Degree Programme and Examination Regulations for the Master's Degree Programme in Artificial Intelligence at the Faculty of Engineering of Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) – FPOAI –
Dated 11 November 2020

Based on Section 13 (1)(2), Section 43 (5)(2), Section 58 (1) and Section 61 (2)(1) of the Bavarian Higher Education Act (Bayerisches Hochschulgesetz, BayHSchG), FAU enacts the following degree programme and examination regulations:

Part I: General Provisions

Section 35 Scope
The degree programme and examination regulations for the Master's degree programme in Artificial Intelligence complement the current version of the General Examination Regulations for the Bachelor's and Master's degree programmes at the Faculty of Engineering of FAU (**ABMPO/TechFak**).

Section 36 Master's Degree Programme, Part-time Study, Start of Degree Programme, Teaching and Examination Language, Related Degree Programmes
(1) [1]The Master's degree programme in Artificial Intelligence builds on the content covered in the Bachelor's degree programme in Computer Science and consists of compulsory elective modules (total workload of 50 ECTS credits), the modules Project I (10

ECTS credits) and Project II (10 ECTS credits), an advanced seminar (5 ECTS credits), as well as modules in a minor subject (15 ECTS credits total) and the Master's thesis (30 ECTS credits). [2]The 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) [1]The Master's degree programme in Artificial Intelligence can be completed as a full-time or as a part-time degree programme. [2]It can be started in either the summer or the winter semester.

(3) [1]Notwithstanding Section 4 (5) **ABMPO/TechFak**, the teaching and examination language in the Master's degree programme in Artificial Intelligence shall be English; in the compulsory electives individual teaching units and examinations may be held in German. [2]The Master's thesis shall be written in English. [3]Exceptions shall require the approval of the chairperson of the Degree Programme Committee for Computer Science. [4]This 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 programmes.

Part II: Special Provisions

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

(1) [1]A subject-specific degree within the meaning of Section 29 (1)(1) **ABMPO/TechFak** is a Bachelor's degree or a Diplom degree in the subject Computer Science. [2]In accordance with (5)(4) of the **Appendix to ABMPO/TechFak,** applicants with a subject-related degree or an equivalent degree as defined in Section 29 (1)(1) **ABMPO/TechFak** shall only be admitted to the Master's degree programme after passing an oral admission examination according to (3).

(2) [1]As 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. [2]Proof 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. [3]Proof of language proficiency does not need to be submitted if the applicant acquired their university entrance qualification or relevant undergraduate degree in English.

(3) In the oral admission examination according to (5)(3) et seq of the **Appendix to ABMPO/TechFak**, applicants shall be evaluated according to the following criteria:
1. Sound knowledge of the foundations of the subject, in particular abstract and analytical thinking skills and knowledge of programming concepts, algorithms, theoretical computer science and foundations of statistics (90 %),
2. A positive prognosis demonstrated by the applicant's academic progress; discussion of results from the applicants previous degree (in particular from the transcript of records) (10 %).

Section 38 Master's Degree Examinations

(1) The Master's degree programme comprises the following modules 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. 10 ECTS credits each from Project I and Project II pursuant to 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) One interim grade each is given for the compulsory elective module area and the minor subject that receives a weighting of 50 and 15 ECTS credits respectively in the overall grade of the Master's examination.

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

(4) Notwithstanding Section 28 (2)(2)(2) **ABMPO/TechFak**, failed attempts in elective modules of the Master's degree programme shall not be counted when changing to alternative modules and in the event of a failure to pass there is no obligation to repeat the failed examination within the legally stipulated period pursuant to Section 28 (1)(5) **ABMPO/TechFak**.

Section 39 Compulsory Elective Modules

(1) Compulsory elective modules are offered in the following three specialisations:
1. Symbolic Artificial Intelligence,
2. Subsymbolic AI/Machine Learning,
3. AI Systems and Applications.

(2) [1]Students choose compulsory elective modules worth 50 ECTS credits from a catalogue defined by the Degree Programme Committee for each of the three specialisations defined in paragraph 1 above. [2]Of the 50 ECTS credits in the compulsory electives, 10 ECTS credits must come from each of the three specialisations defined in paragraph 1 above. [3]The modules available are published each semester in the module handbook. [4]The module handbook is published in accordance with local practice.

(3) [1]The learning outcome of the compulsory elective modules is to allow students to gain a more in-depth knowledge of selected skills. [2]The second learning outcome has a research focus, with students learning subject-related methods of research and exploring their subject in more depth. [3]Thirdly, the element of choice allows students to tailor their profile in view of their career plans.

(4) [1]The 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. [2]One examination achievement is stipulated per module. [3]Examinations in the modules shall take one of the following forms: written examination (60, 90, 120 min), oral examination, seminar achievement, tutorial achievement or laboratory 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]Other examination forms are possible if so decided by the Degree Programme Committee.

(5) [1]Compulsory 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). [2]Any exceptions (also to the size of the module) are detailed in the module handbook.

Section 40 Project I and Project II

(1) [1]The first learning outcome of the modules Project I and Project II 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. [2]A 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. [3]Thirdly, the element of choice allows students to tailor their profile in view of their career plans.

(2) [1]Project I and Project II shall each have a workload of approximately 300 hours (10 ECTS credits) enabling students to complete them within six months. [2]Project I and Project II must be selected from one of the specialisations listed in Section 39 (1) and may not be chosen from the same specialisation.

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

(4) [1]The Project I and Project II modules usually consist of an advanced seminar (2 SWS) and a research laboratory course (6 SWS) each. [2]Any exceptions are detailed in the module handbook.

Section 41 Advanced Seminar

(1) [1]The learning outcome of the advanced seminar module 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, analyse and interpret information relevant to their subject. [2]A 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. [3]Thirdly, the element of choice allows students to tailor their profile in view of their career plans.

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

Section 42 Minor Subject

(1) [1]The learning outcome of the minor subject is to allow students to gather, analyse 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. [2]Secondly, 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. [3]Thirdly, the element of choice allows students to tailor their profile in view of their career plans.

(2) [1]At 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. [2]The selected combination of modules must be approved as a minor subject by the Degree Programme Committee pursuant to Section 8a (4) of **ABMPO/TechFak**. [3]The combinations of minor subjects that can be selected are listed in the relevant catalogue that is announced in accordance with local practice. [4]Exceptions can be granted by the Degree Programme Committee upon receiving a justified request. [5]Due to the specific subject competencies that must be acquired as part of the qualification goals of the Master's degree programme 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) [1]The 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 programme and examination regulations** and/or the module handbook. [2]The 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 programme and examination regulations** of the relevant faculty. [3]If a minor subject is chosen from subjects offered by the Faculty of Engineering, all examination and course achievements stipulated in **ABMPO/TechFak** and combinations of these achievements in justified exceptional cases are permitted.

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 programme
2. submission of relevant certificates if admission to the Master's degree programme was granted with conditions according to Section 29 (2) or (3) **ABMPO/TechFak**.

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

(3) [1]The thesis shall deal with a scientific subject from the field of artificial intelligence. [2]The 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. [3]The Master's thesis shall be allocated by a university lecturer in Computer Science who is responsible for one of the compulsory elective modules pursuant to Section 39.

(4) [1]The presentation shall last around 30 minutes and deal with the topic of the written Master's thesis. [2]The 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. [3]The presentation is graded pursuant to Section 18 (1) of **ABMPO/TechFak**.

Part III: Final Provisions

Section 44 Legal Validity and Transitory Provisions

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

Appendix 1: Structure of the Master's Degree Programme in Artificial Intelligence

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/course achievement
		L	T	P	S		1st sem.	2nd sem.	3rd sem.	4th sem.	
Compulsory elective module area	see Section 39 (5)					50	20	20	10		EA, see Section 39 (4)
Project I	see Section 40 (4)					10		10			EA and CA, see Section 40 (3)
Project II	see Section 40 (4)					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	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)
					2-4		30	30	30	30	
Total SWS and ECTS credits[2]:						120					

Abbreviations:
SWS = semester hours
S = seminar
L = lecture
EA = examination achievement
T = tutorial
CA = course achievement
Lab = laboratory course

[1] Due to the specific subject competencies that must be acquired as part of the learning outcome of the Master's degree programme, 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 qualification goals of the Master's degree programme.

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

Appendix 2: Structure of the Master's Degree Programme in Artificial Intelligence - Part-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/ course achievements
		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)
Project I		see Section 40 (4)				10					10				EA, see Section 40 (3)
Project II		see Section 40 (4)				10						10			EA, 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 credits[2]:					2-4		15	15	15	15	15	15	15	15	
						120									

Abbreviations:
SWS = semester hours
S = seminar
L = lecture
EA = examination achievement
T = tutorial
CA = course achievement
Lab = laboratory course

[1]   Due to the specific subject competencies that must be acquired as part of the learning outcome of the Master's degree programme, 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 qualification goals of the Master's degree programme.
[2]   The total number of required semester hours (SWS) depends on the chosen modules and teaching units.

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Erlangen, 11 November 2020

Prof. Dr.-Ing. Joachim Hornegger
President

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