Study Regulations
Governing the Bachelor's and Master's Degree Programmes in Bioinformatics

21 January 2016

Please note: This translation is provided for information purposes only. In the event of any discrepancies between the translation and the original German version, the latter shall take precedence.

Pursuant to Section 54 of the Saarland University Act of 23 June 2004 (Official Gazette of Saarland, p. 1782) as amended by the Act of 14 October 2014 (Official Gazette, p. 406) and pursuant to the Joint Examination Regulations for the Bachelor's and Master's Degree Programmes of Faculty 6 (Natural Science and Technology Faculty I – Mathematics and Computer Science) of 2 July 2015 (Official Bulletin No. 72, p. 616) and with the consent of the Saarland University Senate, the Center for Bioinformatics at Saarland University hereby issues the following Study Regulations Governing the Bachelor's and Master's Degree Programmes in Bioinformatics.

Content:

Section 1
Scope

(1) These study regulations, which govern the contents and structure of the Bachelor's and Master's degree programmes in Bioinformatics, are based on the Joint Examination Regulations for the Bachelor's and Master's Degree Programmes of Faculty 6 (Natural Science and Technology Faculty I – Mathematics and Computer Science) of 2 July 2015 (Official Bulletin No. 72, p. 616) and the Subject-Specific Regulations Governing to the Bachelor's and Master's Degree Programmes in Bioinformatics of 21 January 2016 (Official Bulletin No. 22, p. 180).

Section 2
Objectives of the degree programme and career relevance

(1) The subject of bioinformatics is concerned with developing algorithms and software that can simulate biochemical processes and analyse molecular biology data.

(2) The aim of the academic degree programmes in bioinformatics is to teach the theoretical principles and methods used in the field of bioinformatics. The fundamental aspects taught include the basic principles and methods from the neighbouring disciplines of mathematics and computer science, the theoretical foundations of selected areas in the life sciences (general, organic and physical chemistry, biochemistry, molecular and microbiology,

pharmaceutical science, medicinal chemistry and biophysics). The compulsory practical skills classes in the areas of bioinformatics, computer science and the life sciences enable students to deepen the knowledge acquired in other modules and introduce them to practical career-relevant applications of the subject.

(3) The Bachelor's degree programme leads to an initial academic qualification with students on the programme acquiring the basic scientific concepts, knowledge and skills in the disciplines set out in Paragraph 2 above. The modular structure of the programme allows students to select one of the two areas of specialization described in detail in Section 4 below and thus to organize their degree to reflect their academic skills and interests.

(4) In the Master's degree programme, greater emphasis is placed on research. The objective of the Master's programme is to build on and strengthen the knowledge and skills acquired in the preceding Bachelor's degree and to prepare students so that they can take up challenging national and international research and development activities in the field of bioinformatics or can continue pursuing an academic career track in bioinformatics. Particular emphasis is placed on sharpening the students' methodological skills so that they are in a position to develop innovative new methods.

Section 3
Start and duration of programme

(1) Students can begin the Bachelor's and Master's programmes at the beginning of the winter or summer semester of each year.

(2) The curriculum in the Bachelor's programme is organized such that the programme can be completed in four semesters (standard period of study). The curriculum in the Master's programme is organized such that the programme can be completed in four semesters (standard period of study).

Section 4
Career-profile specializations in the Bachelor's programme

The Bachelor's degree programme provides students with an initial academic grounding in the area of the biosciences (biochemistry, molecular biology, genetics, pharmaceutical science, biotechnology, etc.), as well as in computer science and mathematics, and enables students to acquire the basic scientific concepts, knowledge and skills of bioinformatics. Graduates from the Bachelor's programme are able to understand the problems and questions addressed in the biosciences and are equipped to tackle these problems by generating appropriate mathematical models and applying relevant scientific methods and programming techniques. The Bachelor's degree programme aims to prepare graduates for a career working in bioinformatics. For some graduates from the programme, their subsequent professional activity will involve applying existing bioinformatics software and tools in order to generate new biologically relevant knowledge (e.g. identifying new target molecules for treating certain diseases, identifying new leads in drug discovery and development, therapy optimization, etc.). For others, their work will involve developing and implementing new bioinformatics methods and tools. A distinction is therefore made between graduates who work as 'bioinformatics users' and those who are active as 'bioinformatics developers'. Users require greater knowledge of the life sciences and of the existing array of bioinformatics tools, whereas the developers need a deeper understanding of the methods of computer science and mathematics. The Bachelor of Science qualification can therefore be earned in one of two ways. The two areas of specialization are 'Computational Molecular Biology' ('CMB') and 'Bioinformatics' ('BI'). In CMB the focus is on methodological development, whereas BI focuses on the application of established techniques in bioinformatics. To enable students to structure the content of their degree course to better suit their preferred career path and to provide them with greater choice within the Bachelor's programme, students in the second half of the

programme can opt to earn more credits from modules in the biological categories or from those in the computer science / informatics categories. The first career-specialization profile (CMB) is designed for the 'bioinformatics user', while the second profile (BI) reflects that of the 'bioinformatics developer'. The latter is a more theoretical specialization and prepares graduates for an academic career in bioinformatics and for management positions in industry; it is therefore recommended for students seeking admission to the Master's programme in bioinformatics. For graduates from the Bachelor's programme who placed more emphasis on the biological aspects of bioinformatics but who wish to progress to a Master's degree programme, the recommendation is for them to pursue a Master's degree in an area such as biotechnology or drug design. By offering two career-specialization profiles, the Bachelor's programme not only fulfils the requirement that a Bachelor's qualification must enable graduates to be employed in a recognized professional field, it also provides students with greater choice by allowing them to structure their studies to reflect their interests (life sciences or IT) and skills.

Section 5
Teaching and learning formats

The curriculum content is taught using the following types of academic instruction:

1. Lectures ('L', standard class size = 100): Lectures serve to introduce a particular subject area and also provide an overview of the relevant theoretical concepts and principles, methodologies and skills, technologies and practical implementations that are common to the subject. Lecture courses provide suggestions for further reading on a topic and open the way to acquiring a deeper understanding of an area through subsequent exercise classes, practical assignments and self-directed study.

2. Exercise or problem-solving classes ('E', standard class size = 20): Exercise or problem-solving classes are small-group sessions used primarily to supplement and reinforce what was learned in the lectures. Students work on representative problems as this provides an opportunity for them to apply and deepen the knowledge they acquired in lectures, to assess their personal understanding of a specific area and to clarify any questions that they may have.

3. Introductory seminars and seminars ('S', standard class size = 15) provide an opportunity for students to broaden the knowledge and skills they have already acquired and to gain a deeper understanding of a particular area of research by participating in discussions, giving presentations or completing seminar assignments based on their study of the specialist literature and relevant academic sources. They also help students acquire the skills necessary for the effective oral and visual presentation of scientific and academic content and encourage students to engage in critical analysis and discussion of research results. A seminar may also include project-related work in areas of current scientific interest or debate. The deeper understanding of a particular field that students acquire through project-related work in the Bachelor's seminar may provide the basis for their Bachelor's thesis project.

4. Practical skills classes and project work ('P', standard class size = 15): Practical skills classes or projects offer a number of practical subject-related topics that introduce students to the specific approaches and methods used in a particular discipline or field of study. The relevant theoretical knowledge underlying a specific topic is acquired by attending lectures and studying the relevant scientific literature. An additional goal of the practical assignments is to provide students with the opportunity to gain practical experience with computer-aided methods. Projects tend to address interdisciplinary topics. Working on a topic offers students the opportunity to work in supervised groups to tackle specific assignments from the initial solution design concept through to its final

practical implementation. Students learn about the relationships between theory and practice not only through their own independent study and research, but also through project-based teamwork. Participation in a particular practical skills class or project may be dependent on a student having first successfully completed a required course of lectures and exercise classes.

Section 6
Structure and content of the Bachelor's degree programme

(1) To graduate from the programme, students shall earn a total of 180 credits (often referred to in Germany as 'credit points' or 'CPs') as defined by the European Credit Transfer System (ECTS). As a rule, students are required to earn 30 credits per semester.

(2) The curriculum and the coursework requirements in the Bachelor's programme are in the form of module elements or modules. Detailed information on the content of each module and the frequency with which they are offered is provided in the module catalogue. The table below lists every module element (lecture, exercise or problem-solving class, seminar, introductory seminar, practical skills class, and possible combinations thereof) with the corresponding number of credit hours per week and the associated student workload expressed in credits. The type of academic assessment or examination associated with each specific module element is also shown. The frequency with which the module elements are offered is specified in Section 7. The final column in the table 'Minimum credits required per category' shows the minimum number of credits that need to be earned in the relevant module category for each of the two areas of specialization 'CMB' and 'BI'. In the first module category, the numbers in parentheses represent the minimum number of credits that must be earned from introductory lectures in computer science.

Module code	Title of module	hrs/wk	ECTS credits	Type of examination	Min. no. of credits per category	
					CMB	BI
Lecture courses in fundamental areas of mathematics (graded)					51 (24)	33 (15)
M-B-1	Mathematics for Students of Computer Science 1	L4 E2		FE		
M-B-2	Mathematics for Students of Computer Science 2	L4 E2		FE		
M-B-3	Mathematics for Students of Computer Science 3	L4 E2		FE		
M-B-4	Analysis 1	L4 E2		FE		
M-B-5	Linear Algebra 1	L4 E2		FE		
Lectures in Applied Mathematics (graded)						
A-B-1	Practical Mathematics 1	L4 E2		FE		
A-B-2	Statistics for Biologists	L1		FE		
Introductory lectures in computer science (graded)						
I-B-1	Programming 1	L4 E2		FE		
I-B-2	Programming 2	L4 E2		FE		
I-B-3	Fundamentals of Theoretical Computer Science	L4 E2		FE		
I-B-4	Introduction to Data Structures and Algorithms	L2 E2		FE		
Introductory lectures in chemistry and the biosciences (graded)					12	12

C-B-1	General Chemistry	L5 (half a semester)		FE		
C-B-2	Molecular Biology	L2		FE		
C-B-3	Organic Chemistry and Biochemistry	L6 (half a semester)		FE		
C-B-4	Biochemistry	L4		FE		
Lectures in chemistry and the biosciences (graded)					18	32
B-B-1	Biopharmaceutics and Drug Delivery	L2 E1		FE		
B-B-2	Biophysics	L2		FE		
B-B-3	Introduction to Genetics	L4		FE		
B-B-4	Physical Chemistry	L2		FE		
B-B-5	Medicinal Chemistry and Drug Design	L2 E1		FE		
B-B-6	Molecular Microbiology	L2		FE		
B-B-7	Introduction to Biotechnology	L2		FE		
B-B-8	Introduction to Cellular Biology	L3		FE		
Courses on key career skills (ungraded)					1	1
E-BM-1	Organizational Structures in Scientific Research	L1		FE		
E-BM-2	Project Management	L1/E1		FE		
E-BM-3	Patent Law and Bioethics	L1/E1		FE		
E-BM-4	Efficient Learning	L1		FE		
Lectures in bioinformatics (graded)					27	24
BI-B-1	Lecture Series: Introduction to Bioinformatics	L2		SR		
BI-B-2	Bioinformatics 1	L4 E2		FE		
BI-B-3	Bioinformatics 2	L4 E2		FE		
BI-B-4		L2 E2		FE		
BI-BM-1	Specialist Lecture Course in Bioinformatics	L2 E1		FE / O		
Practical skills class in computer science (ungraded)					9	9
I-P-1	Software Lab	L2 P4		Project		
Practical skills class in the biosciences (ungraded)					6	6
B-P-1	Basic Lab Course in the Life Sciences (2 weeks)	P3		SR		
Practical skills class in bioinformatics (graded)					-	9
BI-PB-1	Software Tools in Bioinformatics	L2 P2		FE / SR		
Introductory seminar (graded)					5	5
BI-SB-1	Introductory Seminar on Topics in Bioinformatics	S2		L / SR		
Bachelor's seminar (graded)					9	9
BI-BS-1	Bachelor’s Seminar on Topics in Bioinformatics	L1 P2		L		
Total minimum number of credits per category					138	140
of which, no. of credits from graded modules					122	124

As the Bachelor's thesis is worth 12 ECTS credits, the remaining 28 credits (BI) or 30 credits (CMB) may be accumulated by freely combining credits from other modules in the permitted categories, from tutoring students in an exercise or problem-solving class associated with a lecture course (each worth 4 credits), from English-language courses (maximum of 9 credits) and from the industrial placement/internship or international research project (14 credits) mentioned in Sec. 6(2).

In the column headed 'Type of assessment', 'FE' stands for a final written examination, 'O' for an oral examination, 'SR' for a summary report and 'L' for a lecture course.

(2) It is recommended that students taking the Bachelor's degree programme complete either an industrial work placement or internship (in a company specializing in bioinformatics, biotechnology or pharmaceuticals) of at least eight-weeks duration, or spend at least eight weeks conducting research at another university or research institution, preferably abroad.

(3) The freedom to combine modules in the Bachelor's programme is subject to the following restrictions:
In the case of the 'Lecture courses in fundamental areas of mathematics', only the combinations M-B-1 with M-B-2 or M-B-4 with M-B-5 are permitted. In the case of the 'Introductory lectures in chemistry and the biosciences', students can choose either module C-B-3 or module C-B-4.

(4) Academic credits are either graded or ungraded. A graded academic assessment or examination cannot be split into ungraded and graded credits.

(5) Students taking modules in the categories 'Lecture courses in fundamental areas of mathematics', 'Introductory lectures in computer science' and 'Lectures in bioinformatics' who fail an assessment or examination at the first scheduled attempt shall be permitted to retake the assessment or examination on one further occasion within the same examination or assessment period provided that the module completion deadline has not expired (cf. Section 13(4) of the Examination Regulations). In such cases, the first failed attempt shall be treated as if it had not occurred (cf. provisions governing the 'Freiversuch' option in Section 17(4) of the Examination Regulations). The completion deadline for the modules in these categories is the end of the sixth semester.

(6) A student who received academic credits for successfully completing a module listed in Section 5 is permitted to retake the assessment or examination on one further occasion within the same examination or assessment period and before the module completion deadline expires in order to improve the mark awarded (cf. Sec. 13(4) of the Examination Regulations). A student who has received academic credits for successfully completing other modules shall be permitted to retake the assessment or examination on one further occasion within the same examination period in order to improve the mark awarded, provided that the module coordinator gave notice at the beginning of the module that the final examination or assessment may be repeated for this purpose. The student shall be awarded the better of the two grades. In all other cases, students will not be permitted to repeat an assessment or examination for which they have already achieved at least the minimum pass mark.

(7) Each module element is offered at least once a year, with the exception of the 'Courses on key career skills', which are offered at least once every two years.

(8) The range of modules offered in the different module categories may be broadened for one or more semesters by adding other module elements that have been previously approved by the Examination Board. These additional module elements, their weighting in ECTS credits and their assignment to one or more of the proposed module categories will be announced before the semester begins.

(9) Course attendance may be compulsory for certain introductory seminars, exercise or problem-solving classes and practical skills classes. Students will be notified of this by the course coordinator at the beginning of the course.

Section 7
Bachelor’s thesis and Bachelor’s seminar

(1) By completing a Bachelor’s thesis, students demonstrate that they are able to work independently on tackling problems in the field of bioinformatics. The completion period for the Bachelor’s thesis is three months. Students are awarded 12 ECTS credits for completing their Bachelor’s thesis.

(2) Before registering as a candidate for the final assessment phase (Bachelor’s thesis), each student shall have successfully completed a Bachelor’s seminar in an area with direct relevance to the topic being addressed in the thesis and shall have given a presentation on the planned thesis project.

(3) Students shall register their thesis project with the Examinations Office no later than one semester after successfully completing the Bachelor’s seminar. In order to register, a student shall submit to the Examination Office the slides used to present the student’s thesis project in the Bachelor’s seminar. Students who fail to meet this deadline will be required to successfully complete another Bachelor’s seminar.

Section 8
Structure and content of the Master’s degree programme

(1) To graduate from the Master's programme in Bioinformatics, students shall earn a total of 120 credits as defined by the European Credit Transfer System (ECTS). As a rule, students are required to earn 30 credits per semester.

(2) As a rule, the language of instruction used in the module elements in the Master's programme is English. The coordinators of the Master’s programme shall ensure that in each of the module categories a sufficient number of modules are offered in English so that students can acquire the required number of credits in the various categories in order to graduate.

The table below sets out the requirements for the Master's degree programme in Bioinformatics.

Module code	Title of module	hrs/wk	ECTS credits	Type of examination	Min. no. of credits per category
Core lecture courses in computer science (graded)					18
I-M-1	Data Structures and Algorithms	L4 E2	9	FE	
I-M-2	Computer Graphics	L4 E2	9	FE	
I-M-3	Database Systems	L4 E2	9	FE	
I-M-4	Information Retrieval	L4 E2	9	FE	
I-M-5	Artificial Intelligence	L4 E2	9	FE	
I-M-6	Optimization	L4 E2	9	FE	
I-M-7	Geometric Modelling	L4 E2	9	FE	
I-M-8	Introduction to Computational Logic	L4 E2	9	FE	
I-M-9	Image Processing and Computer Vision	L4 E2	9	FE	
I-M-10	Software Engineering	L4 E2	9	FE	
I-M-11	Machine Learning	L4 E2	9	FE	
Advanced lectures in the biosciences (graded)					12
B-M-1	Molecular Biotechnology 2	L2	3	FE	
B-M-2	The Human Genome	L2	3	FE	
B-M-3		L2 E1 S1	6	FE	
B-M-4	Bioreaction Engineering	L2 E1 S1	6	FE	
B-M-5	Specialist Lecture Course in Bioscience	L2 E1	5	FE / O	
Advanced lectures in bioinformatics (graded)					19
BI-M-1	Bioinformatics 3	L4 E2	9	FE	
BI-BM-1	Specialist Lecture Course in Bioinformatics	L2 E1	5	FE / O	
Practical skills class in the biosciences (ungraded)					5
BI-PM-1	Programming Course	P2	5	SR / FE	
Key career skills (ungraded)					0
E-BM-1	Organizational Structures in Scientific Research	L1	1	FE	
E-BM-2	Project Management	L1/E1	1	FE	
E-BM-3	Patent Law and Bioethics	L1/E1	1	FE	
Advanced practical skills classes in the biosciences (ungraded)					0
B-PM-1	Advanced Lab Course in the Life Sciences	P3	8	SR	
Seminar (graded)					7
BI-SM-1	Seminar on Topics in Bioinformatics (maximum of two)	S2	7	L / SR	
Master’s seminar (graded)					12
BI-MS-1	Master’s Seminar on Topics in Bioinformatics	S1 P3	12	L	
Total number of compulsory credits					73
of which, no. of credits from graded modules					68

As the Master’s thesis is worth 30 ECTS credits, the remaining 17 credits may be accumulated from other modules in the permitted categories or from tutoring students in exercise or problem-solving classes associated with lecture courses (each worth 4 credits). The only restriction is that no more than two seminars (S-M-1) may be included on the Master's degree certificate.

In the column headed ‘Type of assessment’, ‘FE’ stands for a final written examination, ‘O’ for an oral examination, ‘SR’ for a summary report and ‘L’ for a lecture course.

(3) Academic credits are either graded or ungraded. A graded academic assessment or examination cannot be split into ungraded and graded credits.

(4) A student who received academic credits for successfully completing one of the ‘Core lecture courses in computer science’ is permitted to retake the assessment or examination on one further occasion within the same examination or assessment period and before the module completion deadline expires in order to improve the mark awarded (cf. Sec. 13(4) of the Examination Regulations). A student who has received academic credits for successfully completing other modules shall be permitted to retake the assessment or examination on one further occasion within the same examination period in order to improve the mark awarded, provided that the module coordinator gave notice at the beginning of the module that the final examination or assessment may be repeated for this purpose. The student shall be awarded the better of the two grades. In all other cases, students will not be permitted to repeat an assessment or examination for which they have already achieved at least the minimum pass mark.

(5~~7~~) Each lecture course, practical skills class and seminar is offered at least once a year, with the exception of the ‘Core lecture courses in computer science’ and the ‘Courses on key career skills’, which are offered at least once every two years. At least two specialist lecture courses in bioinformatics are offered each semester.

(6) The range of modules offered in the different module categories may be broadened for one or more semesters by adding other module elements that have been previously approved by the Examination Board. These additional module elements, their weighting in ECTS credits and their assignment to one or more of the proposed module categories will be announced before the semester begins.

(7) Course attendance may be compulsory for certain seminars, exercise or problem-solving classes and practical skills classes. Students will be notified of this by the course coordinator at the beginning of the course.

Section 9
Master’s thesis and Master’s seminar

(1) By completing a Master’s thesis, students demonstrate that they are able to work independently on tackling problems in the field of bioinformatics. The completion period for the Master’s thesis is six months. Students are awarded 30 ECTS credits for completing their Master’s thesis.

(2) Before registering as a candidate for the final assessment phase (Master’s thesis), each student shall have successfully completed a Master’s seminar in an area with direct relevance to the topic being addressed in the thesis and shall have given a presentation on the planned thesis project.

(3) Students shall register their thesis project with the Examinations Office no later than one semester after successfully completing the Master’s seminar. In order to register, a student shall submit to the Examination Office the slides used to present the student’s thesis project in the Master’s seminar. Students who fail to meet this deadline will be required to successfully complete another Master’s seminar.

Section 10
10 Study plan and module catalogue

The Center for Bioinformatics will compile (i) a module catalogue based on these study regulations that includes detailed information on the types and scope of the module elements offered, their content, learning objectives and the learning and teaching methods used, and (ii) a study plan with recommendations on how students can organize and structure their studies efficiently. The latest version of the study plan will be made available in suitable form at the start of each semester. The range of courses offered in the different module categories in a particular semester will be published in the Saarland University course catalogue for that semester.

Section 11
Student advisory services

(1) Students can seek advice on module- or programme-related issues from the teaching staff at the faculties participating in the programme. Specifically, questions concerning the programmes in bioinformatics can be addressed to members of professorial staff at the Center for Bioinformatics. Students may also seek advice from the departmental student organization ('Fachschaft').

(2) An orientation event is held for students in their first semester at the beginning of the semester's main teaching period. The orientation event provides new students with information on the study environment, the structure of the programme and the examination regulations.

Section 12
Study abroad period

Students have the opportunity to spend part of the programme studying abroad. Students interested in studying abroad should obtain information and advice from a relevant source, take preparatory language courses as needed and should clarify credit transfer arrangements in accordance with the relevant examination regulations by completing a study abroad learning agreement. Information on study abroad opportunities, exchange programmes, scholarships and administrative formalities is available from Saarland University International Office or from the relevant departmental representative. As foreign host universities and scholarship-awarding bodies often have early application deadlines and long application processing times, study abroad applications should generally be submitted to the Examinations Office one year before the planned start date.

Section 13
Commencement and transitional arrangements

(1) These regulations shall come into force on the day after they are announced in the Official Bulletin of the Institutions of Higher Education in Saarland (*Dienstblatt der Hochschulen des Saarlandes*).

(2) Students who began studying for a degree in bioinformatics before these regulations entered into force may continue to study under the earlier study regulations of 8 June 2016 for a transitional period as specified in Section 38(2) of the Subject-Specific Provisions for the Examination Regulations Governing Bachelor's and Master's Degree Programmes in Bioinformatics at Saarland University of 21 January 2015 (Official Bulletin No. 22, p. 180).

Saarbrücken, 19 April 2016

President of Saarland University
Univ.-Prof. Dr. Volker Linneweber

Appendix 1 Sample study plans

Sample study plan for the Bachelor's programme (BI)

Semester	Computer Science	Mathematics	Bioinformatics	Introductory lectures in chemistry and the biosciences	Lecture courses in the biosciences	Seminars	Practical skills classes	Key career skills	ECTS credits
1	Programming I (9 credits)	Mathematics for Students of Computer Science I (9 credits)	Lecture Series: Introduction to Bioinformatics (3 credits)	General Chemistry (4 credits) Organic Chemistry and Biochemistry (5 credits)				Efficient Learning (1 credit)	31 credits
2	Programming II (9 credits)	Mathematics for Students of Computer Science II (9 credits)		Molecular Biology (3 credits)			Software Lab Course (9 credits)		30 credits
3	Introduction to Data Structures and Algorithms (6 credits)		Bioinformatics I (9 credits)		Introduction to Biotechnology (3 credits) Biophysics (3 credits)		Software Tools (9 credits)		30 credits
4			Bioinformatics II (9 credits)	Physical Chemistry (3 credits)	Molecular Microbiology (3 credits)	Introductory Seminar (5 credits)	Tutoring (4 credits)	Project Management (1 credit)	25 credits
5			Specialist Lecture Course in Bioinformatics (5 credits)		Introduction to Cellular Biology (5 credits) Fundamentals of Genetics (6 credits) Medicinal Chemistry and Drug Design (5 credits) Biopharmaceutics and Drug Delivery (5 credits)		Basic Lab Course in the Life Sciences (6 credits)		32 credits
6			Specialist Lecture Course in Bioinformatics (5 credits) (6 credits) Bachelor's Thesis (12 credits)			Bachelor's Seminar (9 credits)			32 credits

Sample study plan for the Bachelor's programme (CMB)

Semester	Computer Science	Mathematics	Bioinformatics	Introductory lectures in chemistry and the biosciences	Lecture courses in the biosciences	Seminars	Practical skills classes	Key career skills	ECTS credits
1	Programming I (9 credits)	Mathematics for Students of Computer Science I (9 credits)	Lecture Series: Introduction to Bioinformatics (3 credits)	General Chemistry (4 credits) Organic Chemistry and Biochemistry (5 credits)				Efficient Learning (1 credit)	31 credits
2	Programming II (9 credits)	Mathematics for Students of Computer Science II (9 credits)		Molecular Biology (3 credits)			Software Lab Course (9 credits)		30 credits
3	Introduction to Data Structures and Algorithms (6 credits)	Mathematics for Students of Computer Science III (9 credits)	Bioinformatics I (9 credits)		Introduction to Biotechnology (3 credits) Biophysics (3 credits)				30 credits
4			Bioinformatics II (9 credits) Specialist Lecture Course in Bioinformatics (5 credits)	Physical Chemistry (3 credits)	Molecular Microbiology (3 credits)	Introductory Seminar (5 credits)	Tutoring (4 credits)		29 credits
5			Specialist Lecture Course in Bioinformatics (5 credits)		Introduction to Cellular Biology (5 credits) Fundamentals of Genetics (6 credits) Medicinal Chemistry and Drug Design (5 credits) Biopharmaceutics and Drug Delivery (5 credits)		Basic Lab Course in the Life Sciences (6 credits)		32 credits
6			Computational Chemistry (6 credits) Bachelor's Thesis (12 credits)			Bachelor's Seminar (9 credits)		Organizational Structures in Scientific Research (1 credit)	28 credits

Sample study plan for the Master's programme

Semester	Core lecture courses Computer science	Bioinformatics	Advanced lectures in the biosciences	Seminars	Practical skills classes	Key qualifications	ECTS credits
1	Data Structures and Algorithms (9 credits)	Bioinformatics II (9 credits)	Specialist Lecture Course in Bioinformatics (5 credits)	Seminar (Bioinformatics) (7 credits)		Scientific Publishing (1 credit)	31 credits
2	Artificial Intelligence (9 credits)	Specialist Lecture Course in Bioinformatics (5 credits)	Molecular Biotechnology II (3 credits) The Human Genome (3 credits) Systems Toxicology (3 credits)		Programming Course (5 credits)	Organizational Structures in Scientific Research (1 credit)	29 credits
3		Specialist Lecture Course in Bioinformatics (5 credits) Specialist Lecture Course in Bioinformatics (5 credits)		Master's Seminar (12 credits)	Advanced Lab Course in the Life Sciences (8 credits)		30 credits

4	Master's Thesis (30 credits)	30 credits