

**Study and Examination Regulations
for the Master's Degree Programme
Intelligent Robotics (M.Eng.)
at
Deggendorf Institute of Technology**

of 23 January 2024

Based on Art. 9, 80 (1), 84 (2) Clause 1 of the Bavarian Higher Education Innovation Act (BayHIG) of 5 August 2022 (GVBl. p. 414, BayRS 2210-1-3-WK), last amended by Section 3 of the Act of 23 December 2022 (GVBl. p. 709), Deggendorf Institute of Technology hereby enacts the following by-laws:

**Section 1
Aim of the study programme**

- (1) The master's degree programme of Intelligent Robotics aims to enable graduates of a *Diplom* or bachelor's programme to substantiate the knowledge they have acquired so far with theoretical knowledge so as to be particularly well-equipped to meet the requirements of modern research and development tasks. The programme is primarily designed for graduates of *Diplom* or bachelor's programmes in robotics, mechatronics, mechanical engineering, electrical engineering, industrial engineering, production engineering, control engineering, computer science, electronics and automation technology or related programmes.
- (2) ¹The programme supplements what is taught in a bachelor's or *Diplom* programme with in-depth and subject-specific content. ²This qualifies graduates for creative work in research and development departments and for production and management activities in the industry. ³In addition, particularly qualified students should acquire theoretical foundations that enable them to pursue a doctorate or work in academic fields.

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

- (1) Qualification requirements for admission to the master's programme of Intelligent Robotics are
 - completion of an undergraduate programme at a German or foreign university with a minimum of 210 ECTS points in the fields of robotics, mechatronics,

mechanical engineering, electrical engineering, industrial engineering, production engineering, control engineering, computer science, electronics and automation technology or a related programme or a degree equivalent to such a university degree. ²The Examination Committee decides on the equivalence of degrees.

and

- proof of eligibility for the specific programme as part of a process, in accordance with Section 7 of these by-laws

(2) Proof of the following language skills has to be provided for this degree programme:

- Knowledge of the English language at level B2 of the Common European Framework of Reference for Languages.
- Knowledge of the German language at level A2 of the Common European Framework of Reference for Languages.

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

Section 3 Structure of the degree programme, standard period of study

- (1) The degree programme is offered as a full-time programme ; the standard period of study is three semesters.
- (2) 90 ECTS points have to be obtained.
- (3) 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 ECTS points not yet obtained

If applicants provide evidence 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. ECTS points not yet obtained, which must be obtained by the start of the third semester, can be proven upon request to the Examination Committee by completing an additional internship or by participating in subject-relevant university courses. 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 of at least 20 weeks in the fields of robotics, mechatronics, mechanical engineering, electrical engineering, industrial engineering, production engineering, control engineering, computer science, electronics or automation technology.
2. University courses:
University courses must stem from the subject-relevant undergraduate degree programmes provided by the university. The applicant must consult the responsible student advisor in advance. The advisor works out an individual concept together with the applicant.

Section 5 Modules and courses

- (1) The programme comprises modules that can consist of courses on connected subjects. Each module is assigned ECTS points that take into account the time required by students to complete the module.
- (2) The compulsory and elective modules, courses, the number of hours for these, the type of courses, the examinations, and the ECTS points, are specified in the appendix to these by-laws. Regulations are supplemented by the curriculum for the subject-specific compulsory elective modules and compulsory elective subjects of a general academic nature.
- (3) All the modules consist of compulsory modules, compulsory elective modules or optional modules:
 1. Compulsory modules are those modules of a programme that are mandatory for all students.
 2. Compulsory elective modules are modules that are offered as alternatives to individuals or groups. Students must select certain modules from these in accordance with these study and examination regulations. The selected modules are treated as compulsory modules.
 3. Optional modules are modules that are not mandatory for achieving the study objective. They can be additionally chosen by students from the subjects offered by the institute.
- (4) There is no guarantee that the scheduled specialisations and compulsory elective modules will actually be offered. Likewise, no rights or entitlements exist to the related courses being held in the event of insufficient student numbers.

Section 6 Curriculum

The responsible faculty, currently the Faculty of Applied Natural Sciences and Industrial Engineering, draws up a curriculum to safeguard the range of courses and to inform the students. Details of the course of studies are derived from this curriculum.

The curriculum is decided by the Faculty Council and announced within the university before the semester starts. Changes or new regulations, if any, must be announced at the latest at the beginning of the lecture period of the semester in which these changes are to be implemented for the first time. In particular, the curriculum contains regulations and information regarding:

1. the time distribution of weekly semester hours per module and semester including ECTS points,
2. names of compulsory and elective modules as well as their weekly semester hours,
3. subject-specific elective modules with their number of hours,
4. the form of teaching in the individual modules, if they have not been definitively set out in the annex,
5. the type of examination and its duration,
6. detailed regulations for proofs of performance and attendance.

Section 7

Proof of programme-specific aptitude

- (1) ¹Programme-specific aptitude is determined by means of a written or online examination lasting 90 minutes. ²The date is set by the Examination Committee. ³The examination comprises complex tasks on relevant topics from higher mathematics for engineers, and on the fundamentals of robotics, computer science and programming, mechatronics, control engineering and electrical engineering. ⁴The examination is considered as passed if the grade "mit Erfolg abgelegt" (completed successfully) is obtained. ⁵The examination is assessed by two university lecturers. ⁶These two examiners determine the respective examination-specific points system, which determines the success of participation. ⁷The solutions must be logically comprehensible. Both university lecturers must agree on the result evaluation. ⁷At least one of the two university lecturers must teach in a relevant programme at Deggendorf Institute of Technology. ⁹The Faculty Council of Applied Natural Sciences and Industrial Engineering appoints the university lecturers.
- (2) ¹The Examination Committee may waive participation in the assessment of programme-specific aptitude if the applicant demonstrates above-average knowledge in the programmes specified in Section 3 (1) No. 1. ²Above-average qualifications are qualifications with a grade of "gut" (good) (<2.5) and above or above-average knowledge (grade 2.5 and above) in the subjects of mathematics, control engineering, physics, computer science and mechatronics or robotics or related subjects.
- (3) ¹The procedure for determining programme-specific aptitude is conducted semester-wise. ²Participants are invited for this via email.
- (4) ¹Applicants who have not furnished proof of programme-specific aptitude can re-register for the test once on the date decided for the next semester. ²In justifiable cases of exception, students may also be allowed to register at a later point in time.

Section 8
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) A student's overall examination grade is calculated using a weighted arithmetic average of their individual grades. The weighting of an individual grade is equal to the number of ECTS points assigned 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 9
Master's thesis and colloquium

- (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 who have obtained at least 40 ECTS points can register for the master's thesis.
- (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 not passed in the first attempt.
- (5) The master's thesis may be written in German or English.
- (6) As part of the colloquium, students have to explain their master's thesis and discuss the content and approach. The colloquium is held in front of two examiners. As a rule, these should be the supervisors of the master's thesis. The duration of the colloquium is 30 minutes; the colloquium can be repeated once if not passed in the first attempt.

Section 10 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 11 Academic degree and diploma supplement

- (1) Upon successful completion of the master's examination, the academic degree of "Master of Engineering", abbreviated as "M.Eng.", is awarded.
- (2) A certificate granting the academic degree will be issued in accordance with the sample shown in the appendix to the General Examination Regulations of Deggendorf Institute of Technology.
- (3) An English translation and a diploma supplement, which describes the essential course content underlying the degree, the course of studies and the qualification obtained with the degree, are enclosed with the certificate.

Section 12 Coming into effect

These study and examination regulations enter into force on 01 April 2024. They shall apply for students who start their studies in the 2024/25 winter semester.

Annex 1 to the study and examination regulations for the master's programme of Intelligent Robotics at Deggendorf Institute of Technology

M.Eng. Intelligent Robotics										
Weekly semester hours (SWS)										
Overview of module/course numbers, module and course descriptions, SWS and ECTS			Modul	1st Sem	2nd Sem	3rd Sem	ECTS	Weighting for module grade	Form of instruction	Examination format
Module no.	Course no.	Module/Course								
MIR-1	MIR1101	Robotic Dynamics	4	4			5		SU/Ü	schrP 90min
MIR-2	MIR1102	Advanced Methods in Control Engineering	4	4			5		SU/Ü	PoP
MIR-3	MIR1103	Statistics and Machine Learning	4	4			5		SU/Ü	schrP 90min
MIR-4	MIR1104	Technical Project Management	4	4			5		SU/Ü	PoP
MIR-5	MIR1105	Embedded Systems	4	4			5		SU/Ü	schrP 90min
MIR-6	MIR1106	Case Study "ROS Robot Programming"	4	4			5		Ü	PoP
MIR-7	MIR2101	Advanced Methods in Robotics	4		4		5		SU/Ü	schrP 90min
MIR-8	MIR2102	Image Processing and Computer Vision	4		4		5		SU/Ü	schrP 90min
MIR-9	MIR2103	Robot Modelling & Simulation	4		4		5		SU/Ü	PoP
MIR-10	MIR2104	Industrial Robotics and Automation	4		4		5		SU/Ü	PoP
MIR-11	MIR2105	Case Study "Robotic Systems"	4		4		5		Ü	PoP
MIR-12	MIR2106	Intelligent Multi-Agent Systems	4		4		5		SU/Ü	schrP 90min
MIR-13	MIR3101	Subject-specific Compulsory Elective Module (FWP)	4			4	5		SU/Ü	The type of examination conducted for FWP courses is subject to the currently valid study regulations of the course.
MIR-14		Master's module					25			
	MIR3102	Master's thesis						20	Master thesis	
	MIR3103	Master's colloquium				2		5	S	mdIP 30 min. incl. presentation
		Total SWS		24	24	6	90			
		Total ECTS		30	30	30	90			
Abbreviations										
	Master thesis	Master's thesis								
	ECTS	European Credit Transfer System								
	schrP	Written examination								
	PoP	Portfolio examination								
	mdIP	Oral examination								
	S	Seminar								
	SU	Seminar-based lesson								
	Ü	Tu								
	SWS	Weekly semester hours								

Issued based on the resolution of the Faculty Council of the Faculty of Applied Natural Sciences and Industrial Engineering of 25 October 2023, the approval of the university management of 23 January 2024 and the notification to the Bavarian Ministry of Science and Art of 24 January 2024 and the regulatory approval of the Vice-President of Deggendorf Institute of Technology of 03 April 2024.

Signed by
Prof. Dr. Marcus Herntrei
Vice President

These by-laws were laid down on 03 April 2024 at Deggendorf Institute of Technology. They were duly posted on 03 April 2024. Their day of announcement is therefore 03 April 2024.