Study and Examination Regulations for the Bachelor's Degree Programme Bioinformatics at Deggendorf Institute of Technology

of 1 October 2022

Based on Art. 13 (2) Clause 2, 58 (1), 61(2) Clause 1 of the Bavarian Higher Education Act (BayHSChG) of 23 May 2006 (GVBl. p. 245, Bay RS 2210-1-1-WK), last amended by Art. 1 of the Act passed on 9 April 2021 (GVBl. p. 182), Deggendorf Institute of Technology enacts the following by-laws:

Section 1
Aim of the study programme

(1) [1]The degree programme Bachelor of Bioinformatics educates computer scientists on the basis of knowledge acquired in the fields of computer science, mathematics, statistics, biomedicine and natural science. [2]The programme is offered by the Faculty of Computer Science at Deggendorf Institute of Technology.

(2) [1]The core qualifications acquired by successful graduates of this bachelor's degree course include data competency, analytical skills and biomedical science skills.

(3) [1]The degree programme communicates the cross-functional computer science and biomedical science knowledge that enables successful graduates to perform evidence-based clinical, biomedical and natural science research work. [2]The course simultaneously focuses on teaching students application-based methods as well as ensuring barrier-free communication between medical experts and/or natural scientists and computer scientists and/or analysts.

(4) [1]Through practice-based instruction, students will acquire the ability to master and develop bioinformatic systems. [2]They will become highly adept at solving problems and capable of processing bioinformatic questions and matters.

(5) [1]Students will actively work on projects and understand how to present work outcomes to a variety of target groups and how to formulate constructive criticism. [2]This ability will enable them to work effectively in teams and also to run such teams.

(6) [1]The companies which successful graduates have in their sights especially include research institutes, clinics, diagnostic laboratories, the pharmaceutical industry and the biotech industry. [2]Students will furthermore become skilled in conducting

scientific work unassisted in the aforementioned fields in the context of applied research and development.

(7) [1]The specialist knowledge aside, students will equally become proficient in social and methodological skills in the areas of personality development, work methods, project planning and project execution. [2]Students will additionally be empowered to present their acquired skills and expertise in fluent English.

Section 2
Course structure, standard period of study

(1) [1]The standard period of study is seven semesters, six of which are theory-based and one is practical. [2]The practical semester takes place in the fifth semester of the degree programme.

(2) A total of 210 ECTS credits may be awarded.

(3) [1]The degree programme Bachelor of Bioinformatics may be commenced in the winter semester of any given year. [2]Two semesters are devoted to teaching the general scientific principles of the basic sciences Mathematics, Computer Science and Natural Sciences. [3]Building on this, students will immerse themselves in the areas of application applicable to bioinformatics in preparation for their practical semester. [4]The final two semesters serve to enable students to specialise in their chosen field and as career orientation. [5]The degree course ends with the writing of a Bachelor thesis.

(4) The modules Bioinformatics II, Proseminar – Bio- and System Medicine and the Bachelor seminar are held in English.

Section 3
Modules and courses

(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 compulsory elective modules, the lectures, their number of hours, forms of instruction, examinations as well as the ECTS credits are defined in the appendix to these by-laws. [2]The regulations governing compulsory elective modules of a general and subject-specific nature are supplemented by the curriculum.

(3) [1]All modules comprise compulsory modules, compulsory elective modules or elective modules:

1. Compulsory modules are those modules held during the degree programme which are binding for all students.
2. Compulsory elective modules are alternative modules offered individually or in groups. Students are required to select a certain number of modules based on these study and examination regulations. The selected modules will be treated as compulsory modules.
3. Elective 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 entitlement exist to all of the envisaged specialisations, compulsory elective modules or elective modules actually being offered. [2]Similarly, no rights or entitlement exist to the accompanying courses of instruction taking place in the event of insufficient student numbers.

Section 4
Curriculum

[1]The relevant faculty, currently the Faculty of Applied Computer Science, will prepare a curriculum, outlining the programme's course progression, that ensures the relevant courses are offered and that students are aware of these.
[2]The curriculum is set by the Faculty Board and made public at the Institute prior to the semester commencing. [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. In particular, the curriculum will contain regulations and information regarding:

1. the time allocated for the weekly hours per semester, the time allocated per module and semester, including the attainable ECTS credits;
2. the names of the compulsory and compulsory elective modules as well as their respective number of weekly hours per semester;
3. the subject-related 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 Appendix 2;
5. the examination format and exam duration;
6. the lectures accompanying the internship during the practical semester as well as their form of instruction and organisation

Section 5
Basic modules

[1]Course and examination performances up to a total of 60 ECTS credits that have been attained through study-related foundation modules attended in the course of a bachelor's degree programme of the same name or of a comparable nature at a state-run or state-approved university of applied sciences in Bavaria are, upon request and without further review, to be credited towards the foundation modules of a Bachelor degree programme at the host university. [2]The foundation modules offered for this degree programme are marked in the curriculum with an asterisk (*).

Section 6
Basics and orientation examinations (GOP)

[1]By the end of the second semester, students must have sat the following examination components for the first time: Programming I, Biology and Chemistry and Mathematics I. [2]Should this deadline not be met, the aforementioned basics and orientation

examination will be deemed to have been initially failed.

Section 7
Admission to the internship semester

(1) [1]The fifth semester of the degree programme is earmarked as an internship semester. [2]It involves an internship at a company/undertaking as well as accompanying practical-based lectures, as defined in the curriculum, which will be held as block courses at the beginning and/or the end of the semester. [3]In lieu of the internship, a relevant, degree-related practical training course may be submitted as proof in certain justified, exceptional cases. [4]The internship semester may also be taken abroad. [5]The linkages, correlations and skills learned during the internship semester are to be documented in a written internship report. [6]The internship report must be submitted to the internship commissioner. [7]The internship commissioner overseeing the degree programme will make themselves available to advise students.

(2) [1]In order to be admitted to the fifth semester (internship semester), students must have obtained at least 70 ECTS credits through their preceding studies. [2]This threshold will not apply where the academic advisor submits a deviating written recommendation in a specific instance.

(3) [1]In order to attend the specialist modules, students must have passed the internship semester and have obtained at least 120 ECTS credits.

Section 8
Internship semester

(1) The internship semester comprises a minimum of 20 but no more than 24 weeks, of which two are devoted to practical-based lectures (PLVs).

(2) [1]Unless attainment of the educational goal is compromised, missing practical periods caused by interruptions will, by way of exception, not need to be made up for at a later juncture where such interruptions are beyond the students' control (e.g. shutdowns, illness) and provided that no more than five working days are lost as a result of the interruption. [2]Students performing military duty training will be exempt from the requirement to make up for the missing time provided that no more than ten working days are lost due to such training. [3]Students will be required to prove that the interruption was beyond their control. [4]Where interruptions exceed five or ten days respectively, the missing days must be made up for in total. [5]Any overtime performed may be credited towards the interruptions.

Section 9
Assessment of examination performance; overall examination grade

(1) ECTS credits are awarded for each successfully passed examination. The number of attainable credits per exam is shown in the appendix.

(2) [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 course for which the grade was awarded.

(3) In addition to the overall grade assigned as per para. 2, 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.

(4) Should an end-of-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.

Section 10
Bachelor's thesis

(1) When writing their bachelor's thesis, students will be required to demonstrate their ability to apply unassisted the knowledge and skills they have acquired in the course of their studies to complex tasks.

(2) Students having acquired at least 120 ECTS credits are eligible to register for their bachelor's thesis.

(3) The time allotted for writing the bachelor's thesis is four months.

Section 11
Certificate

On passing the bachelor'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 12
Academic degree and diploma supplement

(1) Upon successfully passing the bachelor's examination, the academic degree "Bachelor of Science", in short: "B.Sc.", is awarded.

(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 13
Coming into effect

These study and examination regulations will come into effect on 1 October 2022. They apply to all students commencing the degree programme as of the 2022 winter semester.

Annex to the Study and Examination Regulations for the Bachelor's Degree Programme Bioinformatics at Deggendorf Institute of Technology

B.Sc. Bioinformatics		Weekly hours per semester (SWS)											Examinations		
Module No.	Module	SWS	1st sem.	2nd sem.	3rd sem.	4th sem.	5th sem.	6th sem.	7th sem.	ECTS	Weighting of module grade	Type of instruction	Admission requirements	Type of examination	Exam duration
BIO-01	Biology and Chemistry*	**4**	4							**5**	**1**	SU		schrP	90 min.
BIO-02	Physics	**4**	4							**5**	1	SU		schrP	90 min.
BIO-03	Operating Systems and Networks	**4**	4							**5**	1	SU		schrP	90 min.
BIO-04	Mathematics 1*	**4**	4							**5**	1	SU/Ü		schrP	90 min.
BIO-05	Programming I*	**4**	4							**5**	1	SU/Ü		Präs/schrP	90 min.
BIO-06	Basics of Computer Science	**4**	4							**5**	1	SU/Ü		Präs/schrP	90 min.
BIO-07	Molecular Biology and Biochemistry I	**4**		4						**5**	1	SU		schrP	90 min.
BIO-08	Key Qualification – Technical English	**4**		4						**5**	1	SU		schrP, mP	90 Min., 15 Min.
BIO-09	Mathematics II	**4**		4						**5**	1	SU/Ü		schrP	90 min.
BIO-10	Internet Technologies	**4**		4						**5**	1	SU/Ü		schrP	90 min.
BIO-11	Programming II	**4**		4						**5**	1	SU/Ü		schrP	90 min.
BIO-12	Algorithms and Data Structures	**4**		4						**5**	1	SU/Ü		Präs/schrP	90 min.
BIO-13	Molecular Biology and Biochemistry II	**4**			4					**5**	1	SU/Ü		schrP	90 min.
BIO-14	Physiology	**4**			4					**5**	1	SU		schrP	90 min.
BIO-15	Data Bases	**4**			4					**5**	1	SU/Ü		schrP	90 min.
BIO-16	Project Management	**4**			4					**5**	1	SU/Ü		Präs/schrP	90 min.
BIO-17	Stochastics	**4**			4					**5**	1	SU/Ü		schrP	90 min.
BIO-18	Key Qualification - Ethics and Academic Work	**4**			4					**5**	1	SU		schrP	90 min.
BIO-19	Bioinformatics I	**4**				4				**5**	1	SU/Ü		Präs/ schrP	90 min.
BIO-20	Internship Molecular Biology and Biochemistry	**4**				4				**5**	1	PR		Präs/ schrP	90 min.
BIO-21	Software Engineering	**4**				4				**5**	1	SU/Ü		PstA	PstA
BIO-22	Machine Learning	**4**				4				**5**	1	SU/Ü		PstA	PstA
BIO-23	Microbiology	**4**				4				**5**	1	SU/Ü		schrP	90 min.
BIO-24	Key Qualification - Compliance, Data Protection	**4**				4				**5**	1	SU/Ü		schrP	90 min.
BIO-25	Internship + PLVs	**x**					x							PB	
	Internship						x			**24**	1	PP			
	PLV Career Service I	**2**					2			**3**	1	SU/Ü			
	PLV Career Service II	**2**					2			**3**	1	SU/Ü			
BIO-26	Molecular Biotechnology	**4**						4		**5**	1	SU/Ü		schrP	90 min.
BIO-27	Pathology and Pathophysiology	**4**						4		**5**	1	SU/Ü		schrP	90 min.
BIO-28	Bioinformatics II	**4**						4		**5**	1	SE		Präs/schrP	90 min.
BIO_29	Introductory Seminar - Bio- and System Medicine	**4**						4		**5**	1	SE		mP	20 Min.
BIO-30	Deep Learning/Big Data	**4**						4		**5**	1	SU/Ü		PstA	PstA
BIO-31	Comp. Elec. Module (FWP) 1 (I-III)	**4**						4		**5**	1	SU/Ü		PstA	PstA
BIO-32	Comp. Elec. Module (FWP) 2 (I-III)	**4**							4	**10**	1	PR		PstA	PstA
BIO-33	Bachelor's Seminar	**2**							2	**5**	1	SE		Präs	20 Min.
BIO-34	Bioethics	**2**							2	**5**	1	SE		mP	20 Min.
BIO-35	Bachelor's Thesis									**10**				BA	BA
	Total SWS	**132**	**24**	**24**	**24**	**24**	**4**	**24**	**8**						
	Total ECTS	**210**	**30**	**30**	**30**	**30**	**30**	**30**	**30**						

Abbreviations:	
ECTS	European Credit Transfer System
SWS	Semester hours per week
ZV	Admission requirements
*	
S/SU/U	
S	
SU	
U	
PR	
schrP	
mP	
PStA	
Präs	
PB	
schrP/PStA	
BA	

Issued on the basis of the enactment passed by the Senate of Deggendorf Institute of Technology on 15 December 2021, the degree programme announcement lodged on 1 February 2022 with the Bavarian State Ministry for Science and Arts as well as the supervisory approval of the Vice-President of Deggendorf Institute of Technology of 14 April 2022.

Signed
Prof. Waldemar Berg
Vice-President

The by-laws were recorded at Deggendorf Institute of Technology on 15 April 2022. The recorded by-laws were duly posted on the notice boards on 15 April 2022. Their day of announcement is therefore 15 April 2022.