Study and Examination Regulations for the

Master's Degree Programme

Applied AI for Digital Production Management, M.Eng.

at

Deggendorf Institute of Technology

of 23 July 2025

Based on Art. 9, 80 para. 1, 84 para. 2(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 1 of the Act dated 23 July 2024 (GVBl. p. 257), Deggendorf Institute of Technology hereby enacts the following by-laws:

Section 1
Aim of the study programme

(1) The master's degree programme "Applied AI for Digital Production Management" 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 particularly well-equipped to meet the requirements posed by tasks in modern research and development. The degree programme is primarily designed for undergraduates holding a *Diplom* or bachelor's degree in industrial engineering, production engineering or mechatronics.

(2) [1]The programme builds on the knowledge acquired during their *Diplom* or bachelor's programme and deepens their understanding of subject-specific content. [2]Through this approach, graduates will acquire the ability to work creatively in research and development departments and also to carry out production and management activities in the industrial 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
Structure of the programme

(1) The programme comprises three theoretical semesters and is concluded by the master's thesis.

(2) [1]Lectures are held in English. [2]Examinations are written in English.

Section 3
Qualification requirements for the degree programme

(1) To qualify for admission to the master's degree programme Applied AI for Digital Production Management, students must:

- have successfully completed an undergraduate degree programme at an institute of higher education in Germany or abroad and attained at least 210 ECTS credits in the field of industrial engineering, production engineering, mechatronics, or a related degree programme, or a degree of comparable standing to one from such an institute of higher education. [2]The examination committee shall determine whether the obtained degrees are of comparable standing.

  and

- furnish proof of suitability for the programme in question pursuant to Section 5 of these by-laws.

(2) The following language proficiency must be documented for admission to this degree programme:

- 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 the Deggendorf Institute of Technology shall apply as amended.

Section 4
Proof ECTS credits not yet obtained

[1]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.[2]Missing ECTS credits that need to be completed by the beginning of the third semester may, further to application to the examination committee, be furnished by completing an additional internship or attending subject-relevant university courses. [3]Proof for each variant may be furnished only once. [4]A maximum of 30 ECTS credits may be provided this way. [5]The following conditions apply for submission of proof:

1. Internship:

Successful completion of a relevant internship in the field of industrial engineering, production engineering, mechatronics, or a related field of no less than 20 weeks' duration.

2. University lectures and classes:

University lectures and classes must be drawn from the relevant undergraduate degree courses offered at the Institute of higher education. 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 5
Aptitude assessment

(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 involves complex tasks on relevant subjects relating to advanced mathematics for engineers and fundamental aspects concerning mechatronics, mechanical engineering, and business administration and their applications, as described in detail in, for example, the Module Handbook for the bachelor's programme in Mechatronics and Project Management for Digital Production. [4]The subject matter covered by the following modules is of relevance: DPC-02 Mathematics 1, DPC-11 Mathematics 2, DPC-04 Physics, DPC-01 Computer Science, DPC-08 Computer Science 2 as well as DPC-12 Project Management and DPC-27 Process Optimisation. [5]The assessment test will be deemed to have been passed if the grade "passed successfully" ("*mit Erfolg abgelegt*") was awarded. [6]To ascertain a grade, the test is evaluated by two university instructors. [7]The two examiners jointly set the relevant marking system to be used in order to determine whether the candidate has been successful. [8]The approaches to solving the tasks must be logical and comprehensible. Both lecturers must reach a consensus when arriving at the test result. [9]At least one of the two university instructors must teach in one of the relevant degree programmes at Deggendorf Institute of Technology. [10]The university instructors are appointed 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 degree awards are deemed to be those demonstrating an overall grade of "good" (<2.5) or better, or above-average knowledge (a grade of 2.5 or better) in Mathematics, Physics, Computer Science and Business Administration or Production Engineering,

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

(4) [1]Candidates not passing the aptitude test for the degree programme may register to reapply to sit the test on the day it is held the following semester.

[2]In justified cases, a candidate may register for the test at a later juncture.

(5) [1]Applicants are notified in writing of their written test result. [2]The reasons for the candidate not passing the examination must be provided.

(6) No rights or entitlement to the master's degree programme being offered shall exist in the event of an insufficient number of applicants.

Section 6
Modules and course assessments

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

(2) [1]Compulsory and elective modules, their number of hours, forms of instruction, the examination and the ECTS credits are defined in the appendix to these by-laws. [2]The regulations governing subject-specific elective modules are supplemented by the curriculum.

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

1. Compulsory modules are mandatory for all students.

2. Compulsory elective modules are offered as alternatives. Students are required to select a certain number of modules based on these study and examination regulations. [3]The selected modules will be treated as compulsory modules.

3. Voluntary 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 Institute.

(4) [1]No rights or entitlements exist to the envisaged compulsory elective modules or elective modules actually being offered. [2]Likewise, no rights or entitlements exist to the related courses being held in the event of insufficient numbers.

(5) Attendance is compulsory for module MDM-07 "Cross Cultural Development for Engineers". Students must attend at least 75% of the course in order to be admitted to the examination. Otherwise, the examination will be deemed failed.

Section 7
Curriculum

[1]The relevant faculty, currently the Faculty of Applied Natural Sciences, will prepare a curriculum detailing the progression of the degree programme to ensure that the relevant courses are offered and that students are duly informed. [2]The curriculum will be determined by the Faculty Council and made public at the Institute prior to the start of the semester. [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 semester hours per week per module and semester, including the attainable ECTS credits;
2. a description of the compulsory and compulsory elective modules plus their number of semester hours per week, the form of instruction, study objectives and the content of the individual modules;
3. the subject-specific 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 the appendix.

Section 8
Assessment of examination performance; overall examination grade

(1) [1]Each module includes an end-of-module examination. [2]Should a module examination comprise multiple module component examinations, a student's module grade will be calculated based on the arithmetic average of their individual examination grades, rounded down to one decimal point. [3]The individual examination grades are weighted according to the attainable number of ECTS credits.

(2) Should a 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.

(3) [1]A student's overall 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 credits allocated to the subject for which the grade was awarded.

(4) In addition to the overall grade assigned as per para. 3, 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.

Section 9
Master's thesis

(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 an independently compiled academic paper, their ability to apply the knowledge and skills acquired during the degree programme to projects relating to engineering practice.

(2) The time between the topic being assigned and the master's thesis being submitted should be of an adequate duration in light of the scope of the topic and be six months.

(3) [1]Further to approval by the examination committee, the master's thesis may be written in German. [2]The thesis is followed by a master's colloquium (oral examination). As part of the colloquium, students have to present 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 45 minutes; the colloquium can be repeated once if not passed in the first attempt. The colloquium assessment involves a presentation and an oral examination concerning the thesis.

(4) Students wishing to register to write their master's thesis must have attained at least 40 ECTS credits.

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 successfully passing the master's examination, the academic degree "Master of Engineering", in short: "M. Eng." is conferred.

(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 a 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 come into effect on 1 October 2025 and shall apply for all students who start their studies on this date.

Appendix 1

to the Study and Examination Regulations for the master's degree programme Applied AI for Digital Production Management at Deggendorf Institute of Technology

Overview of modules and courses at Deggendorf Institute of Technology:

M.Eng. Applied AI in Digital Production Management											
Semester periods per week (SWS)											
Overview - module/course no., module and course description, SWS and ECTS credits			**Module**	**1st sem.**	**2nd sem.**	**3rd sem.**	**ECTS**	**Weighting of module grade**	**Form of instruction**	**Exam format**
Module No.	Course no.	**Module**/Course								
MDM-01	MDM1101	**Machine Learning and Deep Learning in Production and Logistics**	4	4			5		SU/Ü	PoP
MDM-02	MDM1102	**Advanced Statistical Methods & Optimisation**	4	4			5	5	SU/Ü	schrP 90 min
MDM-03		**Data Management**	4	4			5			schrP 90 min
	MDM1103	Production Data Management		2				2	SU	
	MDM1104	Application Systems - ERP & MES		2				3	SU	
MDM-04	MDM1105	**Production and Logistic Management**	4	4			5		SU/Ü	PoP
MDM-05	MDM1106	**Digital Tools in Development and Production**	4	4			5		SU/Ü	schrP 90 min
MDM-06	MDM1107	**Machine Vision**	4	4			5		Ü	PoP
MDM-07	MDM2101	**Cross Cultural Development for Engineers**	4		4		5		SU/Ü	PoP
MDM-08		**Advanced Intelligent Systems**	4		4		5			schrP 90 min
	MDM2102	Big Data Processing & Analytics			2			2	SU	
	MDM2103	Natural Language Processing			2			3	SU	
MDM-09	MDM2104	**Case Study Intelligent Systems in Production**	4		4		5		Ü	PoP
MDM-10		**Digital Production Systems**	4		4		5			PoP
	MDM2105	Cyber-Physical Production Systems & Smart Factory			2			3	SU	
	MDM2106	Simulation of Production Systems			2			2	SU	
MDM-11	MDM2107	**Case Study Production Systems**	4		4		5		Ü	PoP
MDM-12	MDM2108	**Quality & Sustainability**	4		4		5		SU	schrP 90 min
MDM-13	MDM3101	**Subject-Specific Compulsory Elective (FWP)**	4			4	5		SU/Ü	The type of examination conducted for elective (FWP) courses is subject to the currently valid study regulations of the course.
MDM-14		**Master's Module**					25			
	MDM3102	Master's Thesis						23	MA	MA
	MDM3103	Master's Colloquium				2		2	S	mdlP 45 min incl. presentation
		Total SWS		**24**	**24**	**6**	**90**			
		Total ECTS		**30**	**30**	**30**	**90**	**90**		
Abbreviations										
	MA	Master's thesis								
	ECTS	European Credit Transfer System								
	schrP	Written examination								
	PoP	Portfolio assessment								
	Ü	Exercise class								
	S	Seminar								
	SU	Seminar-based tuition								
	S	Seminar								
	SWS	Semester hours per week								

Issued based on the resolution of the Faculty Council dated 03 July 2025 and the Faculty Council of the Faculty of Natural Sciences of Deggendorf Institute of Technology dated 30 April 2025, and the approval of the university management dated 23 July 2025, and the regulatory approval of the Vice President of Deggendorf Institute of Technology dated 24 July 2025.

Signed
Prof. Dr. Marcus Herntrei
Vice-President

These by-laws were recorded at Deggendorf Institute of Technology on 24 July 2025. The recorded by-laws were duly posted on the notice boards on 24 July 2025. Their day of announcement is therefore 24 July 2025.