

# Examination Regulations

for

## Bioengineering B.Sc.

at Rhine-Waal University of Applied Sciences

Dated 17 January 2013

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Only the German version published in the Official Notices of Rhine-Waal University of Applied Sciences is legally binding.*

In accordance with Section 2 (4) sentence 1 and Section 64 (1) of the Higher Education Act of North Rhine-Westphalia [Hochschulgesetz – HG NRW], in the amended form produced by the Greater Liberty for Higher Education Institutions Act [Hochschulfreiheitsgesetz] of 31 October 2006 (Law and Regulations Gazette of NRW – GV.NRW. 2006, p. 474), last amended by Article 1 of the Act amending the Higher Education Act and the Art Colleges Act [Gesetz zur Änderung des Hochschulgesetzes und des Kunsthochschulgesetzes] of 18 December 2012 (GV.NRW. 2012, p. 672) and by Section 2 (4) of the Universities of Applied Sciences Establishing Act of 21 April 2009 [Fachhochschuleerrichtungsgesetz 2009] (GV.NRW. 2009, p. 255) and by the General Examination Regulations for Bachelor's Programmes (RPO) of Rhine-Waal University of Applied Sciences of 22 October 2012 (published in the Official Notices on 29 October 2012), the Founding Dean of the Faculty of Life Sciences of Rhine-Waal University of Applied Sciences has issued the following examination regulations:

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## **Section 1**

### **Scope of application**

These examination regulations shall apply to the English-taught bachelor's degree programme Bioengineering of the Faculty of Life Sciences of Rhine-Waal University of Applied Sciences, in conjunction with the General Examination Regulations for Bachelor's Programmes [Rahmenprüfungsordnung; hereinafter "RPO"] of Rhine-Waal University of Applied Sciences. These examination regulations govern the standard seven-semester mode of study (full-time study), the nine-semester dual-vocational mode of study (dual study), and the nine-semester part-time mode of study for working professionals [berufsbegleitendes Studium].

## **Section 2**

### **Aims and objectives; purpose of examination; degree awarded**

(1) The bachelor's examination concludes the degree programme and constitutes a first academic and scientific qualification towards a career. The general aims and objectives for bachelor's programmes are outlined in Section 3 RPO. The central aim of this degree programme is to produce qualified experts in the field of bioengineering/biotechnology. Key to achieving this aim is a broad and diverse approach to material that is intended to impart expert competencies in the natural sciences and engineering, and general and practical competencies in economics, organisational strategies, information technologies and cross-cultural interaction. A strong command of the English language is also key to achieving success in this degree programme, as it provides the essential basis for this programme's continuous goal of broadening and deepening students' technical language and communication skills.

(2) The academic degree "Bachelor of Science", abbreviated as "B.Sc.", shall be awarded for the successful completion of the bachelor's examination.

## **Section 3**

### **Entry requirements**

(1) The general entry requirements for bachelor's degree programmes are outlined in Section 4 RPO.

(2) A "related or comparable programme of study" within the meaning of Section 4 (6) RPO is defined as any undergraduate (bachelor's or German 'Diplom') degree programme at a university or university of applied sciences in Germany if that programme's content predominately falls under the umbrella of biotechnology.

(3) Sufficient proficiency in English can be demonstrated by submitting a valid and recognised language certificate equivalent to CEFR level B2 (Common European Framework of Reference for Languages). Generally, the following language tests and scores are accepted as valid proof:

- IELTS: 6.0 or better
- TOEFL (iBT): minimum 80
- TOEFL (PBT): minimum 550
- TOEFL (CBT): minimum 213

(4) Exempted from this language certificate requirement are applicants who have acquired English language abilities equivalent to level B2 over the course of earning their university entrance qualification [Hochschulreife] at a secondary school in Germany. This is considered the case when an applicant has successfully completed at least seven years of English at a German secondary school and earned a final cumulative mark of at least “sufficient” (4.0 or better) for the subject.

#### **Section 4 Preparatory internship**

Students in this degree programme are required to complete an eight-week preparatory internship (within the meaning of Section 4 (3) RPO) at an extramural company, public authority, organisation (for-profit or nonprofit) or other institution and in a context relevant to the curriculum. The internship should familiarise the student with questions and matters relating to the natural sciences and engineering. The internship can also extend to the manufacturing/production sector.

#### **Section 5 Programme structure; volume of studies; progression of studies**

(1) This degree programme has a total volume of study of 122 credit hours [Semesterwochenstunden – SWS].

(2) In accordance with the framework outlined in Section 6 (5) RPO, the modules of this programme comprise a total sum of 210 credit points (hereinafter “CP”).

(3) An integral part of the dual study programme is on-the-job vocational training that occurs over the first four semesters of study and is subject to contractual agreement between the student and the company providing the training. Both the vocational training position and the company must have a clear relevance to the student’s chosen field of study. The Faculty of Life Sciences shall be responsible for assessing the relevance of a proposed dual study contract. In the ‘dual phase’ of study, the regular content of the first two semesters is taught over the course of four semesters instead. During this phase, the dual study student spends two weekdays studying at the University and three weekdays receiving vocational training at the company. The dual phase concludes with a comprehensive examination, in German, conducted by the respective German Chamber of Industry and Commerce before the start of the fifth semester. From this point the student begins to study full time and completes the remaining degree requirements.

(4) The part-time mode of study [berufsbegleitendes Studium] allows working individuals to continue their profession while studying on a part-time basis. In this mode of study, the regular content of the first two semesters is taught over the course of four semesters instead. During this time, the part-time student’s work week is divided into two days of study at the university and three days at their place of employment.

(5) Additional information about the structure and progression of the programme, as well as about the type, form and scope of modules, can be found in the study and examination schedule in the annex of these examination regulations. For details about a module’s qualification aims, content and most commonly offered mode of examination, please refer to

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the descriptions in the module guide, which is available in the dean's office for all students and staff to review.

### **Section 6 Scope of examinations**

- (1) The time allotted to students for a written examination is based on the CP value of the respective course unit(s). As a general rule, 60 minutes shall be allotted for every two CP.
- (2) An oral examination generally lasts at least 30 minutes, but no more than 45 minutes.
- (3) The text portion of an assignment, term paper or project should not exceed 30 DIN A4 pages in length (not including annexes).

### **Section 7 Scope and form of the bachelor's thesis**

- (1) As a rule, the text portion of the bachelor's thesis should be between 40 and 100 DIN A4 pages in length (not including annexes). The thesis may also be supplemented with other media, provided they are appropriate and helpful for the documentation of the thesis in accordance with the assigned task. In this case the text portion of the thesis (not including annexes) may have less pages than the minimum requirement defined in sentence 1.
- (2) The bachelor's thesis can also be admitted as group work if each student's individual contribution fulfils the requirements in Section 23 (1) RPO and is clearly distinguishable and thus assessable due to clear delimitation by section, page numbers or other criteria that ensure distinct identification of each student's separate contribution.

### **Section 8 Admission to the bachelor's thesis and colloquium**

- (1) In conjunction with the general prerequisites for admission to a bachelor's thesis (Section 24 (1) RPO), students must show that they have acquired 175 CP.
- (2) In conjunction with the general prerequisites for admission to a colloquium (Section 27 (2) RPO), candidates must show that they have acquired 202 CP.

### **Section 9 Credit points for the bachelor's thesis and colloquium**

- (1) Twelve CP shall be awarded for successfully passing the bachelor's thesis.
- (2) Eight CP shall be awarded for successfully passing the colloquium.

### **Section 10 Conferment of the bachelor's degree**

The bachelor's degree specified in Section 2 (2) is officially conferred with the issuing of the bachelor's degree certificate (Section 30 (1) RPO).

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## **Section 11**

### **Entry into force**

These examination regulations shall enter into force on the day after their publication in the Official Notices [Amtliche Bekanntmachungen] of Rhine-Waal University of Applied Sciences. These regulations apply to all students who first enrolled in the Bioengineering B.Sc. programme of the Faculty of Life Sciences of Rhine-Waal University of Applied Sciences in or after winter semester 2012-2013.

# Annex

## Recommended study and examination schedule for Bioengineering B.Sc.

Modul-Nr./ Module No.	Module/Subjects	SWS CH	LV	Type					Ex/Prü	CP	SWS / CH					SS / ST 6	WS / WT 7
				S	E/Ü	LC/Pr	Pro	WS / WT 1			SS / ST 2	WS / WT 3	SS / ST 4	WS / WT 5			
BE_1	Cell Biology and Microbiology <b>Zellbiologie und Mikrobiologie</b>	4	2			2		P	5	4							
BE_2	Fundamentals of Chemistry <b>Grundlagen der Chemie</b>	4	2			2		P	5	4							
BE_3	Basics of Physics <b>Grundlagen Physik</b>	4	2		1	1		P	5	4							
BE_4	Mathematics and Statistics <b>Mathematik und Statistik</b>	6	3		3			P	5	6							
BE_5	Basics of Management <b>Managementgrundlagen</b>	4	2		2			T	5	4							
BE_6	Project 1 <b>Projekt 1, Wiss. Arbeiten</b>	4					4	T	6	4							
BE_7	Genetics and Molecular Biology <b>Genetik und Molekularbiologie</b>	4	2			2		P	5		4						
BE_8	Applied Chemistry <b>Angewandte Chemie</b>	6	3		2	1		P	5		6						
BE_9	Biochemistry <b>Biochemie</b>	4	2			2		P	5		4						
BE_10	Bioengineering Physics <b>Bioengineering Physik</b>	4	2		1	1		P	5		4						
BE_11	Applied Microbiology <b>Angewandte Mikrobiologie</b>	4	2			2		P	5		4						
BE_12	Applied Mathematics <b>Angewandte Mathematik</b>	4	2		2			P	5		4						
BE_13	Physical Chemistry <b>Physikalische Chemie</b>	4	2		1	1		P	5			4					
BE_14	Instrumental Analytics <b>Instrumentelle Analyse</b>	4	2		2			P	5			4					
BE_15	Measurement and Control Engineering <b>Mess- und Regelungstechnik</b>	4	2		1	1		P	5			4					
BE_16	Process Engineering <b>Chemische Verfahrenstechnik</b>	5	3		2			P	5			5					
BE_17	Basics of Economic Sciences <b>Grundlagen der Wirtschaftswissenschaften</b>	5	4		1			P	5			5					
BE_18	Applied Management <b>Angewandtes Management</b>	4	2		2			T	5			4					
BE_19	Bioprocess Engineering <b>Bioverfahrenstechnik</b>	4	2			2		P	5					4			
BE_20	Enzyme Engineering <b>Enzym Engineering</b>	4	4					P	5					4			
BE_21	Project 2 <b>Projekt 2</b>	4					4	T	10					4			
BE_22	Downstream Processing <b>Produktaufarbeitung</b>	4	2	2				P	5						4		
BE_23	Industrial Biotechnology <b>Industrielle Biotechnologie</b>	4	4					P	5						4		
BE_24	Basics of Law <b>Grundlagen Rechtswissenschaft</b>	4	2		2			P	5						4		
BE_25	Integrated Management Systems and Quality <b>Management</b>	4	4					P	5						4		
BE_26	Elective modules 1 <b>Wahlpflichtkatalog 1</b>	8	8					P	12					8			
BE_27	Elective modules 2 <b>Wahlpflichtkatalog 2</b>	8	8					P	12						8		
<b>Semesterwochenstunden // total credit hours</b>		<b>122</b>	<b>73</b>	<b>2</b>	<b>22</b>	<b>17</b>	<b>8</b>			<b>26</b>	<b>26</b>	<b>26</b>	<b>20</b>	<b>24</b>			
										<b>Credit Points</b>	<b>31</b>	<b>30</b>	<b>30</b>	<b>32</b>	<b>32</b>	<b>30</b>	<b>25</b>
													<b>155</b>			<b>55</b>	
													<b>210</b>				

### Abbreviations: // Abkürzungen

CH = credit hours per week // SWS = Semesterwochenstunden

WS = winter term // Wintersemester

SS = summer term // Sommersemester

Ex/Prü = type of examination // Prüfungsart

CP = credit points (= ECTS-points)

LV = Lecture // Vorlesung

E/Ü = exercise // Übung

LC/Pr = lab course // Praktikum

Pro = project // Projekt

T = certificate // Testat (unbenotet)

P = examination (marked) // benotete Prüfung

	gesamt	1.Sem	2.Sem	3.Sem	4.Sem	5.Sem	6.Sem	7.Sem
<b>SWS</b>	<b>122</b>	<b>26</b>	<b>26</b>	<b>26</b>	<b>20</b>	<b>24</b>		
<b>CP</b>	<b>210</b>	<b>31</b>	<b>30</b>	<b>30</b>	<b>32</b>	<b>32</b>	<b>30</b>	<b>25</b>

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## Elective Catalogue\*

Modul-Nr.	Elective modules 1 Wahlpflichtkatalog 1	CH	CP	Ex
BE_26.1	Technical enzymology Technische Enzymologie	2	3	P
BE_26.2	Biofuels Biotreibstoffe	2	3	P
BE_26.3	Agricultural Biotechnology Grüne Biotechnologie	2	3	P
BE_26.4	Cellular Biophysics Zelluläre Biophysik	2	3	P
BE_26.5	Medical Bioengineering Medizinische Biotechnologie	2	3	P
BE_26.6	Nanobiotechnology Nanobiotechnologie	2	3	P
BE_26.7	Modeling of Dynamic Systems Modellierung dynamischer Systeme	2	3	P
BE_26.8	Module from any other HSRW study course Wahlmöglichkeit Angebot HRW	2	3	P
		8	12	

### Qualifizierungsbereiche

White (industrial) Biotechnology

Green (agricultural) Biotechnology

Red (medical) Biotechnology

Wahlpflichtkatalog aus anderen Studiengängen

Modul-Nr.	Elective modules 2 Wahlpflichtkatalog 2	CH	CP	Ex
BE_27.1	Biocatalysis Biokatalyse	2	3	P
BE_27.2	Metabolic Engineering Metabolic Engineering	2	3	P
BE_27.3	Biopolymers Biopolymere	2	3	P
BE_27.4	Environmental Biotechnology Umweltbiotechnologie	2	3	P
BE_27.5	Microalgae Mikroalgen	2	3	P
BE_27.6	Immunology Immunologie	2	3	P
BE_27.7	Module from any other HSRW study course Wahlmöglichkeit Angebot HRW	2	3	P
		8	12	

\* The faculty reserves the right to set a minimum number of participants for offering an elective subject. The possibility of obtaining the required number of elective credit points remains unaffected.

\*\* Subject to the approval of the chair of the examination board.

Issued on the basis of a resolution put forth by the dean of the Faculty of Life Sciences on 12 December 2013 and with official approval granted by the Executive Board on 5 February 2013.

Kleve, 20 February 2013

Professor Dr Marie-Louise Klotz

President of Rhine-Waal University of Applied Sciences