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HOCHSCHULE RHEIN-WAAL
Rhine-Waal University of Applied Sciences

Examination Regulations

for Mechatronic Systems Engineering B.Sc.

Faculty of Technology and Bionics
Rhine-Waal University of Applied Sciences

Dated 9 January 2018
(Official Notice 17/2018)

As amended by the fourth amending statutes
Dated 19 June 2024
(Official Notice 08/2024)

Contents

Section 1
Scope

These Examination Regulations apply to Mechatronic Systems Engineering B.Sc., offered in English at the Faculty of Technology and Bionics of Rhine-Waal University of Applied Sciences, 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 forms the basis for the professionally qualifying nature of this bachelor's degree. The overall aims and objectives for the 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) A "related or comparable programme of study" within the meaning of Section 4 (6) RPO is defined as any bachelor's or *Diplom* degree programme at a university or university of applied sciences if the vast majority of said programme's contents are attributable to engineering, with an emphasis on mechatronics.

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

(5) Applicants are exempted from this language certificate requirement if they acquired proficiency in English equivalent to level B2 as part of their university entrance qualification at a secondary school in Germany. This is considered to be the case for applicants who have successfully completed at least seven years of English at a German secondary school and earned a final mark of at least "sufficient" (4.0 or better on the German grading scale).

(6) The admissions process and requirements for non-EU international applicants are set forth in the Entrance Examination Regulations for Mechatronic Systems Engineering B.Sc. at Rhine-Waal University of Applied Sciences dated 24 March 2014 (Official Notice 15/2014).

Section 4
Basic internship

(1) The basic eight-week internship as defined by Section 4 (3) RPO should be completed at an external company, public office or other organisation and familiarise students with questions and matters relating to materials engineering, general engineering, business organisation and business economics.

(2) The requirements for the aforementioned focus areas in the basic internship are set forth in the Internship Regulations for Engineering Programmes of the Faculty of Technology and Bionics at Rhine-Waal University of Applied Sciences.

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

(1) The total volume of instruction for this degree programme is 134 semester hours (SWS).

(2) The modules of this degree programme comprise a total of 210 credits according to 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 study and examination plan in the annex. Additional information about learning outcomes, qualification aims, contents and forms of examination is available in the corresponding module guide, which is available for viewing in the faculty's central office.

(5) Progression in this degree programme is subject to the following thresholds:

(a) In order to register for examinations scheduled for the fourth semester or higher, students must have earned at least 53 credits from modules scheduled for the first two semesters of study according to the study and examination plan. This prerequisite does not apply to the elective module Foreign Language.

(b) In order to register for examinations scheduled for the fifth semester or higher, students must have earned at least 63 credits from modules scheduled for the first two semesters of study according to the study and examination plan. This prerequisite does not apply to the elective module Foreign Language.

(c) The admission prerequisites for the internship semester / study abroad semester remain unaffected.

(6) For the elective module Foreign Language, non-native speakers of German should register for a German course. Native speakers of German may register for any other language course offered.

Section 6
Internship semester; semester abroad

(1) Support for students seeking an internship (see Section 21 (4) sentence 1 RPO) as well as the option of an applied project at the University instead 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) Deviating from Section 22 (5) and (7) RPO, the following additional requirements apply to study abroad semesters. Students planning a semester abroad must complete modules/courses worth a minimum of 30 credits (or the full-time equivalent of the host university). The semester abroad can only be recognised in full if at least 30 credits (or the full-time equivalent) were successfully earned and this is confirmed by an official certificate from the host university. Students who earned fewer than 30 credits, but at least 15 credits, must complete additional modules at Rhine-Waal University of Applied Sciences to make up for the difference and receive full credit (30 credits) for the semester abroad.

(3) The study abroad semester is considered failed if fewer than 15 credits were earned.

(4) Students planning a study abroad semester must conclude a learning agreement with the faculty advisor designated in the module guide, which 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 report their circumstances to the Examination Board without delay to arrange a new learning agreement. If students fail to report in, the Examination Board can decide in justified cases whether to accept credits from modules or courses that were not outlined in the learning agreement.

Section 7
Scope of examinations

(1) The time allotted for a written examination depends on the number of credits. As a rule, 30 minutes are allotted for every one credit point, though the total duration should not exceed two hours.

(2) An oral examination generally takes between 30 and 45 minutes.

(3) Assignments, term papers or projects should generally not exceed approx. 10,000 words (or 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 (or approx. 50 pages, DIN A4) and approx. 25,000 words (or 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 credits are awarded for passing the colloquium.

Section 11
Conferral of the bachelor's degree

The bachelor's 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.

(2) Students who are currently enrolled in the dual version of Mechatronic Systems Engineering B.Sc. may continue their studies according to the previous examination regulations dated 9 January 2018 (Official Notice 17/2018), as amended by the second amending statutes from 19 August 2020 (Official Notices 01/2021), until 28 February 2030 at the latest.

(3) Students currently enrolled in the dual version of this degree programme may submit a written request to the Examination Board to switch to the full-time version instead.

(4) These examination regulations will expire on 28 February 2030.

Note: The current version of these examination regulations entered into force on 1 August 2024.

Annex 1

Curriculum MSE		HPW	Type						Examination form		CP	HPW						
			V	SL	S	Ü	Pra	Pro	Attestation	graded		WS1	SS2	WS3	SS4	WS5	SS6	WS7
1st Semester																		
2000	Introductory Mathematics	8	5			3				x	8	8						
2008	Statics and Strength of Materials	4	2			2				x	5	4						
2011	Programming	4	2				2		x	x	5	4						
2013	Business Economics & Project Management	4	3				1		x		5	4						
2305	Fundamentals of Electrical Engineering	4	2			1	1		x	x	5	4						
2900	Introduction to Engineering	3	2		1				x		3	3						
2nd Semester																		
2001	Applied Mathematics	8	5			3				x	7		8					
2009	Advanced Strength of Materials	4	2			2				x	5		4					
2012	Advanced Programming	4	2				2		x	x	5		4					
2304	Analog Electronics	4	2			1	1		x	x	5		4					
2701	Engineering Drawing and Design	4	2			1	1		x	x	5		4					
2706	Manufacturing Technology	4	3			1				x	5		4					
3rd Semester																		
2010	Dynamics	4	2			2				x	5			4				
2108	Materials and Testing	4	2			1	1			x	5			4				
2306	Microcontroller	4	2				2		x	x	5			4				
2705	Engineering Design	4	2			2				x	5			4				
2708	Thermodynamics	4	2			1	1			x	5			4				
2901	Drives & Power Electronics	4	2			2				x	5			4				
4th Semester																		
2002	Numerical Mathematics	4	3			1				x	5				4			
2311	Embbeded Systems	4	2				2			x	5				4			
2902	System Theory and Controls	4	2			1	1			x	5				4			
2904	Modelling and Simulation	4	2				2			x	5				4			
	Focus Field (see catalogue individual subjects: Focus Fields)																	
	Focus Field Subject 1	4									5				4			
	Focus Field Subject 2	4									5				4			
5th Semester																		
2014	Cross-Cultural Management and Creativity	4	2			2			x		5					4		
2015	Group Project	1						1	x		5					1		
2903	Controls	4	2			1	1			x	5					4		
2907	Sensors and Actuator Networks	4	2			1	1			x	5					4		
	Focus Field (see catalogue individual subjects: Focus Fields)																	
	Focus Field Subject 3	4									5					4		
	Focus Field Subject 4	4									5					4		
6th Semester																		
2016	Internship / Semester abroad								x		30							
7th Semester																		
2017	Bachelor Thesis									x	12							
2018	Colloquium									x	3							
2910	Technology and Innovation Management	4	2				2			x	5							4
2912	Entrepreneurship	2						2	x		2							2
	Elective (see catalogue individual subjects: Electives)	3									5							3
		133	V	SL	S	Ü	Pra	Pro	Attestation	graded	210	27	28	24	24	21		9
Overview		HPW	Type						Examination form		CP	WS1	SS2	WS3	SS4 HPW	WS5	SS6	WS7

Catalogue Individual Subjects MSE		HPW	Type						Examination form		CP	HPW						
			V	SL	S	Ü	Pra	Pro	Attestation	graded		WS1	SS2	WS3	SS4	WS5	SS6	WS7
Focus Fields *//***/**** **																		
	Focus Field Simulation in Mechatronics	**16**	**8**			**5**	**3**				**20**				**8**	**8**		
2710	Fluid Mechanics	4	2			1	1			x	5				4			
2908	Multibody Dynamics	4	2			2				x	5				4			
2309	Object-oriented Programming	4	2				2			x	5					4		
2905	Finite Element Method	4	2			2				x	5					4		
	Focus Field Applied Mechatronics (ME focus)	**16**	**8**			**5**	**3**				**20**				**8**	**8**		
2710	Fluid Mechanics	4	2			1	1			x	5				4			
2909	Vehicle Technology	4	2			1	1			x	5				4			
2717	Mobile Hydraulics	4	2			1	1			x	5					4		
2910	Robotics	4	2			2				x	5					4		
	Focus Field Applied Mechatronics (EL focus)	**16**	**8**			**4**	**4**				**20**				**8**	**8**		
2303	Digital Electronics	4	2			1	1		x	x	5				4			
2912	Optical Systems	4	2			1	1			x	5				4			
2308	Signal Transmission	4	2			1	1			x	5					4		
2314	Practical Electronics	4	2			**1**	**1**			x	5					4		
	Focus Field Bionics	**16**	**8**			**4**	**2**	**2**			**20**				**8**	**8**		
2723	Biomimetic Science	4	2			2				x	5				4			
2724	Zoological Physics	4	2				2			x	5				4			
2725	Bioinspiration	4	2			2				x	5					4		
2726	Bionic Design	4	2					2	x		5					4		
Electives																		
2020	Foreign Language								x		5							
2021	Module from any other Bachelor study course HSRW								x	x	5							
2911	Introduction to Scientific Methods in Mechatronics	2	1				1			x	5							2

Explanations / Conditions

* Die Fakultät behält sich das Recht vor, sowohl eine Mindestteilnehmerzahl für das Zustandekommen eines Faches im Fokusfeld / Wahlbereich als auch eine Maximalteilnehmerzahl festzulegen. Die Möglichkeit des Erreichens der vorgeschriebenen Kreditpunktanzahl aus

** Aus dem Wahlbereich können mit dem Einverständnis des Prüfungsausschusses der Fakultät Technologie und Bionik auch Fächer mit einem Gesamtumfang von 5 Kreditpunkten aus dem gesamten Bachelor-Studienangebot der Hochschule Rhein Waal gewählt werden / As elective a maximum of 5 CP can be chosen with the consent of the examination committee of the faculty Technology and Bionics from any Bachelor study programme at the Rhine-Waal University of Applied Science.

*** Die Fakultät Technologie und Bionik behält sich das Recht vor, das Fächerangebot im Wahlbereich zu ändern / The faculty Technology and Bionics reserves the right to change the catalogue of electives.

**** Aufgrund von stundenplantechnischen Randbedingungen ist nicht auszuschließen, dass Fächer verschiedener Fokusfelder sowie Fächer des Wahlbereichs zeitgleich angeboten werden / Due to time tabling constraints subjects from different focus fields and electives may

Abbreviations

HPW Semesterwochenstunden / hours per week
CP Kreditpunkte / credit points
V Vorlesung / lecture
SL Seminaristische Vorlesung / seminar lecture
S Seminar / seminar
Ü Übung / exercise
Pra Praktikum / practical work
Pro Projekt / project
WSx Wintersemester / winter semester
SSx Sommersemester / summer semester