Study and examination regulations for the Bachelor's degree programme in Applied Artificial Intelligence at Rosenheim Technical University of Applied Sciences

of 14 April 2021

On the basis of Article 13 (1) Sentence 2, Art. 57 (1) Sentence 1, Art. 58, Art. 61 (2) Sentence 1 and (8) Sentence 2, and Art. 66 (1) Sentence 1 of the Bavarian Higher Education Act (BayHSchG), Rosenheim Technical University of Applied Sciences issues the following rules:

Section 1
Purpose of the study and examination regulations

These study and examination regulations serve as a supplement to the current versions of the Basic Examination Regulations for Universities of Applied Sciences in Bavaria (*Rahmenprüfungsordnung für die Fachhochschulen in Bayern* – RaPO) of 17 October 2001 and the General Examination Regulations of Rosenheim Technical University of Applied Sciences (*Allgemeine Prüfungsordnung der Technical Hochschule Rosenheim* - APO) of 2 August 2016.

Section 2
Study objectives

(1) The aim of the Bachelor's degree programme in Applied Artificial Intelligence is to train its students through application-oriented teaching based on scientific findings and methods. Graduates will be capable of professional independent work as Bachelors of Science in Applied Artificial Intelligence.

(2) Building upon broad-based training across the entire spectrum of basic subjects, students in higher semesters will gain the more advanced specialist knowledge required for planning, developing and using software in application-oriented areas of artificial intelligence or machine learning. They will learn how to identify essential connections and achieve the flexibility required to keep up with the rapid advance of technical developments. Selecting subject-specific modules gives students the opportunity to shape their studies according to their personal interests and career aims. This offers graduates access to widely diversified fields of work. They will have the flexibility to work in international companies, public-sector administration and their own independent enterprises. The international focus of the course is demonstrated by the fact that its lectures are offered in English.

(3) The degree programme will enable graduates to assume skilled specialist and management roles in the field of applied artificial intelligence. This also includes training in analytical thinking and responsible action. Students with the appropriate aptitude will also have the opportunity to gain a further advanced qualification by going on to study a relevant Master's degree programme either directly following this degree programme or at a later stage.

Section 3
Admission requirements

(1) Level B2 English language skills under the Common European Framework of Reference for Languages (CEFR). These can be evidenced by:

1. Internet-based TOEFL with 72 or more points,
2. IELTS with a band score of 6.0 or higher,
3. Cambridge CEFR B2 First (FCE), Grade C or higher,
4. Cambridge CEFR C1 Advanced (CAE) with level B2 or higher,
5. At least 6 years of English tuition at school with a minimum grade of "satisfactory" in the final year, evidenced by a German higher education entrance qualification or an equivalent recognised higher education entrance qualification from a non-German school.

Native English speakers are not required to submit proof of adequate English language skills. In cases of doubt or non-submission of proof, applicants may be required additionally/alternatively to pass a language test comparable to those listed above at Rosenheim Technical University.

(2) Non-German native speakers without a German higher education entrance qualification must provide proof of German language skills at level A2 or higher in accordance with CEFR. The following apply as proof of required German language skills:

1. Deutsches Sprachdiplom DSD Level 1 (level CEFR A2/B1),
2. Goethe certificate at level A2,
3. TELC certificate at level A2,
4. German language courses completed at a university worth at least 4 credit points at level A2 or higher in accordance with CEFR,
5. At least 3 years of German tuition at school, evidenced by an officially certified translation of school certificates.

(3) The Examination Committee shall decide whether the admission requirements are met.

Section 4
Course structure

(1) The standard period of study for the Bachelor's degree programme is seven semesters. This includes six theoretical semesters and one practical semester. The practical semester takes place in the 5th semester. This may only be postponed by request submitted to the Examination Committee for reasons for which the student is not responsible. The allocation of modules to specific semesters is set out in the study plan.

(2) Examinations in the modules "Programming Basics", "Computer Science Fundamentals" and "Analysis 1" must be taken by the end of the second semester. If students miss this deadline for reasons for which they are responsible, the examinations shall be considered taken for the first time and failed. Only those students who have achieved at least 30 credit points are entitled to start the third semester and continue with further studies.

(3) At least 30 credit points must be obtained by the end of the third semester. If students miss this deadline for reasons for which they are responsible, module examinations that have not yet been taken shall be considered taken and irrevocably failed. Deadline extensions are regulated by Section 8 (4) of the Basic Examination Regulations for Universities of Applied Sciences in Bavaria (RaPO) in its current version.

(4) Only those students who have achieved at least 80 credit points are entitled to start the practical semester and continue with further studies.

(5) The degree programme includes a Bachelor's thesis.

Section 5
Modules and examinations

The modules, their number of hours, credit points, type of lecture as well as type and scope of examinations are set out in the Appendix to these rules. The modules are offered in English. The regulations defined in these rules are supplemented by the study plan.

Section 6
Study plan

(1) The Faculty of Computer Science produces a study plan detailing the course structure for the students' information and to ensure compliance with the curriculum. It is approved by the Faculty Council and is published within the university. New regulations must be published at the latest at the start of the semester in which the regulations come into force for the first time. In particular, the study plan includes regulations and information on:

1. Objectives, content, hours per week per semester, credit points and types of lecture used in individual modules, if this is not regulated conclusively in these rules, and, in particular, a list of current required elective modules, including conditions and restrictions regarding student numbers.

2. Objectives and content of the practical semester and the parallel lecture course as well as the form, organisation and number of credit points.

3. More detailed conditions relating to examinations, certificates of attendance and admission requirements.

(2) No assertion is made that all required elective modules and elective modules shall actually be available. Equally, no assertion is made that associated lectures shall be conducted if there are insufficient attendees. The Examination Committee can also set requirements for attendance as well as maximum numbers of attendees for certain lectures.

Section 7
Practical semesters

(1) The practical semester comprises a supervised work experience-based practical period of 18 weeks to be spent at a relevant company. The practical semester is supplemented by parallel lectures and ends with an examination. Details are set out in the study plan.

(2) The practical semester is considered successfully completed if the individual practical periods covering the required content are evidenced by a certificate from the place of training based on the template provided by Rosenheim Technical University of Applied Sciences, a valid practical report is submitted on time and a seminar presentation is graded as passed by a supervisor.

Section 8
Bachelor's thesis

(1) Students must successfully complete their practical semester and achieve 160 credit points in order to request a topic for a Bachelor's thesis.

(2) The Bachelor's thesis must be submitted at the latest 5 months after the topic is issued.

(3) The Bachelor's thesis is assessed and graded by two examiners. At least one of these two examiners should be a full-time professor at the Faculty of Computer Science or the Faculty of Applied Natural Sciences and Humanities at Rosenheim Technical University of Applied Sciences.

(4) The Bachelor’s thesis may be written in German or English. A summary in German must be included, however.

(5) The Bachelor's thesis must be presented and defended in person within a 30-minute time period. The defence is subject to the terms and conditions for oral examinations set out in Section 16 of the General Examination Regulations (APO). The presentation is held within the framework of the module “Bachelor’s Thesis Seminar” (Module No. 27).

Section 9
Academic Advising

If a student does not obtain at least 30 credit points after two semesters, he or she must seek assistance from Academic Advising.

Section 10
Examination Committee

The Examination Committee comprises at least three professors from the Faculty of Computer Science.

Section 11
Overall examination grade

The overall examination grade is the arithmetic average of individual grades weighted with credit points, rounded off to one decimal point. Only half the credit points obtained in Modules 1 to 10 contribute to the final grade. Ungraded practical periods are not considered.

Section 12
Academic title

On passing the Bachelor's examination, the student shall be awarded the academic title of "Bachelor of Science", in short: “B.Sc.”.

Section 13
Effective date, transitional regulations

These study and examination regulations come into force on 1 October 2021. They apply to students enrolling in the 2021/22 winter semester.

Produced on the basis of the resolution by the Senate of Rosenheim Technical University of Applied Sciences of 7 April 2021and the approval of the President of Rosenheim Technical University of Applied Sciences.

Rosenheim, dated 14 April 2021

Oliver Heller
Kanzler

These rules were laid down on 14 April 2021 at Rosenheim Technical University of Applied Sciences. This was published within the university on 14 April 2021. The publication date is therefore 14 April 2021.

Anlage zur Studien- und Prüfungsordnung für den Bachelorstudiengang Applied Artificial Intelligence an der Technischen Hochschule Rosenheim

Appendix to the study and examination regulations for the Bachelor's degree programme in Applied Artificial Intelligence at Rosenheim Technical University of Applied Sciences.

1. Theoretische Studiensemester

(Theoretical semester)

Modul Nr. *No*	**Modulbezeichnung** *Modules*	**SWS**	**Leistungs-punkte** *ECTS*	**Art der Lehrver-anstaltung 1)** *Form of Course*	**Prüfungen Examinations 1) 2)** **Art u. Dauer in Minuten** *Type and Duration*	**ZV**	**Ergänzende Regelungen 1)** *Supplementary regulations*
1	Programming Basics *Grundlagen der Programmierung*	6	7	SU, Ü	schrP 60-120	-	-
2	Computer Science Fundamentals *Grundlagen der Informatik*	6	7	SU, Ü	schrP 60-120	-	-
3	IT Systems *IT-Systeme*	4	5	SU, Ü	schrP 60-120	-	-
4	Introduction to Artificial Intelligence *Einführung in die künstliche Intelligenz*	6	7	SU, Ü	schrP 60-120	-	-
5	Analysis 1 *Analysis 1*	8	10	SU, Ü	schrP 60-120 oder mdlP 15-45	-	-
6	Object-Oriented Programming *Objektorientierte Programmierung*	4	5	SU, Ü, PA	schrP 60-120 PStA	-	3, 6)
7	Theoretical Computer Science *Theoretische Informatik*	4	5	SU, Ü	schrP 60-120	-	-
8	Linear Algebra *Lineare Algebra*	6	7	SU, Ü	schrP 60-120 oder mdlP 15-45	-	-
9	Analysis 2 *Analysis 2*	4	5	SU, Ü	schrP 60-120 oder mdlP 15-45	-	-
10	Digital Business Models *Digitale Geschäftsmodelle*	4	5	SU, Ü	schrP 60-120	-	-
11	Database Systems *Datenbanken*	6	7	SU, Ü	schrP 60-120	-	-
12	Unsupervised and Reinforcement Learning *Unüberwachtes und verstärkendes Lernen*	4	5	SU, Ü	schrP 60-120 oder mdlP 15-45	-	-
13	Supervised Learning *Überwachtes Lernen*	4	5	SU, Ü	schrP 60-120 oder mdlP 15-45	-	-
14	Stochastics *Stochastik*	4	5	SU, Ü	schrP 60-120 oder mdlP 15-45	-	-
15	Numerical Methods and Optimization *Numerische Methoden und Optimierung*	4	5	SU, Ü	schrP 60-120 oder mdlP 15-45	-	-
16	Software Engineering *Software-Engineering*	4	5	SU, Ü	schrP 60-120	-	-
17	IT Security *IT-Sicherheit*	4	5	SU, Ü	schrP 60-120 oder mdlP 15-45	-	-
18	Neural Networks and Deep Learning *Neuronale Netze und Deep Learning*	4	5	SU, Ü	schrP 60-120 oder mdlP 15-45	-	-

Modul Nr. *No*	Modulbezeichnung *Modules*	SWS	Leistungs-punkte *ECTS*	Art der Lehrver-anstaltung 1) *Form of Course*	Prüfungen Examinations 1) 2) Art u. Dauer in Minuten *Type and Duration*	ZV	Ergänzende Regelungen 1) *Supplementary regulations*
19	Data Science *Data Science*	4	5	SU, Ü	schrP 60-120 oder mdlP 15-45	-	-
20	Project Management *Projektmanagement*	4	5	SU, Ü	schrP 60-120 oder PStA	-	-
21	IT Law & Ethics *IT-Recht & Ethik*	4	5	SU, Ü	schrP 60-120 oder mdlP 15-45	-	-
22	Practical Software Engineering *Software-Engineering-Praxis*	6	7	SU, Ü, PA, S	PStA	Z1	3)
23	Embedded Artificial Intelligence *Eingebettete künstliche Intelligenz*	4	5	SU, Ü	schrP 60-120 oder mdlP 15-45	-	-
24	Speech Recognition and Sequence Learning *Spracherkennung und Sequence Learning*	6	7	SU, Ü	schrP 60-120 oder mdlP 15-45	-	-
25	Computer Vision *Computer Vision*	6	7	SU, Ü	schrP 60-120 oder mdlP 15-45	-	-
26	Specialist Required Elective Courses *FWPM*	16	20	SU, Ü, PA, S	P		4, 5)
27	Bachelor's Thesis Seminar *Seminar zur Bachelorarbeit*	1	2	S	SV	-	-
28	Bachelor's Thesis *Bachelorarbeit*	0	12	BA	BA	-	-
		137	**180**				

2. Praktisches Studiensemester (5. Studiensemester)

(Practical semester, 5th semester)

Modul Nr. *No*	Modulbezeichnung *Modules*	SWS	Leis-tungs-punkte *ECTS*	Art der Lehrver-anstaltung 1) *Form of Course*	Prüfungen Examinations 1) 2) Art u. Dauer in Minuten	ZV	Ergänzende Regelungen 1) *Supplementary regulations*
29	Internship Seminar Part 1 *Praxisblock 1*	2	3	SU, Ü	TN, SV, Kol	-	-
30	Internship Seminar Part 2 *Praxisblock 2*	2	3	S, PB	TN, PB	Z3	-
31	Internship *Betreute Praxisphase*	0	24	Pr	-	Z2	-
		4	**30**				

1) The Faculty Council sets out the details in the study plan.

2) A minimum grade of "sufficient" for all significant examinations is required to successfully complete the programme.

3) Submission on time is necessary to pass.

4) Individual details will be announced with the examination notice at the start of the semester.

5) The catalogue of specialist required elective courses is determined by the Faculty Council for each semester according to the criteria in Section 5, and set out in the study plan at the start of each semester.

6) The proof of achievement is not incorporated into the grade, but it is necessary to achieve a pass.

Z1) Only those who have passed the examination in Software Engineering (No. 16) and successfully completed the supervised practical phase of the practical semester (Internship, No. 31) can take the Practical Software Engineering module (No. 22).

Z2) Only those who have attended the Internship Seminar Part 1 (No. 29) are authorised to take the supervised practical phase (Internship, No. 31).

Z3) Only those who have attended the Internship Seminar Part 1 (No. 29), completed the supervised practical phase (Internship, No. 31) and submitted the practical report are authorised to participate in the Internship Seminar Part 2 (No. 30).

3. Erklärung der Abkürzungen (*Abbreviations)*:

SWS	=	Semesterwochenstunden *hours per week per semester*
ECTS	=	European Credit Transfer System
V	=	Vorlesung *lecture*
Ü	=	Übung *practical exercise*
SU	=	Seminaristischer Unterricht *seminar-based lectures*
ZV	=	Zulassungsvoraussetzung *admission requirements*
BA	=	Bachelorarbeit *Bachelor's thesis*
P	=	Prüfungen *examinations*
FWPM	=	Fachbezogenes Wahlpflichtmodul *specialist required elective module*
schrP	=	schriftliche Prüfung *written examination*
PStA	=	Prüfungsstudienarbeit *coursework (such as a work experience report, or a colloquium for group work with an additional, individual examination)*
mdlP	=	mündliche Prüfung *oral examination*
Kol	=	Kolloquium *colloquium*
AWPM	=	Allgemeinwissenschaftliches Wahlpflichtmodul *general required elective module*
prP	=	praktische Prüfung *practical examination*
mE	=	mit Erfolg abgelegt *pass*
PA	=	Projektarbeit *project work*
PB	=	Praxisbericht *practice report*
Pr	=	Praktikum *work experience*
S	=	Seminar *seminar*
SV	=	Seminarvortrag *seminar presentation*
TN	=	Teilnahmenachweis *attendance certificate*
prP	=	Praktische Prüfungen *practical examinations.*