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HOCHSCHULE RHEIN-WAAL
Rhine-Waal University of Applied Sciences

Examination Regulations

for

Nature-Inspired Materials, B.Sc.

at Rhine-Waal University of Applied Sciences
From 4 January 2017
(Official Notice 20/2018)

As amended by the third amending statutes
From 10 March 2025
(Official Notice 11/2025)

Contents

Section 1
Scope

These examination regulations apply to the bachelor's degree programme Nature-Inspired Materials B.Sc., offered in English at the Faculty of Technology and Bionics of Rhine-Waal University of Applied Sciences, and are valid in conjunction with the General Examination Regulations ("RPO") of Rhine-Waal University of Applied Sciences. They govern the full-time, seven-semester mode of study.

Section 2
Academic objectives; purpose of examination; degree awarded

(1) The bachelor's examination (*Bachelorprüfung*) forms the basis for the professionally qualifying nature of this bachelor's degree. The overall aims and objectives for this degree programme are outlined in Section 3 RPO. A strong command of English is key to success in this degree programme, as it provides the essential basis for the programme's continuous objective of expanding and honing students' professional language skills.

(2) The academic degree "Bachelor of Science", abbreviated as "B.Sc.", is awarded for successfully completing the bachelor's examination.

Section 3
Admission requirements

(1) General admission requirements are defined in Section 4 RPO.

(2) *Intentionally omitted.*

(3) Applicants are ineligible for admission if they have failed the final attempt at a mandatory examination in a previous degree programme that was very similar content-wise to this degree programme and offered by a university subject to German Basic Law.

(4) Sufficient proficiency in English can be demonstrated by a recognised language certificate for level B2 of the CEFR (Common European Framework of Reference for Languages).

(5) Applicants are exempted from this language certificate requirement if they have acquired proficiency in English equivalent to level B2 while earning their

university entrance qualification [*fachgebundene Hochschulreife* or *Fachhochschulreife*] at a German secondary school. This is the case for applicants who have successfully completed at least seven years of English at a German secondary school and earned a final grade of at least “sufficient” (4.0 or better on the German grading scale).

(6) *Intentionally omitted.*

Section 4
Basic internship

Proof of completion of a basic internship within the meaning of Section 4 (3) RPO is not required.

Section 5
Programme structure; Volume of instruction hours; Progression of studies

(1) The total volume of instruction for this degree programme is 134 credit hours (CH, or *SWS* in German).

(2) The modules of this degree programme comprise a total of 210 credits in accordance with the ECTS framework defined in Section 6 (5) RPO.

(3) Intentionally omitted.

(4) Additional information about the breakdown of this degree programme and the type, form and scope of modules is available in the curriculum at the end of this document. Additional information about learning outcomes, qualification aims, contents and forms of examination can be found in the corresponding module guide.

(5) Prerequisites for examination registration, the internship semester, the project, the thesis and colloquium can be found in annex 2.

(6) Intentionally omitted.

Section 6
Internship semester; semester abroad

(1) Internship semester requirements are defined in Section 21 RPO. Support services for students seeking an internship as well as the option of an applied project at Rhine-Waal University of Applied Sciences in lieu of an internship (see Section 21 (4) sentence 2 and 3 RPO) are excluded for this degree programme in accordance with Section 21 (4) sentence 4 RPO.

(2) The study abroad semester is governed by Section 22 RPO. Deviating from Section 22 (5) and (7) RPO, the following conditions also apply to study abroad semesters. Students intending to undertake a study abroad semester must plan to complete at least 20 credits worth of modules/courses or the full-time equivalent of the host university. The study abroad semester can only be recognised in full if at least 20 credits (or the full-time equivalent) were successfully obtained and this is confirmed by an official certificate from the host university. Students who earn fewer than the minimum of 20 credits, but at least 15 credits, must earn at least 5 additional credits at Rhine-Waal University of Applied Sciences to make up for the difference and receive full recognition (20 credits) for the study abroad semester.

(3) *Intentionally omitted.*

(4) Students planning a study abroad semester must conclude with the designated faculty advisor (see module guide) a learning agreement that clearly defines the modules they intend to complete at the host university.

(5) Students who are unable to adhere to their learning agreement for reasons beyond their control must notify the Examination Board without delay to amend their learning agreement accordingly. If students fail to notify the Examination Board properly, in justified cases it can still decide whether to accept credits from modules or courses that were not defined in the learning agreement.

Section 7
Scope of examinations

(1) The time allotted for a written examination depends on the corresponding number of credits. As a rule, 30 minutes are allotted for each credit point, with the total duration not exceeding two hours.

(2) An oral examination generally takes between 20 and 60 minutes.

(3) Assignments, term papers or projects should generally not exceed 10,000 words (approx. 30 pages, DIN A4).

Section 8
Scope and form of the thesis

(1) The main text portion of the thesis should generally be between 15,000 words (approx. 50 pages, DIN A4) and 25,000 words (approx. 70 pages, DIN A4) in length. The thesis may also be supplemented with other media, provided the use of said media as additional documentation is appropriate and helpful within the context of the assigned task. In this case, the length of the text portion of the thesis may deviate from the aforementioned minimum requirement.

(2) The thesis can also be submitted as group work if each student's individual contribution fulfils the requirements set forth in Section 23 (1) RPO and is clearly distinguishable (and thus assessable) due to clear and distinct delimitation by sections, page numbers or other criteria.

Section 9
Admission to the thesis and colloquium

(1) In addition to the requirements for admission to the thesis defined under Section 24 (1) no. 3 RPO, students must also have earned at least 175 credits.

(2) In addition to the requirements for admission to the colloquium defined under Section 27 (2) no. 3 RPO, students must also have earned at least 207 credits.

Section 10
Credit values for the thesis and colloquium

(1) Twelve credits are awarded for passing the bachelor's thesis.

(2) Three (3) credits are awarded for passing the colloquium.

Section 11
Conferral of the bachelor's degree

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

Section 12
Entry into force and expiry

(1) These examination regulations will enter into force on the day after publication in the Official Notices of Rhine-Waal University of Applied Sciences. They apply to students who first enrol in Nature-Inspired Materials, B.Sc. at the Faculty of Technology and Bionics of Rhine-Waal University of Applied Sciences in or after winter semester 2025-26.

(2) Students who enrolled in the bachelor's degree programme Biomaterials Science before winter semester 2025-26 may continue their studies according to the examination regulations dated 4 January 2017 (Official Notice 20/2018), as amended by the second amending statutes from 15 November 2022 (Official Notice 15/2023), until no later than 28 February 2029. The examination regulations from 4 January 2017 (Official Notice 20/2018), as amended by the second amending statutes from 15 November 2022 (Official Notice 15/2023), will expire on 1 March 2029.

(3) Students currently studying according to the examination regulations dated 4 January 2017 (Official Notice 20/2018), as amended by the second amending statutes on 15 November 2022 (Official Notice 15/2023), may submit a written request to the Examination Board to switch to the present examination regulations. The Examination Board is responsible for all credit recognition decisions for modules and examinations completed under previous examination regulations. Upon expiry of the examination regulations from 4 January 2017 (Official Notice 20/2018), as amended by the second amending statutes from 15 November 2022 (Official Notice 15/2023), any students still studying under said examination regulations are considered to have switched to the present examination regulations automatically.

Note: These examination regulations entered into force in their present version on 25 March 2025.

Annex 1: Curriculum

Curriculum									
Modulcode	Modulname	CP	HPW	L	Ex	PT	Pro	Examination form	
								Testat	Graded
	Semester 1								
NIM 1 2201	Mathematics 1	6	6	4	2				x
NIM 1 2202	Chemistry of Materials	6	4	Hybrid		4			x
NIM 1 2203	Physics and Error Statistics	6	4	2	1	1			x
NIM 1 2204	Fundamentals of Project Management	3	2	1	1			x	
NIM 1 2205	Information Competence and Scientific Working	3	2	1	1			x	
NIM 1 2206	Fundamentals of Business and Management	6	4	3	1			x	
	Semester 2								
NIM 2 2207	Mathematics 2	6	6	4	2				x
NIM 2 2208	Organic Chemistry	6	4	2		2			x
NIM 2 2209	Programming for Biomaterials	6	4	2		2			x
NIM 2 2210	Metallic Materials and Testing	6	4	2		2			x
NIM 2 2211	Materials Analysis	6	4	2	1	1			x
	Semester 3								
NIM 3 2212	Non-metallic Materials	6	4	2	1	1			x
NIM 3 2213	Chemistry of Biopolymers	6	4	2	1	1			x
NIM 3 2214	Biochemistry	6	4	2		2			x
NIM 3 2215	Physical Chemistry	6	4	2	1	1			x
NIM 3 2216	Personal and Social Competences	6	4	2	2				x
	Semester 4								
NIM 4 2217	FEM and Materials Simulation	6	4	2	1	1			x
NIM 4 2218	Corrosion and Surface Chemistry	6	4	2	1	1			x
NIM 4 2219	Materials Technology	6	4	3	1				x
NIM 4 2220	Cell Biology and Microbiology	6	4	2	1	1			x
	Focus (1)	6	4						x
	Semester 5								
NIM 5 2221	Sustainability, Quality and Business Process Management	6	4	3	1			x	
NIM 5 2222	Biocompatible Materials	6	4	2		2			x
NIM 5 2223	Recycling and Ecology of Materials	6	4	2		2			x
	Focus (2)	6	4						x
	Focus (3)	6	4						x
	Semester 6								
NIM 6 2224	NIM-Project	5	4				4	x	
	Elective 1	5	4						x
	Elective 2	5	4						x
NIM 6 2225	Internship	15						x	
	Semester 7								
NIM 6 2225	Internship	15						x	
NIM 7 2227	Bachelor Thesis	12							x
NIM 7 2228	Colloquium	3							x
	3 Vertiefungsrichtungen (Focus Fields)								
	Material Technology								
NIM 4 2229	(1) Manufacturing Technology and Factory Equipment	6	4	3	1				x
NIM 5 2232	(2) Material Testing and Failure Analysis	6	4	2		2			x
NIM 5 2233	(3) Inorganic and Composite Materials	6	4	2		2			x
	Management								
NIM 4 2230	(1) Accounting	6	4	2	2				x
NIM 5 2234	(2) General Management	6	4	2		2		x	
NIM 5 2235	(3) Technology and Innovation Management	6	4	2					
	Biochemistry								
NIM 4 2231	(1) Biotechnology and Biodegradable Materials	6	4	4					x
NIM 5 2236	(2) Supramolecular Chemistry and Materials	6	4	2	1	1			x
NIM 5 2237	(3) Smart Functional Materials	6	4	2		2			x
	Wahlfächer (Electives)								
NIM 6 2241	Research-Project	5	4				4	x	
NIM 6 2242	Nanomaterials	5	4	2	1	1			x
NIM 6 2243	Materials inspired by nature	5	4	2	1	1			x
NIM 6 2244	Medical devices	5	4	2		2			x
NIM 6 2245	Numerical Mathematics	5	4	2	2				x
NIM 6 2246	Foreign Language	5	4						

Annex 2: Module prerequisites per Section 5 (5)

Abhängigkeiten im Curriculum des Studienganges Biomaterials Science, B.Sc.

Dependencies

	Recommended	Requires	Required by
Semester 1			
Mathematics 1	Highschool Mathematics: Algebra, Exponential function and Logarithm, Trigonometry	-	Physical Chemistry; Non-metallic Materials; FEM and Materials
Chemistry of Materials	-	-	Chemistry of Biopolymers; Biochemistry
Physics and Error Statistics	-	-	Physical Chemistry; Material Technology; Manufacturing Technology and Factory Equipment
Fundamentals of Project Management	-	-	Manufacturing Technology and Factory Equipment
Information Competence and Scientific Working	-	-	Personal and Social Competence
Fundamentals of Business and Management	-	-	Sustainability, Quality and Business Process Management;
Semester 2			
Mathematics 2	Mathematics 1	-	FEM and Materials Simulation
Organic Chemistry	General Chemistry; Chemistry of Materials	-	Cell Biology and Microbiology; Smart Functional Materials
Programming for Biomaterials	Physics and Error Statistics	-	FEM and Materials Simulation
Metallic Materials and Testing	Chemistry of Materials	-	Recycling and Ecology of Materials; Corrosion and Surface Chemistry; Materials Technology;
Materials Analysis	Chemistry of Materials	-	Recycling and Ecology of
Semester 3			
Non-metallic Materials	Organic Chemistry or Chemistry of Materials	-	Biocompatable Materials; Inorganic and Composite
Chemistry of Biopolymers	Organic Chemistry	Chemistry of Materials	
Biochemistry	Organic Chemistry	Chemistry of Materials	Cell Biology and Microbiology; Biocompatible Materials;
Physical Chemistry	Mathematics 2	Mathematics 1; Physics and Error Statistics	Smart Functional Materials
Personal and Social	-	-	General Management
Semester 4			
FEM and Materials Simulation	Physics and Error Statistics	Mathematics 1; Mathematics 2; Programming for Biomaterials	
Corrosion and Surface	Physical Chemistry	Metallic Materials and Testing	
Materials Technology	Non-metallic Materials; Materials Analysis	Physic and Error Statistic; Metallic Materials and Testing	
Cell Biology and Microbiology	xxx	xxx	
Focus (1)	Chemistry of Biopolymers; Biochemistry	Organic Chemistry	
Semester 5			
Sustainability, Quality and Business Process Management	-	Fundamentals of Business and Management	
Biocompatible Materials	Organic Chemistry	Biochemistry; Metallic Materials and Testing; Non-metallic Materials	
Recycling and Ecology of Materials	Non Metallic Materials; Material Analysis	Metallic Materials and Testing	
Focus (2)		See below	
Focus (3)		See below	
Semester 6			
NIM-Project		Credit point minimum: 60	
Elective 1		As elective	
Elective 2		As elective	
Internship		Credit point minimum: 90	
Semester 7			
Internship		Credit point minimum: 90	
Bachelor Thesis		Credit point minimum: 175	
Colloquium		Thesis	
3 Vertiefungsrichtungen (Focus Fields)			
Material Technology			
(1) Manufacturing Technology and Factory Equipment	-	Project Management; Physics and Error Statistics	
(2) Material Testing and Failure Analysis	Metallic Materials and Testing	Fundamentals of Business and Management	
(3) Inorganic and Composite Materials	Metallic Materials and Testing, Non-metallic Materials	Biochemistry	
Management			
(1) Accounting	Material Analysis	Metallic Materials and Testing	
(2) General Management	-	Personal and Social Competences	
(3) Technology and Innovation Management	-	Organic Chemistry; Chemistry of Biopolymers	
Biochemistry			
(1) Biotechnology and Biodegradable Materials	Material Analysis	Non-metallic Materials	
(2) Supramolecular Chemistry and Materials	-	Fundamentals of Business and Management	
(3) Smart Functional Materials	Metallic Materials and Testing; Non-metallic Materials	Organic Chemistry; Physical Chemistry	
Electives			
Project 2			
Nanomaterials			
Materials inspired by nature			
Medical devices			
Numerical Mathematics			