme-specific aptitude as part of a process in accordance with Section 8 of these by-laws.

(2) For this degree programme proof of the following language skills have to be provided:

- Level B2 English proficiency, as defined under the Common European Framework of Reference for Languages.

- Level A2 German proficiency, as defined under the Common European Framework of Reference for Languages.

Regarding the proof, the regulations set out in Section 3 of the general examination regulations for additional qualification in foreign languages and compulsory elective subjects of a general academic nature (AWP) of Deggendorf Institute of Technology shall apply as amended.

Section 3
Structure of the programme, standard period of study

(1) The programme is offered as a full-time programme; the standard period of study is three semesters.

(2) A total of 90 ECTS points is to be acquired.

(3) Lectures are taught in English. Examinations are carried out in English.

(4) 1No rights or entitlement exist to the master's programme being held in the event that an insufficient number of qualified students enrol. 2Likewise, no rights or entitlement exist to all elective modules being offered each semester.

(5) The programme is divided in the fields of specialisation Intelligent Robotics (IR) and Assistive Robotics (AR).

Section 4
Selection of the field of specialisation

(1) Students are to choose their field of specialisation during the application process, before starting the programme.

(2) 1No rights or entitlements exist to the envisaged field of specialisation. 2Likewise, no rights or entitlements exist to the related courses being held in the event of insufficient student numbers.

Section 5
Proof of ECTS points not yet obtained

[1]If applicants provide proof of an admission-substantiating university degree, for which less than 210 ECTS points but at least 180 ECTS points have been awarded or are to be regarded as equivalent, then proof of the ECTS points not yet obtained is a prerequisite for passing the master's examination. Missing ECTS points to be obtained by the start of the third semester, may upon request to the Examination Committee be provided through additional relevant professional experience or by attending relevant university courses. [2]Proof for each variant may be furnished only once. A maximum of 30 ECTS points may be provided this way.

The following conditions apply for the proof:

1. Internship:
   Successful completion of a relevant internship in the fields of robotics, mechatronics, mechanical engineering, electrical engineering, industrial engineering, production engineering, control engineering, computer science, electronics, bioinformatics, health informatics or automation technology for a period of at least 20 weeks.

2. University lectures and classes:
   [1]Lectures and classes must be drawn from the relevant undergraduate degree programmes offered at the institute. [2]The relevant academic advisor is to be consulted in advance, during which time an individualised concept is to be jointly developed with the applicant.

Section 6
Modules and courses

(1) [1]The degree programme comprises modules that may consist of courses on connected subjects. [2]ECTS points are allotted to each module in keeping with the amount of time students are required to invest.

(2) [1]Compulsory and compulsory elective modules, the lectures, their number of hours, forms of instruction, examinations as well as the ECTS points are defined in the appendix to these by-laws. [2]The regulations governing compulsory elective modules of a general and subject-specific nature are supplemented by the curriculum.

(3) All modules comprise compulsory modules, compulsory elective modules or elective modules:

1. Compulsory modules are those modules held during the degree programme which are binding for all students.
2. [1]Compulsory elective modules are alternative modules offered individually or in groups. [2]Students are required to select a certain number of modules based on these study and examination regulations. [3]Selected modules are treated as compulsory modules.
3. [1]Optional modules are modules that are not mandatory for the achievement of the study objective. [2]They may be additionally selected from the courses offered by the Institute.

(4) [1]No rights or entitlement exist to all of the envisaged specialisations, compulsory elective modules or elective modules actually being offered. [2]Similarly, no rights or entitlement exist to the accompanying courses of instruction taking place in the event of insufficient student numbers.

Section 7
Curriculum

[1]The relevant faculty, currently the Faculty of Natural Sciences and Industrial Engineering, will prepare a curriculum, outlining the programme's course progression, that ensures the relevant courses are offered and that students are aware of these.

[2]This shows the course of studies in detail. [2]The curriculum is set by the Faculty Council and made public at the Institute prior to the semester commencing. [3]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. [4]In particular, the curriculum will contain regulations and information regarding:

1. the time allocated for the weekly hours per semester, the time allocated per module and semester, including the attainable ECTS points;
2. the names of the compulsory and compulsory elective modules as well as their respective number of weekly hours per semester;
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;
5. the examination format and exam duration;
6. detailed provisions for proofs of performance and attendance.

Section 8
Proof of programme-specific aptitude

(1) [1]A student’s aptitude and suitability for the degree programme is ascertained through a written or online test of 90 minutes’ duration [2]The appointment for this examination is set by the examination committee. [3]The examination shall cover complex tasks on relevant topics from higher mathematics for engineers, as well as the basics of robotics, computer science and programming, mechatronics, control engineering and electrical engineering. [4]The assessment test will be deemed to have been passed if the grade “passed successfully” (“mit Erfolg abgelegt”) was awarded. [5]To ascertain a grade, the test is evaluated by two university instructors. [6]The two examiners jointly set the relevant marking system to be used in order to determine whether the candidate has been successful. [7]The approaches to solving the tasks must be logical and comprehensible. Both lecturers must reach a consensus when arriving at the test result. [8]At least one of the two university instructors must teach in one of the relevant degree programmes at Deggendorf Institute of Technology. [9]The selection of professors is made by the Faculty Council of Applied Natural Sciences and Industrial Engineering.

(2) [1]The examination committee may waive a candidate’s obligation to take the aptitude test for the degree programme if the applicant demonstrates above-average knowledge of the subject matter, as verified through their degree awards falling under Section 3(1) Clause 1.

[2]Above-average degrees awards are deemed to be final degrees with an overall grade of "good" (<2.5) or better, or above-average knowledge (a grade of 2.5 or better) in the four subjects Mathematics, Control Engineering, Computer Science and Mechatronics or Robotics or related disciplines.

(3) [1]The procedure for determining programme-specific aptitude is conducted on a semester-by-semester basis. [2]Participants will receive an invitation by e-mail.

(4) [1]Applicants not passing the aptitude test for the degree programme may register to reapply to sit the test in the following half-year. [2]In justified cases, a candidate may register for the test at a later juncture.

Section 9
Assessment of examination performance; overall examination grade

(1) ECTS points are awarded for each successfully passed examination. The number of attainable points per exam is shown in the appendix.

(2) [1]A student's overall examination grade is calculated using a weighted arithmetic average of their individual grades. [2]The weighting of each individual grade equates to the number of ECTS points 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 "nicht ausreichend" ("insufficient") awarded in one module component examination may not be offset by a higher grade in another.

Section 10
Master's thesis and colloquium

(1) [1]Attainment of the master's degree is contingent on a master's thesis being written. [2]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 40 ECTS points.

(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 Committee 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.

(6) [1]The thesis is followed by a master's colloquium (oral examination). [2]Students are required to outline their master's thesis as part of the colloquium and engage in a discussion about the content and approach. The colloquium is held in front of two examiners. [3]As a rule, these should be the supervisors of the master's thesis. [4]The duration of the colloquium is 45 minutes; the colloquium can be repeated once if not passed in the first attempt. [5]The colloquium assessment involves a presentation and an oral examination concerning the thesis.

Section 11
Certificate

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

Section 12
Academic degree and diploma supplement

(1) Based on the successful completion of the master's examination, the academic degree "Master of Engineering", abbreviated as: "M.Eng".

(2) A certificate granting the academic degree shall be issued in accordance with the respective template in the annex to the general examination regulations of Deggendorf Institute of Technology.

(3) The certificate will be accompanied by an English translation and a Diploma Supplement outlining 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 13
Coming into effect

These Study and Examination Regulations enter into force on 15 March 2025. They apply to all students commencing the degree programme as of the 2025 summer semester.

Appendix to the study and examination regulations for the master's degree programme "Robotik / Robotics" at Deggendorf Institute of Technology

M. Eng. Robotik / Robotics										
Weekly semester hours (SWS)										
Overview of module/course numbers, module and course names, SWS and ECTS			**SWS Modul**	**1. Sem**	**2. Sem**	**3. Sem**	**ECTS**	**Weighting of the module**	**Form of instruction**	**Exam format**
Module no.	Course no.	**Module**/Course								
MRO-01	MRO1101	**Robot Dynamics**	**4**	4			5		SU/Ü	schrP 90min
MRO-02	MRO1102	**Advanced Methods in Control Engineering**	**4**	4			5		SU/Ü	schrP 90min
MRO-03	MRO1103	**Statistics and Machine Learning for Computer Vision**	**4**	4			5		SU/Ü	schrP 90min
MRO-04	MRO1104	**Technical Project Management**	**4**	4			5		SU/Ü	PoP
MRO-05	MRO1105	**Embedded Systems**	**4**	4			5		SU/Ü	schrP 90min
MRO-06	MRO1106	**Cross-Cultural Development for Engineers**	**4**	4			5		SU/Ü	PoP
Specialisation: Intelligent Robotics										
MRO-07	MRO-IR-2101	**Advanced Methods in Robotics**	**4**		4		5		SU/Ü	PoP
MRO-08	MRO-IR-2102	**Image Processing and Computer Vision**	**4**		4		5		SU/Ü	PoP
MRO-09	MRO-IR-2103	**Robot Modelling & Simulation**	**4**		4		5		SU/Ü	PoP
MRO-10	MRO-IR-2104	**Industrial Robotics and Automation**	**4**		4		5		SU/Ü	schrP 90min
MRO-11	MRO-IR-2105	**Case Study ROS Robot Programming**	**4**		4		5		Ü	PoP
MRO-12	MRO-IR-2106	**Intelligent Multi-Agent Systems**	**4**		4		5		SU/Ü	PoP
Specialisation: Assistive Robotics										
MRO-13	MRO-AR-2101	**Soft Robotics**	**4**		4		5		SU/Ü	PoP
MRO-14	MRO-AR-2102	**Sensor Fusion and Perception for Assistive Robotics**	**4**		4		5		SU/Ü	schrP 90min
MRO-15	MRO-AR-2103	**Biomechanics**	**4**		4		5		SU/Ü	schrP 90min
MRO-16	MRO-AR-2104	**Rehabilitation Robotics**	**4**		4		5		SU/Ü	schrP 90min
MRO-17	MRO-AR-2105	**Case Study Assistive Robotics for Improvement of Life Quality**	**4**		4		5		Ü	PoP
MRO-18	MRO-AR-2106	**Human-Robot Interaction**	**4**		4		5		SU/Ü	schrP 90min
MRO-19	MRO3101	**Subject-specific compulsory elective (FWP) course**	**4**			4	5		SU/Ü	The type of examination conducted for elective (FWP) courses is subject to the currently valid study regulations of the programme.
MRO-20		**Master's Module**	**2**				25			
	MRO3102	Master's Thesis						20		MA
	MRO3103	Master's Colloquium				2		5	S	mdlP 45min incl. presentation
		Total SWS	**54**	**24**	**24**	**6**				
		Total ECTS		**30**	**30**	**30**	**90**			
Abbreviation										
	MA	Master's thesis								
	ECTS	European Credit Transfer System								
	schrP	Written examination								
	PoP	Portfolio examination								
	mdP	Oral examination								
	S	Seminar								
	SU	Seminar-based tuition								
	Ü	Exercise class								
	SWS	Semester hours per week								

Issued based on the resolution of the Faculty Council dated 29 January 2025 and the Faculty Council of the Faculty of Natural Sciences of Deggendorf Institute of Technology dated 18 December 2024, and the approval of the university management dated 19 February 2025 and the regulatory approval of the Vice President of Deggendorf Institute of Technology dated 19 February 2025.

Signed
Prof. Dr. Marcus Herntrei
Vice President

These by-laws were recorded at Deggendorf Institute of Technology on 19 February 2025. The recorded by-laws were duly posted on the notice boards on 19 February 2025. Their day of announcement is therefore 19 February 2025.