Study and examination regulations for the master's programme in Artificial Intelligence at the Technical University of Applied Sciences Würzburg-Schweinfurt (SPO MAI)

As of 08 October 2024

Based on Section 9 Sentence 1 and Sentence 2, Section 80 (1), Section 84 (2) Sentence 1, (3) and (4) as well as Section 96 (3) Sentence 1 of the Bavarian Higher Education Innovation Act (BayHIG) of 05 August 2022 (GVBl. p. 414, BayRS 2010-1-3-WK) as amended, the Technical University of Applied Sciences Würzburg-Schweinfurt (THWS) issues the following regulations:

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Chapter
General

§ 1
Purpose of the study and examination regulations

[1]These study and examination regulations govern the course of the master's programme in Artificial Intelligence. [2]They serve the implementation and amendment of the General Examination Regulations of the Technical University of Applied Sciences Würzburg-Schweinfurt (APO THWS) of 26 April 2023 as amended.

§ 2
Programme objective and profile

(1) [1]The English-taught consecutive and research-oriented master's programme in Artificial Intelligence is directed towards graduates of undergraduate computer science and comparable programmes. It aims for the target group to develop in-depth application-oriented and methodological competence in the field of Artificial Intelligence and enable them to conduct independent academic work. [2]The programme serves to complement and deepen the computer science knowledge and skills developed in the undergraduate degree programme in the field of computer science or equivalent programmes. [3]It serves to increase the systemic understanding of Artificial Intelligence and its practical application in a methodological way.

(2) [1]In the master's programme, the students analyse the essential Artificial Intelligence principles and methods with a special emphasis on machine learning including mathematical basics and concern themselves with transferring and adapting the fundamental concepts to exemplary application areas of Artificial Intelligence. [2]The ethical and societal aspects of using Artificial Intelligence systems and methods are considered appropriately.

(3) [1]The contents of the master's programme take into account the practical importance and application of Artificial Intelligence. [2]The knowledge and skills developed according to (2) are methodologically and systemically applied in supervised scientific practice either individually or in working groups, with students occasionally managing the group. [3]The ability to conduct independent academic work includes in particular the competence to scrutinise existing solutions, to transfer existing competences to new, unknown problems, and to describe and solve problems in a structured way using in-depth methodological know-how. [4]Students further develop their social competences and learn how to present their ideas and concepts in a confident and persuasive way. [5]Upon graduation, students are able to choose suitable options of Artificial Intelligence to solve new, unknown, or practical problems relying on their knowledge of design and creation of intelligent systems.

(4) [1]Graduates of the master's programme in Artificial Intelligence shall be empowered to advance (further) development of AI systems in science and research as well as companies and other facilities, and to help shape the methodological basics of AI. [2]These competences are intended to qualify graduates of this master's programme for taking on leadership tasks - disciplinary as well as conceptual - in the areas of the development, integration and secure operation of AI systems.

§ 3
Conditions for admission to the programme

(1) Entitled to admission to the master's programme in Artificial Intelligence are persons who possess very good or good skills and knowledge in the area of computer science proven by a relevant practice- and theory-oriented qualification based on science.

(2) [1]The qualification referred to in (1) shall be attested by a degree of 210 credit points in accordance with the European Credit Transfer and Accumulation System (ECTS, hereinafter referred to as ECTS credits) and an overall grade of 2.5 or better completed at a German higher education institution in the field of computer science, or an equivalent degree. [2]Of all required very good to good skills in mathematics and computer science, applicants must in particular prove the following:

a) Advanced working programming knowledge (usually proven through work samples of programming projects, internships, or lab courses, and/or through the applicants' final thesis),

b) At least 20 ECTS credits obtained in mathematics, in particular sufficient knowledge of statistics/probability theory, (linear) algebra, and analysis,

c) At least 15 ECTS credits obtained in computer science, including sufficient knowledge of applied computer science (usually proven through courses on databases, operating systems, software engineering, or distributed systems) and of theoretical computer science (usually proven through courses on algorithms and data structures, automation theory, complexity theory, or logics).

[3]Following Section 86 (1) BayHIG, the examination committee decides whether the degree is equivalent in accordance with (2) Sentence 1 and whether the requirements in accordance with (1) and (2) Sentence 2 are fulfilled. [4]If the proven degree grade mentioned in Sentence 1 above is based on incomparable grading systems, a conversion will be carried out in accordance with the formula in § 43 (4) Sentence 3 APO; the result is calculated to one digit after the decimal point and not rounded.

(3) Other conditions for admission to the programme (in particular with regard to the student's linguistic aptitude for the programme) and for enrolment arise out of the Regulations for the Procedure of Enrolment, Leave of Absence, and Termination of Enrolment at the Technical University of Applied Sciences Würzburg-Schweinfurt (THWS Enrolment Regulations) in the current version.

(4) [1]If admission to the master's programme in Artificial Intelligence is not restricted and notwithstanding (2), applicants with at least 180 ECTS credits, but less than 210 ECTS credits may be admitted to the degree programme on a provisional basis. [2]The missing qualification within the meaning of (2) can be made up by completing certain relevant modules from undergraduate programmes of FHWS or equivalent modules (supplementary qualification), or by proving knowledge and skills acquired outside the higher education sector. [3]The examination committee decides on a case-by-case basis on fulfilment of the admission requirements by taking into account the qualification individually missing. [4]Admission to studies is subject to the condition that the relevant qualification is proven by the end of the 1st semester. [5] The decision concerning fulfilment of admission requirements is made in accordance with the stipulations made in Section 86 (1) and (2) Sentence 1 BayHIG by taking into account the following factors:

a) [1]If the first degree qualifying to enter a profession does not contain a practical semester or a corresponding practical period, relevant professional experience in the scope of at least 20 weeks of full-time employment may be provided to compensate for the non-existent admission requirement. [2]Professional experience must have been acquired after the first degree qualifying to enter a profession. [3]Professional experience should have been gained during regular employment in a company or another appropriate facility. [4]Employment is considered regular, if the contracted working hours amount to at least 50 % of a full-time position. [5]Evidence of professional experience is to be provided by presenting a qualified work reference or interim work reference.

b) If - for reasons of supplementary qualification - modules from the undergraduate programme of THWS are completed, the regulations of the respective undergraduate programme apply to the type and procedure of examinations; within supplementary qualification, there is one re-sit possible for each examination.

(5) [1]Notwithstanding (2), applicants can be provisionally admitted to the master's programme Artificial Intelligence if admission to the master's programme is unrestricted and if at the time of application the degree certificate is not yet available; in this case, the applicant must prove that a maximum of

30 ECTS credits of the overall number of ECTS credits available in the undergraduate programme is missing and that, in general, achieving the degree grade according to (2) is possible. [2]A written confirmation by the higher education institution shall provide proof that the degree grade can generally be achieved. [3]Admission to studies is subject to the condition that the degree certificate containing the required degree grade is presented as proof within one semester after the start of studies.

2. Chapter
Programme structure

§ 4
Standard time to degree and start of studies

(1) [1]The standard time to degree is three semesters with a total of 90 ECTS credits.

(2) The programme commences in the summer semester.

§ 5
Programme structure and modules

(1) [1]The programme structure is laid down in the appendix to these Study and Examination Regulations.

(2) [1]Core Electives (FWPM) in accordance with Section 7 (3) APO THWS serve the development of advanced competences; therefore, they have an immediate thematic relation to other modules of the master's programme in Artificial Intelligence. [2]Each student has to select Core Electives with a total of 10 ECTS credits as well as one project module of 10 ECTS credits. [3]The modules with the best grades up to the total of ECTS credits mentioned above are included in the calculation of the degree grade, unless the student makes a different binding selection to the Department of Student Affairs (HSST) before the degree certificate is issued.

3. Chapter
Examinations and deadlines

§ 6
Supplementary regulations for other types of assessments

(1) [1]If the module affected is assigned ten ECTS credits, the topic of the research project set should be such that the work can generally be completed in eight weeks when it is worked on continuously to the exclusion of everything else. [2]After the project paper is submitted, the work is presented by the student in person in accordance with § 26 (4) APO THWS.

(2) [1]Students from the master's programme in Artificial Intelligence should be admitted to oral examinations as listeners, unless a student objects. [2]The admission of listeners does not extend to the discussion of the examinee's performance and the announcement of the examination result.

(3) Assessment criteria for other types of assessments (*sonstige Prüfungsleistungen*) must be determined and communicated before the start of the assessment(s).

§ 7

Master's thesis

(1) Students may not start working on their master's thesis before they have achieved at least 50 ECTS credits.

(2) At the latest with issuance of the topic, the student must be officially informed about additional submission criteria exceeding the provisions of § 30 (8) Sentence 1 and Sentence 2 APO THWS.

(3) [1]After the master's thesis is submitted, the paper is presented by the student in person with oral explanations. [2]The presentation takes place in the presence of the responsible examiners who may ask supplementary questions. [3]The presentation is included in the assessment of the master's thesis.

§ 8

Standard deadlines

[1]Additional deadlines according to § 39 (1) Sentence 2 APO THWS are set as follows: By the end of the second programme semester, students must have successfully completed examination achievements from the first two programme semesters amounting to at least 21 ECTS credits (according to appendix to these study and examination regulations). [2]If a student fails to meet one of the deadlines stated in Sentence 1 and if they are responsible for the reasons, the module examinations not yet taken are deemed irreversibly failed.

4. Chapter

Organisational matters

§ 9

Examination committee (Prüfungskommission)

In accordance with Section 20 (1) Sentence 3 APO THWS, the number of additional members of the examination committee for the master's programme in Artificial Intelligence is three.

5. Chapter

Academic degree, concluding provisions

§ 10

Academic degree

After successful completion of the master's examination, graduates are awarded the academic degree Master of Science (abbrev. M.Sc.).

§ 11

Coming into Effect, Expiration

These Study and Examination Regulations shall come into effect on 15 March 2025.

§ 12

Transitional provisions

This version of the study and examination regulations is valid in conjunction with the General Examination Regulations of 26 April 2023 as amended and applies to all students in the master's programme Artificial Intelligence who start their studies on 15 March 2025 or thereafter or who are to be assigned to this period by allocation or accreditation.

Drawn up based on the resolution of the Senate of the Technical University of Applied Sciences Würzburg-Schweinfurt of 07 October 2024 and the based on the legal supervision and approval of the President of the Technical University of Applied Sciences Würzburg-Schweinfurt in accordance with Section 9 Sentence 3 and Section 84 (2) Sentence 1 BayHIG of 08 October 2024.

Würzburg, 08 October 2024

Professor Dr. Jean Meyer
President

These study and examination regulations for the master's programme in Artificial Intelligence were set down on 08 October 2024 at the Technical University of Applied Sciences Würzburg-Schweinfurt. This was communicated on 08 October 2024 by notice. The date of publication is 08 October 2024.

Abbreviations:

APO THWS	General Examination Regulations of the Technical University of Applied Sciences Würzburg-Schweinfurt
BayHIG	Bavarian Higher Education Act
BEEG	Federal Parental Benefit Act
BGBl	Federal Law Gazette
bZv	Particular conditions for admission (to an examination)
d	German (as language of examination)
e	English (as language of examination)
ECTS	European Credit Transfer and Accumulation System
Ex	Field trip
Core Electives (FWPM)	Core elective module
GVBl	Bavarian Law Gazette
HSST	Department of Student Affairs
MA	Master's thesis
M.Sc.	Master of Science
m.E./o.E.	Passed successfully / failed
mP	Oral examination
MuSchG	Maternity Protection Act
PflegeZG	Family Caregiver Leave Act
P	Internship
Pro	Project
S	Seminar
SGB XI	Social Security Code Volume 11
soP	Other types of assessment: The actual type of assessment is laid down in the study plan and announced **at the start of the semester** by the responsible lecturers. Only one type of assessment per module is to be completed.
sP	Written examination
Study and examination regulations	Study and examination regulations
Seminar-like lecture	Seminar-like lecture
Credit hours (SWS)	Semester hours per week
THWS	Technical University of Applied Sciences Würzburg-Schweinfurt
Tpf	In accordance with § Section 22 (1) APO THWS, attendance is mandatory. Attendance is documented by signing the attendance list. The module manager is responsible for the attendance list.
Practical course/exercise course	Practical course/exercise course
Lecture	Lecture

Abbreviations for other types of assessment:

A	Research project
B	Presentation
C	Multimedia presentation
D	Documentation report
E	Colloquium
F	Written assignment / term paper
G	Portfolio assignment
H	Practical assignment

Study and examination regulations for the master's programme "Artificial Intelligence"
at the Technical University of Applied Sciences Würzburg-Schweinfurt, valid from 15 March 2025, Appendix 1

This appendix applies to all students who start their studies in the master's programme "Artificial Intelligence" on 15 March 2025 or thereafter and all students who are to be assigned to this period by allocation or accreditation.

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
								Exam					Weight	
No.	Exam no.	Module name[1)]	Semester	Credit hours (SWS)	ECTS credits	Course type	Prerequisite	Type	Duration / format	Langua ge	bZv	Final grade	Factor	Act. weighting
1	5172010	Mathematical Foundations of AI	1	4	5	SU		sP, mP	90, 15	e		yes	1	5
2	5172020	Artificial Intelligence and Machine Learning	1	4	5	SU		sP	90	e		yes	1	5
3	5172030	Introduction to Deep Learning	1	4	5	SU		soP	G	e		yes	1	5
4	5172040	Reasoning and Decision Making under Uncertainty	1	4	5	SU		soP	G	e		yes	1	5
5		FWPM I / Elective I	1 or 3	4	5	2)		2)	2)	e		yes	1	5
6	51711110	Scientific Seminar	1	4	5	S		soP (m.E./o.E.)	G	e		no	0	0
7	5172050	Project Module	2	8	10	Pro		soP	A	e		yes	1	10
8	5171070	Introduction to the Ethics and Regulation of AI	2	4	5	SU		sP	90	e		yes	1	5
9	5172080	Fundamentals of Mobile Robotics	2	4	5	SU		mP	15	e		yes	1	5
10	5171090	Semantic Data Processing and Representation	2	4	5	SU		soP	G	e		yes	1	5
11	5171100	Learning of Structured Data	2	4	5	SU		sP, soP	90, G	e		yes	1	5
12		FWPM II / Elective II	3 or 1	4	5	2)		2)	2)	e		yes	1	5
13	5171130	Master's thesis	3		25	MA	50 ECTS credits			e/d		yes	1	25
		Total		**52**	**90**									**85**

1) All modules are generally suitable for studies abroad.

2) The core elective modules (FWPM) are chosen from a catalogue set by the faculty. The type of course and examination is subject to the chosen FWPM. More details are laid down in the curriculum.

Exam types: A = Project work, G = Portfolio assignment