

These degree program and examination regulations have been worded carefully to be up to date; however, errors cannot be completely excluded. The official German text available from L1 – Legal Affairs and Academic Quality Management is the version that is legally binding.

**Degree Program and Examination Regulations for the
Master’s Degree Program in
Artificial Intelligence at the Faculty of Engineering of
Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)
– FPOAI –**

Dated November 11, 2020

amended by statute of
July 26, 2022
March 23, 2023

Based on Section 9 (1), section 80 (1)(1), and Section 84 (2)(1) of the Bavarian Higher Education Innovation Act (**BayHIG**) dated August 5, 2022, Friedrich-Alexander-Universität Erlangen-Nürnberg enacts the following degree program and examination regulations:

Contents:

Part 1: General provisions	2
Section 35 Scope	2
Section 36 Master’s Degree Program, Part-time Study, Start of Degree Program, Teaching and Examination Language, Related Degree Programs	2
Part II: Special Provisions.....	2
Section 37 Qualification for a Master’s Degree, Certificates, Admission Requirements	2
(1) ¹ A subject-specific degree as defined in Section 29 (1)(1) ABMPO/TechFak is a Bachelor’s degree program in computer science from FAU or a degree from a university in Germany or another country with equivalent content, provided it includes skills in computer science accounting for the following number of credits:	2
1. Programming and algorithms worth 20 ECTS credits,	2
2. Theoretical computer science and logic worth 15 ECTS credits,	2
3. Databases and conceptual modeling worth 5 ECTS credits,	2
4. Mathematics in computer science (foundations of analysis, linear algebra, stochastics) worth at least 20 ECTS credits and software engineering worth at least 10 ECTS credits.	2
Section 38 Master’s Degree Examinations	4
Section 39 Compulsory Elective Modules.....	4
Section 40 Projects	5
Section 41 Module Group Advanced Seminar	6
Section 42 Minor Subject.....	6
Section 43 Master’s Thesis.....	7
Part III: Part: Final Provisions	8
Section 44 Legal Validity and Transitory Provisions	8
Appendix 1: Appendix 1: Structure of the Master’s Degree Program in Artificial Intelligence – Full-time study.....	9
Appendix 2: Structure of the Master’s Degree Program in Artificial Intelligence – Part-time study	10

Part 1: General provisions

Section 35 Scope

The degree program and examination regulations for the Master's degree program in Artificial Intelligence complement the current version of the General Examination Regulations for the Bachelor's and Master's degree programs at the Faculty of Engineering of FAU (**ABMPO/TechFak**).

Section 36 Master's Degree Program, Part-time Study, Start of Degree Program, Teaching and Examination Language, Related Degree Programs

(1) ¹The Master's degree program in Artificial Intelligence builds on the content covered in the Bachelor's degree program in Computer Science and consists of compulsory elective modules (total workload of 50 ECTS credits), the module group Projects (20 ECTS credits total), an advanced seminar (5 ECTS credits), modules in a minor subject (15 ECTS credits total) and the Master's thesis (30 ECTS credits). ²The type and scope of the examinations and the distribution of modules across the semesters in the standard duration of study are included in the following provisions and **Appendix 1** (full-time study) and **Appendix 2** (part-time study).

(2) ¹The Master's degree program in Artificial Intelligence can be completed as a full-time or as a part-time degree program. ²It can be started in either the summer or the winter semester.

(3) ¹Notwithstanding Section 4 (5) **ABMPO/TechFak**, the teaching and examination language in the Master's degree program in Artificial Intelligence shall be English; individual teaching units and examinations may be held in German. ²The Master's thesis shall be written in English. ³Exceptions shall require the approval of the chairperson of the Degree Program Committee for Computer Science. ⁴This shall not affect the rest of Section 4 (4) **ABMPO/TechFak**.

(4) The provisions in Section 30 (3)(2) **ABMPO/TechFak** do not apply to related degree programs.

Part II: Special Provisions

Section 37 Qualification for a Master's Degree, Certificates, Admission Requirements

(1) ¹A subject-specific degree as defined in Section 29 (1)(1) **ABMPO/TechFak** is a Bachelor's degree program in computer science from FAU or a degree from a university in Germany or another country with equivalent content, provided it includes skills in computer science accounting for the following number of credits:

1. Programming and algorithms worth 20 ECTS credits,
2. Theoretical computer science and logic worth 15 ECTS credits,
3. Databases and conceptual modeling worth 5 ECTS credits,
4. Mathematics in computer science (foundations of analysis, linear algebra, stochastics) worth at least 20 ECTS credits and software engineering worth at least 10 ECTS credits.

²Applicants who have completed their Bachelor's degree at another university must submit the module descriptions for the modules named above. ³Notwithstanding sentence 1, the admissions committee can invite applicants with a degree that is

otherwise equivalent to the Bachelor's degree to participate in the qualification assessment process if applicants acquired the skills named in sentence 1 not as part of their first undergraduate degree but still at a university; the relevant proof must be attached to the application in a suitable form (e.g. transcript of records, certificates or similar). ⁴Up to 5 ECTS credits for each individual area stated in sentence 2 may be compensated for by imposing conditions that must be met pursuant to Section 29 (2)(2) **ABMPO/TechFak**, although no more than 20 ECTS credits may be compensated for in this manner; if there are any more extensive differences in the various skills areas, these shall be considered to be significant differences and the applicant shall be rejected.

(2) ¹As stipulated in section (2)(3) of the **Appendix to ABMPO/TechFak**, applicants are required to provide additional proof of English language skills equivalent to at least Level B2 of the Common European Framework of Reference (CEFR) by submitting either relevant school reports or certificates issued by a language school or university. ²Proof of language skills can in particular be provided by submitting a school leaving certificate or another certificate issued by the school providing evidence that English courses have been taken at school up until a level equivalent to B2 CEFR. ³Proof of language proficiency does not need to be submitted if the applicant acquired their university entrance qualification or relevant undergraduate degree in English.

(3) ¹Notwithstanding paragraph 5(2) **Appendix to ABMPO/TechFak**, applicants with a degree deemed to be equivalent pursuant to paragraph 1 will be considered qualified for acceptance to the Master's degree program in Artificial Intelligence if the overall grade of the equivalent degree or in the case of Section 29(3) **ABMPO/TechFak** the average of achievements obtained to date is 1.75 or better. ²Notwithstanding paragraph 5(3) et seq **Appendix to ABMPO/TechFak**, the qualification of applicants who could not be admitted directly to the degree program pursuant to sentence 1 and whose overall grade of the equivalent degree or the average of their achievements to date is between 1.76 and 3.0 will be assessed in accordance with paragraph 4. ³Sentence 1 shall apply accordingly in the case of paragraph 1(3) if the average of the skills proved separately is 1.75 or better. ⁴Applicants whose total grade for the equivalent degree or average of achievements to date is 3.01 or poorer shall be considered unsuitable and shall receive a rejection letter including reasons and information on legal remedies. ⁵Sentence 4 shall apply accordingly in the case of paragraph 1(3) if the average of separately proven skills is 1.76 or worse.

(4) ¹Applicants meeting the requirements stipulated in paragraph 3(2) or paragraph 3(3) shall be invited to participate in an electronic test via a secure examinations platform. ²The date for the test will be communicated to applicants at least one week in advance. ³This test shall be conducted as an open book examination, last 60 minutes and comprise solving problems from the areas of programming, algorithms, theoretical information, logic, databases/modeling, software engineering and mathematics in computer science (analysis, linear algebra, ODE, stochastics). ³Further information about the test and about the permitted aids will be communicated to the applicants when the test date is announced; Section 27 (7)(5) **ABMPO/TechFak** shall apply accordingly. ⁵Applicants qualify for admission if they achieve the grade "gut" (good) as defined in Section 18 (1)(1) **ABMPO/TechFak** or better in the test. ⁶Applicants who achieve lower grades in the admission tests will be deemed unsuitable and cannot be admitted to the Master's degree program.

Section 38 Master's Degree Examinations

(1) The Master's degree program comprises the following module groups in accordance with **Appendix 1** and **Appendix 2**:

1. 50 ECTS credits from modules from the compulsory elective module area pursuant to Section 39,
2. A total of 20 ECTS credits from the project module group in accordance with Section 40,
3. 5 ECTS credits from the advanced seminar pursuant to Section 41,
4. 15 ECTS credits from the minor subject pursuant to Section 42,
5. 30 ECTS credits from the Master's thesis in accordance with Section 43.

(2) ¹One interim grade each is given for the compulsory elective module area and the minor subject that receive a weighting of 50 and 15 ECTS credits respectively in the overall grade of the Master's examination. ²Section 40 (5) and Section 41 (2) shall apply to the weighting of the projects and the advanced seminar module group when calculating the overall grade.

(3) The Master's examination shall have been passed if the modules specified in paragraph 1 have been passed.

Section 39 Compulsory Elective Modules

(1) ¹Compulsory elective modules are offered in the following three specializations:

1. Symbolic artificial intelligence, focusing predominantly on research approaches concerning logic, knowledge representation, modeling and inference (classical and statistical)
2. Subsymbolic AI/machine learning, focusing predominantly on pattern recognition, neural networks, reinforcement learning, decision trees and random forests, deep learning, statistical and convex optimization, generative and discriminative models and other classical procedures from machine learning.
3. AI systems and applications, in which methods of artificial intelligence are applied to research-oriented issues from other sectors; the learning outcome focuses predominantly here on the instantiation and adaption of methods to application scenarios.

(2) ¹Students choose compulsory elective modules worth 50 ECTS credits from a catalog defined by the Degree Program Committee for each of the three specializations defined in paragraph 1 above. ²Of the 50 ECTS credits in the compulsory electives, 10 ECTS credits must come from each of the three specializations defined in paragraph 1 above; the other 20 ECTS credits can be chosen freely. ³The elective modules available are published each semester in a module catalog. ⁴The module catalog is published in accordance with local practice.

(3) ¹The learning outcome of the compulsory elective modules is to allow students to gain a more in-depth knowledge of selected skills. ²The second learning outcome has a research focus, with students learning subject-related methods of research and exploring their subject in more depth. ³Thirdly, the element of choice allows students to tailor their profile in view of their career plans. ⁴The requirements in paragraph 2 ensure that students acquire methods and knowledge from all areas of artificial intelligence and prevent students from specializing too quickly in one particular area. ⁵The wide scope of topics covered is a particular feature of the degree program.

(4) ¹The type and scope of examinations depend on the skills taught in modules that are worth 5, 7.5, 10 and 15 ECTS credits respectively. Depending on the student's choice, modules may also be worth 2.5 ECTS credits. The type and scope of examinations are described in the module handbook. ²One examination achievement is stipulated per module. ³Examinations in the modules shall take one of the following forms: written examination (60, 90, 120 min), oral examination, seminar achievement, and tutorial achievement pursuant to Section 6 (3) **ABMPO/TechFak**. ⁴ Section 6 (2)(3) **ABMPO/TechFak** stipulates that in justified exceptional circumstances, combinations of the individual achievements stated in sentence 3 may also be possible.

(5) ¹Compulsory elective modules amounting to 5 ECTS credits usually consist of a lecture (2 SWS) and a tutorial (2 SWS) or a lecture (3 SWS) and a tutorial (1 SWS). ²Any exceptions (and further details on module credits) are provided in the module handbook.

Section 40 Projects

(1) ¹The first learning outcome of the project module group is to allow students to expand the knowledge they have already gained in areas of interest to them in the field of Artificial Intelligence, in particular by working on complex problems within the scope of research-oriented projects. ²A second learning outcome is aimed at promoting personal and social skills through independently preparing, reporting on, and presenting a topic from current research and defending ideas in a discussion at the Master's level, as well as working in a group to develop and test subject-related applications and possibilities for implementation with respect to the chosen subject. ³Thirdly, the element of choice allows students to tailor their profile in view of their career plans. ⁴The projects ought to cover two of the three focus areas of the Master's degree in Artificial Intelligence pursuant to Section 39 (1) in order to ensure that students cover a certain range of methods and subjects and gain an overview of research approaches in the area of artificial intelligence in spite of focusing on their chosen specialization.

(2) ¹A total of 20 ECTS credits must be obtained as part of the project module group. ²Modules worth 5 or 10 ECTS credits are available for students to choose from. (2) ³The projects shall each have a workload of approximately 300 hours (10 ECTS credits) or 150 hours (5 ECTS credits), enabling students to complete them within six months. ⁴The projects must be selected from one of the specializations listed in Section 39 (1) and may not all be chosen from the same specialization. ⁵If the projects are split into more than two modules, only a total of 10 ECTS credits may be taken from one specialization.

(3) ¹The type and scope of the examination are dependent on the specific project. Details can be found in the module handbook. ²Students must complete one assessed task as an examination achievement and one laboratory achievement as a course achievement per module.

(4) ¹Project modules amounting to 10 ECTS credits usually consist of an advanced seminar (2 SWS) and a research laboratory course (6 SWS). ²Any exceptions, particularly for the modules amounting to 5 ECTS credits, are detailed in the module handbook.

(5) Each of the projects contribute individually to the overall grade with the respective number of their ECTS credits.

Section 41 Module Group Advanced Seminar

(1) ¹The learning outcome of the module group advanced seminar is to allow students to gain initial insights into the topics of the areas of interest to them in the field of Artificial Intelligence and to gather, analyze and interpret information relevant to their subject. ²A second learning outcome is aimed at promoting personal and social skills through preparing, reporting on and presenting a topic relating to the subject for a specialist audience at a Master's level and in a manner tailored to suit the target group, as well as working under supervision in a group to develop and test subject-related applications and possibilities for implementation with respect to the chosen subject. ³Thirdly, the element of choice allows students to tailor their profile in view of their career plans. ⁴This module group is not restricted to the main focus areas of the Master's degree program, as the topic of the seminar may be chosen in view of the Master's thesis and students should be given the opportunity to explore the most recent research questions (state of the art).

(2) ¹The module group Advanced seminar generally consists of a seminar module amounting to 5 ECTS credits, but may also consist of two seminar modules each amounting to 2.5 ECTS credits. ²If two modules worth 2.5 ECTS credits are chosen, each module shall contribute individually to the overall grade

(3) ¹The type and duration of the examination is set forth in the module handbook. ²The examination achievement per module shall be taken as an assessed task pursuant to Section 6 (3) **ABMPO/TechFak**. ³The module catalog is published before the beginning of the semester in accordance with local practice.

Section 42 Minor Subject

(1) ¹The learning outcome of the minor subject is to allow students to gather, analyze and interpret information relevant to their subject from an area of application of artificial intelligence that has a practical professional or subject-related relevance to the field of artificial intelligence. ²Secondly, a further learning outcome is aimed at promoting personal and social skills by providing a wide range of interdisciplinary qualifications in the area of application, as well as working under supervision to develop and test subject-related applications and possibilities for implementation with respect to the chosen subject. ³Thirdly, the element of choice allows students to tailor their profile in view of their career plans in the area of application. ⁴The following is a non-exhaustive list of possible minor subjects, which can be added to at any time; further details shall be published in accordance with local practice:

1. *Artificial Intelligence* in Biomedical Engineering Applications for artificial intelligence in medical engineering, in medical image and data processing, and in medical diagnostics.
2. *High-Performance Computing*: Application and theory of AI methods and interaction with methods of high-performance computing.
3. *Robotics and Automation*: Developing and implementing AI techniques in robotics and automation technology.
4. *Business Economics*: Fields of application for artificial intelligence in business.

⁵The specific learning outcomes of the other minor subjects are stipulated in the relevant **degree program and examination regulations** and module descriptions.

(2) ¹At least 15 ECTS credits must be completed from modules that are related to each other that are offered by FAU examiners and that have a practical professional or subject-related relevance to the field of artificial intelligence. ²The selected combination of modules must be approved as a minor subject by the Degree Program Committee pursuant to Section 8a (4) of **ABMPO/TechFak**. ³The combinations of minor subjects that can be selected are listed in the relevant catalog that is announced in accordance with local practice. ⁴Exceptions can be granted by the Degree Program Committee upon receiving a justified request. ⁵Due to the specific subject competencies that must be acquired as part of the qualification goals of the Master's degree program as defined in the module description, only modules which have not already been taken as a compulsory elective module may be taken as a minor subject.

(3) ¹The type and scope of teaching units and examinations in the modules accounting for 2.5, 5, 7.5, 10 or 15 ECTS credits respectively depend on the specific manner in which the respective module is taught and are regulated by the applicable **degree program and examination regulations** and/or the module handbook. ²The type of examinations and the number of semester hours depend on the specific manner in which the respective module is taught and are regulated by the applicable **degree program and examination regulations** or the relevant module description.

Section 43 Master's Thesis

(1) The requirements for allocating a subject for the Master's thesis shall be as follows:

1. achievement of at least 60 ECTS credits in the Master's degree program
2. submission of relevant certificates if admission to the Master's degree program was granted subject to conditions according to Section 29 (2) or (3) **ABMPO/TechFak**.

(2) ¹The Master's thesis module shall be worth 30 ECTS credits. ²It comprises a written Master's thesis (27 ECTS credits) and a presentation (3 ECTS credits) about the Master's thesis.

(3) ¹The thesis shall deal with a scientific subject from the field of artificial intelligence. ²The requirements for the written Master's thesis shall be such that it can be completed with a workload of approximately 900 hours within six months.

(4) ¹Full-time university lecturers from FAU involved in this degree program shall be entitled to assign and supervise Master's theses. ²The chair of the Degree Program Committee may approve exceptions upon application.

(5) ¹The presentation shall last around 30 minutes and deal with the topic of the written Master's thesis. ²The date of the presentation shall be determined by the supervising lecturer either after the student has submitted their Master's thesis or during the final stage of thesis work and the student shall be informed of the date at least one week in advance. ³The presentation is graded pursuant to Section 18 (1) of **ABMPO/TechFak**.

Part III: Part: Final Provisions

Section 44 Legal Validity and Transitory Provisions

(1)¹These degree program and examination regulations shall come into effect on the day after their publication. ²They shall apply to all students who enter the degree program in summer semester 2021 or later.

(2) The first amendment statute shall come into effect on the day after its publication.

(3) ¹The second amendment statute shall come into effect on April 1, 2023. ²Unless stipulated otherwise in the following provisions, it shall apply to all students who are already studying in accordance with a previously valid version of the degree program and examination regulations for AI or who start to study in future. ³Notwithstanding sentence 2, the amendments in Section 37 shall apply to all students starting a degree program from winter semester 2023/2024 onwards. ⁴Notwithstanding sentence 2, the amendments in Section 38 (4) and Section 43 (3) (4) shall apply to all students who have not yet started examinations for specific alternative modules (initial attempt) or who are currently working on their Master's thesis.

Appendix 1: Appendix 1: Structure of the Master's Degree Program in Artificial Intelligence – Full-time study

Module name ¹	Teaching unit	SWS (semester hours)				Total ECTS credits	Distribution of workload per semester in ECTS credits				Type and scope of the examination
		L	T	P	S		1. sem.	2. sem.	3. sem.	4. sem.	
Compulsory elective module area	see Section 39 (5)					50	20	20	10		EA, see Section 39 (4)
Projects ²⁾	see Section 40 (4)					20		10	10		Each EA and CA, see Section 40 (3)
Advanced seminar					2–4	5			5		EA, see Section 41 (2)
Minor subject	see Section 42 (3)					15	10		5		EA or CA, see Section 42 (3)
Master's thesis						30				30	See Section 32 (1)(5) ABMPO/TechFak and Section 43 (4)
Total SWS and ECTS credits³⁾:					2–4		30	30	30	30	
						120					

Abbreviations:

SWS: Hours per week

S: Seminar

L: Lecture

EA: Prüfungsleistung (examination achievement)

T: Tutorial/exercise

CA: Course achievement

P: Practical/internship

¹⁾ Due to the specific subject competencies that must be acquired as part of the learning outcome of the Master's degree program, students are expected to prove on the basis of the module description that they will acquire additional skills compared to the skills acquired in their previous Bachelor's degree. This is detailed in the relevant module description in the context of the learning outcomes of the Master's degree program.

²⁾ See Section 40. Students must select modules amounting to a total of 20 ECTS credits; modules worth 5 and 10 ECTS credits are available.

³⁾ The total number of required semester hours (SWS) depends on the chosen modules and teaching units.

Appendix 2: Structure of the Master's Degree Program in Artificial Intelligence – Part-time study

Module name ¹	Lecture	SWS (semester hours)				Total ECTS credits	Distribution of workload per semester in ECTS credits								Type and scope of the examination
		L	T	P	S		1st sem.	2nd sem.	3rd sem.	4th sem.	5th sem.	6th sem.	7th sem.	8th sem.	
Compulsory elective module area	see Section 39 (5)				50	15	15	10	10					EA, see Section 39 (4)	
Projects ²⁾	see Section 40 (4)				20					10	10			EA and CA, see Section 40 (3)	
Advanced seminar				2-4	5						5			EA, see Section 41 (2)	
Minor subject	see Section 42 (3)				15			5	5	5				EA or CA, see Section 42 (3)	
Master's thesis					30							15	15	See Section 32 (1)(5) ABMPO/TechFak and Section 43 (4)	
Total semester hours and ECTS credits³⁾:				2-4	120	15	15	15	15	15	15	15	15		

Abbreviations:

SWS (semester hours) Hours per week

S: Seminar

L: Vorlesung (lecture)

EA: Prüfungsleistung (examination achievement)

T Tutorial/exercise

CA: Course achievement

P Practical/internship

¹⁾ Due to the specific subject competencies that must be acquired as part of the learning outcome of the Master's degree program, students are expected to prove on the basis of the module description that they will acquire additional skills compared to the skills acquired in their previous Bachelor's degree. This is detailed in the relevant module description in the context of the learning outcomes of the Master's degree program.

²⁾ See Section 40. Students must select modules amounting to a total of 20 ECTS credits; modules worth 5 and 10 ECTS credits are available.

³⁾ The total number of required semester hours (SWS) depends on the chosen modules and teaching units.