- UNOFFICIAL VERSION -

Departmental Examination Regulations (FPO-M)
for the

Master's Degree in

Mechatronics (MECH)

at the
University of Siegen

Issued 28 September 2023
as amended on 19 September 2024

(Master's Degree Program in Mechatronics)

Consolidated Text

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These regulations consolidate the current valid regulations as established in:

- The *Fachprüfungsordnung (FPO-M) für das Fach Mechatronics (MECH) im Masterstudium an der Universität Siegen* dated 28 September 2023 (*Amtliche Mitteilung* 72/2023),
- and the *Ordnung zur Änderung der Fachprüfungsordnung (FPO-M) für das Fach Mechatronics (MECH) im Masterstudium an der Universität Siegen* dated 19 September 2024 (*Amtliche Mitteilung 58/2024*).

Note: This English translation is provided solely for convenience; only the German version as formally published in an *Amtliche Mitteilung* from the University of Siegen is legally binding. In case of discrepancies, the German text shall prevail.

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Article 1
Scope

(1) These Departmental Examination Regulations, together with the General Examination Regulations for the Master's Degree (RPO-M) at the University of Siegen from 28 February 2019 (*Amtliche Mitteilung* 5/2019), as amended, govern studies in the subject of Mechatronics.

(2) Mechatronics can be studied as a single subject degree program.

Article 2
Regulations for the Single Subject Degree in Mechatronics

§ 1
Degree Program Model

The master's degree program in mechatronics is available as a single subject degree program.

§ 2
Objectives for the Degree Program

The master's degree in mechatronics is the culmination of a cross-disciplinary degree program combining the disciplines of electrical engineering, mechanical engineering, and computer science in ways that address the special challenges of developing integrated systems. The English-language master's degree program in mechatronics builds upon a successfully completed first-cycle degree. It imparts students with the necessary specialist knowledge, abilities, and methods to allow them to engage in interdisciplinary research work, to undertake a critical assessment of scientific insights, and to act responsibly. Through the colloquium at the end of the master's thesis, students reinforce their ability to present academic engineering projects at a master's level. The degree program prepares students in accordance with a professional profile for engineers encompassing the enhanced qualifications required to work in the interdisciplinary field of mechatronics, acknowledging the constantly growing ties between classic electrical engineering, mechanical engineering, and computer science. It is intended to train leaders in the research & development fields, especially in internationally active enterprises, and early-career academics, by laying the groundwork for doctoral studies in the engineering sciences following the conclusion of the master's studies.

§ 3
Master's Degree

After successful completion of the course of study, the university awards the academic degree of "Master of Science" (M.Sc.).

§ 4
Special Admission Requirements

(1) Supplemental to § 4 RPO-M, admission to the master's program in Mechatronics requires proof of a first-cycle degree from a higher educational institution in an engineering discipline related to electrical engineering or mechanical engineering, or proof of a first-cycle university degree in a comparable bachelor's degree program.

(2) Comparable bachelor's degree programs within the meaning of Paragraph 1 must convey competencies in the following areas and in the indicated minimum scope.

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Area	Minimum scope
Fundamentals of Mathematics	20 CP
Fundamentals of Natural Sciences	15 CP
Fundamentals of Electrical and Measurement Engineering or Fundamentals of Engineering Mechanics	10 CP
Project Work (including bachelor's thesis)	10 CP

(3) The bachelor's degree must be a qualified degree within the meaning of § 4 Para. 2 RPO-M. A bachelor's degree will be considered qualified if it was completed with a grade of at least 2.7.

(4) An additional requirement for admission to the master's degree in Mechatronics (non-teacher education) is proof of English-language proficiency at the B2 level or higher under the Common European Framework of Reference for Languages (CEFR) or at least an 88 on the TOEFL iBT (Internet based TOEFL) or an IELTS of 6.0.

(5) Admission may be granted on a conditional basis pursuant to § 4 para. 4 RPO-M; the Examination Board for Mechatronics decides on a case-by-case basis.

(6) Enrollment is barred to a candidate who has finally failed an examination in a degree program of notably similar content to the desired degree program and where the examination regulations define the examination in question as essential for the desired degree program.

§ 5
Study Abroad and Internships

Studies abroad and/or internships are not mandatory for the degree program in Mechatronics.

§ 6
Examination Board

(1) To handle the responsibilities denoted in § 8 RPO-M and in this article, Faculty IV — School of Science and Technology establishes an Examination Board for the master's degree program in Mechatronics. The Examination Board for Mechatronics is authorized to fulfill tasks on behalf of the Office of Examinations in Mechatronics. The Examination Board may delegate tasks to the Office of Examinations in Mechatronics.

(2) The Examination Board comprises

1. four members of the teaching faculty,
2. two members of the academic staff, and
3. two members of the student body.

The groups of teaching faculty and of academic staff within the Examination Board for Mechatronics should feature equal number of members from the departments of "Electrical Engineering and Computer Science" and "Mechanical Engineering."

(3) The term of office for members of the teaching faculty and members from the academic staff totals three years. The term of office for members of the student body totals one year.

(4) From each member of the groups in Paragraph 2, at least one deputy shall be elected in the event that appointed members are unable to attend, with a term of office based on Paragraph 3.

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§ 7
Examiners, Independent Co-Examiners

(1) Authority to conduct examinations is governed by § 9 RPO-M.

(2) Independent co-examiners for oral examinations must, at minimum, already hold a qualification equal or superior to the qualification being awarded.

§ 8
Credit Point Requirements and Structure of the Degree Program

(1) Successful completion of the master's degree in Mechatronics requires 120 credit points (CP).

(2) The standard term of study totals four semesters. The course of studies may only be undertaken full time. The degree program may only be started in the winter semester.

(3) The structure of the master's degree program in Mechatronics varies based on the nature of the previously completed bachelor's degree. The course of study encompasses an alignment block of two modules (12 CP; cf. Paragraph 4) based on the student's previous education (alignment level); a compulsory block (compulsory level) comprising seven core modules (42 CP; cf. Paragraph 7); the core elective block (elective level) comprised of six core electives (36 CP; cf. Paragraph 6); and the Master's Thesis (30 CP; 4MECHMA061).

(4) During the alignment block, holders of the bachelor's degree in Electrical Engineering enroll in two compulsory modules: 4MECHMA001 "Introduction to Mechanical Engineering I" and 4MECHMA002 "Introduction to Mechanical Engineering II," each awarding 6 CP (cf. Annex 7). During the alignment block, holders of the bachelor's degree in Mechanical Engineering enroll in two compulsory modules: 4MECHMA011 "Introduction to Electrical Engineering I" and 4MECHMA012 "Introduction to Electrical Engineering II," each awarding 6 CP (cf. Annex 7).

(5) If the previous educational level cannot be clearly categorized, then the Examination Board evaluates the individual case based on the underlying bachelor's degree as part of the admission to the master's degree program and assigns the candidate to the respective alignment block.

(6) During the electives block, six elective modules totaling 36 CP are selected from the core electives catalog (cf. Paragraph 7 together with Appendix 4), which allow for an individually shaped degree plan for the master's degree in Mechatronics.

(7) Module Overview:

No.	Module	CW[1]	EX[2]	CP[3]	C / CE[4]	Link to module description
Alignment Block *(Alignment Level)*				**12**	**C**	
Alignment Block Mechanical Engineering						
4MECHMA001	Introduction to Mechanical Engineering I	0	1	6	C (EE*)	Annex 7
4MECHMA002	Introduction to Mechanical Engineering II	0	1	6	C (EE*)	Annex 7
Alignment Block Electrical Engineering						
4MECHMA011	Introduction to Electrical Engineering I	0	1	6	C (ME*)	Annex 7
4MECHMA012	Introduction to Electrical Engineering II	0	1	6	C (ME*)	Annex 7
Compulsory Block *(Compulsory Level)*				**42**	**C**	
4MECHMA021	Machine Dynamics and System Dynamics	0	1	6	C	Annex 7
4INFBA100	Embedded Control	1	1	6	C	FPO-B INF

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4INFMAEX901	Introduction to Programming	0	1	6	C	FPO-M INF
4MECHMA022	Automation Technologies	0	1	6	C	Annex 7
(Continued)						
4MECHMA023	Software Engineering	0	1	6	C	Annex 7
4MBMA005	Signal Processing	0	1	6	C	FPO-M MB
4MBMA059	Automatic Control	0	1	6	C	FPO-M MB
***Core Elective Block** (Elective Level)*				**36**	**CE**	
Module numbers pursuant to Annex 4	6 modules of 6 CP each from core elective block (Annex 4) pursuant to Paragraph 4	0-6	6	6 CP each	CE	Annex 7, FPO-B/M INF, FPO-M MB, FPO-M ET
4MECHMA061	Master's Thesis	0	1	**30**	C	Annex 7

[1] CW = Coursework **I** [2] EX = Examination **I** [3] CP = Credit Points **I** [4] C/CE = Compulsory Module/Core Elective Module **I**

* EE = Compulsory module for students with prior knowledge of electrical engineering **/** ME = Compulsory module for students with prior knowledge of mechanical engineering

The recommended program semester (*Fachsemester*) is determined from the recommended course sequence (Annex 1).

(8) Potential instructional formats are: Lecture, exercise, lecture with exercise, seminar, and lab. The concrete instructional format must be denoted in the module description. The different respective core elective fields can potentially have other instructional forms beyond those mentioned here.

(9) Instruction is conducted in English.

§ 9
Coursework and Examinations/Assessments

(1) Supplemental to § 10 Para. 1 and § 11 Para. 6 RPO-M, the following formats are stipulated for coursework and examinations/assessments.

1. Coursework:
   a) Lab (written report of roughly 10 pages);
   b) Homework (written composition of roughly 10 pages);
   c) Exercise and project problems (1-15 problems, duration approx. 30-300 hours);
   d) Presentation (15 min.);
   e) Active and regular participation and presentation;
   f) Seminar work.
2. Examinations/assessments:
   a) Written Examination (60-180 min.);
   b) Oral Examination (20-60 min.);
   c) Presentation (20-40 min.);
   d) Exercise sheets (up to 10 pages).

(2) The prerequisite for admission to the examination/assessment for the module 4INFMA204 “Deep Learning” is successful completion of the coursework for that module.

(3) The prerequisite for admission to the examination/assessment for the module 4INFMA307 “Advanced programming in C++” is successful completion of the coursework for that module.

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(4) The prerequisite for admission to the examination/assessment for the module 4ETMA250 “Computational Imaging” is successful completion of the coursework for that module.

(5) The prerequisite for admission to the examination/assessment for the module 4ETMA252 “Topics in Computational Imaging” is successful completion of the coursework for that module.

§ 10
Repetition of Examinations

(1) Repetition of examinations/assessment is governed by § 12 RPO-M.

(2) If an examination or assessment must be retaken, this must occur within two semesters following the semester in which the unsuccessful examination or assessment attempt took place. If the examination/assessment to be repeated is not offered within the deadlines stipulated in Sentence 1, then it must be repeated at the earliest possible time. Students lose the right to retake the examination/assessment if they do not register to retake the examination/assessment within the time frame stipulated in this paragraph. This deadline may be extended by the Examination Board by request, especially in the cases denoted in § 64 para. 3A HG NRW or in the event of a semester on leave during that period.

(3) If a core elective module is finally failed, written application may be made once to the Examination Board for the selection of an alternative core elective module.

§ 11
Master's Thesis

(1) The Master's Thesis (master's thesis and colloquium) is worth 30 credit points (CP) toward the master’s degree.

(2) Application for admission to the Master's Thesis must be submitted in *writing or electronically* to the Examination Board. Admission is governed by § 13 RPO-M. Moreover, admission may only be granted if the modules from the respective alignment block 4MECHMA001 and 4MECHMA002 or 4MECHMA011 and 4MECHMA012 as well as 60 CP in total have been acquired in modules from the Mechatronics degree program.

(3) The Master’s Thesis must be completed within a six-month time frame. It may be submitted no earlier than 20 weeks after registration. The topic of the Master’s Thesis may only be changed once, within four weeks after registration.

(4) The Master’s Thesis must be prepared in the English language. It may be assessed by any member of the teaching faculty in Faculty IV—School of Science and Technology or any habilitated member of the academic staff. The candidate has the right to propose the topic of the thesis as well as one assessor. Following a consultation with the proposed lead assessor, the chairperson of the Examination Board selects a lead assessor and second assessor as well as the topic of the master’s thesis. The master’s thesis will be distributed by the chair of the Examination Board.

(5) One copy of the master’s thesis must be submitted as a bound hard copy. It must also be submitted in electronic form to the Examination Board for mechatronics. In addition, an electronic copy of the master’s thesis compatible with the search function must be submitted to the lead assessor together with all annexes (such as programming code, models, technical drawings, or circuitry diagrams). The electronic form may be used to verify the individual authorship by means of plagiarism detection software.

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(6) The master's thesis is defended in a colloquium (approx. 30 min. presentation with 10-20 minute follow-on discussion). The grade for the colloquium represents 10-30% of the overall grade for the Master's Thesis. The percentage of the final grade derived from the colloquium will depend on the nature of the Master's Thesis and will be shared with the candidate prior to application for admission to the Master's Thesis by the advising faculty member.

§ 12
Grades, Calculation of Grades

The assessment and calculation of grades is governed by § 21 RPO-M.

§ 13
Application and Transitional Rules

(1) These Departmental Examination Regulations apply for all students who have enrolled for the first time in this master's degree program in mechatronics at the University of Siegen starting with Winter Semester 2023/2024.

(2) The examination regulations for the multidisciplinary master's degree program in Mechatronics at the University of Siegen dated 3 July 2013 (*Amtliche Mitteilung* 75/2013), last amended by the *Zweite Ordnung zur Änderung der Prüfungsordnung für den multidisziplinären Masterstudiengang „Mechatronics" der Universität Siegen* dated 20 June 2016 (*Amtliche Mitteilung* 55/2016), expire on 30 September 2025. Students who were enrolled in the master's degree program in Mechatronics prior to Winter Semester 2023/2024 can complete their studies until that date based on those examination regulations.

(3) Students who were already enrolled in the master's degree program in mechatronics prior to Winter Semester 2023/2024 have the option to request that their studies be completed based on the stipulations of the General Examination Requirements for the Master's Degree (RPO-M) at the University of Siegen dated 28 February 2019 (*Amtliche Mitteilung* 5/2019) as amended, as well as these Departmental Examination Regulations. This application must be submitted to the relevant Examination Board for Mechatronics and may not be withdrawn.

Article 3
Regulations for the Degree Component as part of Combination Degree Program (Non-Teacher Education)

Not applicable.

Article 4
Regulations for the Degree Component as Part of Teacher Education

Not applicable.

Article 5
Cross-Departmental Export Modules

Not applicable.

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Article 6
Entry into Effect and Publication

(...)

This set of regulations governs the entry into effect of the original department examination regulations. This official announcement includes the version valid from 20 September 2024.

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Annexes

Recommended Course Sequences

Annex 1: Recommended course sequences by degree model for single subject degree programs in Article 2

1) Recommended course sequence for master's degree in mechatronics (for students with prior knowledge in the field of mechanical engineering)

1st Semester of Studies Winter Semester 1	2nd Semester of Studies Summer Semester 1	3rd Semester of Studies Winter Semester 2	4th Semester of Studies Summer Semester 2
4MECHMA011 Introduction to Electrical Engineering I 6 CP / 4 Hours per Week per Semester	**4MECHMA012** Introduction to Electrical Engineering II 6 CP / 4 Hours per Week per Semester	**4INFBA100** Embedded Control 6 CP / 4 Hours per Week per Semester	**4MECHMA061** Master's Thesis 30 CP
4MECHMA022 Automation Technologies 6 CP / 4 Hours per Week per Semester	**4MECHMA021** Machine Dynamics and System Dynamics 6 CP / 4 Hours per Week per Semester	**4MECHMA023** Software Engineering 6 CP / 4 Hours per Week per Semester	
4INFMAEX901 Introduction to Programming 6 CP / 4 Hours per Week per Semester	**4MBMA005** Signal Processing 6 CP / 4 Hours per Week per Semester	Core Elective Module (cf. Annex 4) 6 CP / 4 Hours per Week per Semester	
Core Elective Module (cf. Annex 4) 6 CP / 4 Hours per Week per Semester	**4MBMA059** Automatic Control 6 CP / 4 Hours per Week per Semester	Core Elective Module (cf. Annex 4) 6 CP / 4 Hours per Week per Semester	
Core Elective Module (cf. Annex 4) 6 CP / 4 Hours per Week per Semester	Core Elective Module (cf. Annex 4) 6 CP / 4 Hours per Week per Semester	Core Elective Module (cf. Annex 4) 6 CP / 4 Hours per Week per Semester	
Alignment: 6 CP Compulsory: 12 CP Core Elective: 12 CP	Alignment: 6 CP Compulsory: 18 CP Core Elective: 6 CP	 Compulsory: 12 CP Core Elective: 18 CP	MA: 30 CP
Total: 30 CP **12 Hours per Week per Semester + Core Electives**	**Total: 30 CP** **16 Hours per Week per Semester + Core Electives**	**Total: 30 CP** **8 Hours per Week per Semester + Core Electives**	**Total: 30 CP**

2) Recommended course sequence for master's thesis in mechatronics (for students with prior knowledge in the field of electrical engineering)

1st Semester of Studies Winter Semester 1	2nd Semester of Studies Summer Semester 1	3rd Semester of Studies Winter Semester 2	4th Semester of Studies Summer Semester 2
4MECHMA001 Introduction to Mechanical Engineering I 6 CP / 4 Hours per Week per Semester	**4MECHMA002** Introduction to Mechanical Engineering II 6 CP / 4 Hours per Week per Semester	**4INFBA100** Embedded Control 6 CP / 4 Hours per Week per Semester	**4MECHMA061** Master's Thesis 30 CP
4MECHMA022 Automation Technologies 6 CP / 4 Hours per Week per Semester	**4MECHMA021** Machine Dynamics and System Dynamics 6 CP / 4 Hours per Week per Semester	**4MECHMA023** Software Engineering 6 CP / 4 Hours per Week per Semester	
4INFMAEX901 Introduction to	**4MBMA005** Signal Processing	Core Elective Module (cf. Annex 4)	

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Programming 6 CP / 4 Hours per Week per Semester	6 CP / 4 Hours per Week per Semester	6 CP / 4 Hours per Week per Semester	
Core Elective Module (cf. Annex 4) 6 CP / 4 Hours per Week per Semester	**4MBMA059** Automatic Control 6 CP / 4 Hours per Week per Semester	Core Elective Module (cf. Annex 4) 6 CP / 4 Hours per Week per Semester	
Core Elective Module (cf. Annex 4) 6 CP / 4 Hours per Week per Semester	Core Elective Module (cf. Annex 4) 6 CP / 4 Hours per Week per Semester	Core Elective Module (cf. Annex 4) 6 CP / 4 Hours per Week per Semester	
Alignment: 6 CP Compulsory: 12 CP Core Elective: 12 CP	Alignment: 6 CP Compulsory: 18 CP Core Elective: 6 CP	 Compulsory: 12 CP Core Elective: 18 CP	MA: 30 CP
Total: 30 CP **12 Hours per Week per Semester + Core Electives**	**Total: 30 CP** **16 Hours per Week per Semester + Core Electives**	**Total: 30 CP** **8 Hours per Week per Semester + Core Electives**	**Total: 30 CP**

Annex 2: Recommended course sequences by degree model for combination degree programs (non-teacher education) in Article 3

Not applicable.

Annex 3: Recommended course sequences by degree model in teacher education in Article 4

Not applicable.

Core Elective Modules

Annex 4: List of core elective modules pursuant to Article 2 § 8 para. 6[*1]

No.	Module	CW	EX	Credit Points	Link to module description
Modules from the degree program in mechanical engineering					
4MBMA052	Condition Monitoring	0	1	6	FPO-M MB
4MBMAEX429	Applied Methods of Fluid Mechanics for Mechatronics	0	1	6	FPO-M MB
4MBMAEX430	Data-Driven Modelling for Mechatronics	0	1	6	FPO-M MB
Modules from Degree Programs in Computer Science					
4INFBA013	Introduction to Machine Learning	0	1	6	FPO-B INF
4INFMA204	Deep Learning	1	1	6	FPO-M INF
4INFMA208	Machine Vision	0	1	6	FPO-M INF
4INFMA212	Unsupervised Learning	0	1	6	FPO-M INF
4INFMA307	Advanced Programming in C++	1	1	6	FPO-M INF
Modules from the degree program in electrical engineering					
4ETMA160	Reliability of Technical Systems	0	1	6	FPO-M ET
4ETMA204	Data Communications Technology I	0	1	6	FPO-M ET
4ETMA250	Computational Imaging	1	1	6	FPO-M ET
4ETMA252	Topics in Computational Imaging	1	1	6	FPO-M ET
4ETMA254	Data Communications Technology II	0	1	6	FPO-M ET

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4ETMA255	Communications and Information Security I	0	1	6	FPO-M ET
4ETMA256	Communications and Information Security II	1	1	6	FPO-M ET
4ETMA257	Introduction to Compressive Sensing	0	1	6	FPO-M ET
4ETMA258	Selected Elements of Compressive Sensing	0	1	6	FPO-M ET
4ETMA259	Data Communication Networks	0	1	6	FPO-M ET
4ETMA350	Microelectronics Sensors	0	1	6	FPO-M ET
4ETMA354	Microelectronics	0	1	6	FPO-M ET
4ETMA167	Data Science for Dynamical Systems	1	1	6	FPO-M ET
Modules from the degree program in mechatronics					
4MECHMA031	Advanced Driver Assistance Systems	0	1	6	Annex 7
4MECHMA032	Mechatronic Systems	1	1	6	Annex 7
4MECHMA033	Materials Science and Engineering	0	1	6	Annex 7

Annex 5: List of core elective modules pursuant to Article 3

Not applicable.

Annex 6: List of core elective modules pursuant to Article 4

Not applicable.

Module Descriptions

Annex 7: Module Descriptions for Article 2

If a module is applied in different degree programs or degree components, then the status can vary between "Compulsory" or "Core Elective" depending on the degree program or degree component. The binding status is determined in the module overview in § 8 and the Annex "Core Elective Modules" of the respective FPO.

No.	4MECHMA001		
Module Title	Introduction to Mechanical Engineering I		
Compulsory/Core Elective	C		
Module Length	2 semesters		
Frequency	01.1: WS; 01.2: SS		
Language of Instruction	English		
Credit Points	6		
Weekly Contact Hours	4		
On-Campus Study	60 h		
Independent Study	120 h		
Workload	180 h		
Instructional Format	**Courses/Module Elements (if applicable)**	**Group Size**	**Weekly Contact Hours**
Lecture	01.1: Engineering Design I	40	2
Lecture	01.2: Engineering Design II	40	2
Academic Requirements	**Format**		**Length / Scope**
Examinations	Written Examination		120 min.
Coursework	None		
Learning Outcomes	The module "Introduction to Mechanical Engineering I," as described in the following, conveys to students the following learning/qualification goal: They acquire the necessary specialist skills to take part in the field of		

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	product development at a master's level and acquire methodological competence in their application. In terms of learning outcomes, students can select and apply the acquired methods in a situationally appropriate manner. They can assess mechatronic products critically, recognize problem areas in mechatronic construction, and compose solutions in a systematic manner. To achieve this, the following learning methodologies are used: Technical knowledge is taught and explained in lectures, with practically oriented exercises used in some cases to discuss and deepen this knowledge. The goal of "Engineering Design I" is to convey to students the necessary methodological competency to develop products systematically, creatively, and in accordance with international standards. Through an extensive clarification of tasks, systematic analyses, and documented assessment of wirk-structures as well as the use of quality assurance methods, students gain the ability to solve product development products and counteract errors early. The coursework focuses on an understanding of rules and methods for the design and construction of feasible product concepts. A fundamental knowledge of reading and preparing technical drawings is conveyed. In "Engineering Design II," students learn important fundamentals and rules for product development to understand the mechanical components of a mechatronic system. This includes basic insights into material behavior and component failure as well as the selection and implementation of standard mechanical engineering components, design for X, fundamental rules and principles of design, as well as virtual product development. In addition, the students learn to estimate the impact of their decisions on costs and to account for this during design. *Social Competencies:* Exercises can be conducted through group work. Students support one another in applying knowledge from in the lecture portion. *Technical Competencies: 90 %; Social Competencies: 10 %*
Course Content	- Introduction to Technical Drawing - Methodic Development of Products - Quality Management Methods - Fundamentals of Materials Mechanics / Machine Elements - Basic Rules and Principles of Design - Design for X - Series Production - Virtual Product Development - Cost Influences in Product Development The students have access to CAD workstations to learn and deepen their skill with CAD and drawing technology.
Applicable in the following degree programs	MA Mechatronics
Prerequisites for Participation	Formal: None Subject: 01.2 "Engineering Design II" presumes knowledge from 01.1 "Engineering Design I."
Prerequisites for Awarding of CP	Successfully passed examination credits

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No.	4MECHMA002		
Module Title	Introduction to Mechanical Engineering II		
Compulsory/Core Elective	C*		
Module Length	2 semesters		
Frequency	02.1: WS; 02.2: SS		
Language of Instruction	English		
Credit Points	6 CP		
Weekly Contact Hours	4		
On-Campus Study	60 h		
Independent Study	120 h		
Workload	180 h		
Instructional Format	**Courses/Module Elements (if applicable)**	**Group Size**	**Weekly Contact Hours**
Lecture with exercise	02.1: Engineering Mechanics	40	2
Lecture	02.2: Production Technologies	40	2
Academic Requirements	**Format**		**Length / Scope**
Examinations	Written Examination		120 min.
Coursework	None		
Learning Outcomes	The module "Introduction to Mechanical Engineering II," as described here in the context of the master's degree in mechatronics, conveys to students the following learning/qualification goal: They will acquire specialist skills in the area of mechanics and production technology as required for a master's degree in mechatronics and which are lacking due to their background in the field of electric engineering, and will acquire methodological competency in the application of said skills. In terms of learning outcomes, students will not only understand and describe the key methods and theories of mechanics and production technology, but will also be able to select, apply, and critically assess their methods in a manner targeted for practical problem solving. To achieve this, the following learning methodologies are used: Technical knowledge is taught and explained in lectures, with case studies used to promote and support discussion and convey competency in methodological application, including through computer-based simulations and media-supported practical examples. In the area of "Engineering Mechanics," students acquire fundamental knowledge in the field of technical mechanics, and in particular in simple models of elasticity. The area of "Production Technology" conveys a well-founded knowledge of different production procedures in industrial production. It is based on the division of production procedures laid out in DIN 8580 ff. Students will furthermore learn to communicate about subjects and problems in mechanical engineering (production technology) with their peers in companies. *Technical Competencies: 95 %; Social Competencies: 5 %*		
Course Content	Engineering Mechanics - Statics, method of sections, cut and bearing reactions - Tensions, strains, Hooke's Law - Beam bending, potentially with torsion - Torque, balance point, principle of linear motion, law of conservation of energy - Oscillation		

	Production Technologies: - Molding - Forming - Cutting - Joining
Applicable in the following degree programs	MA Mechatronics
Prerequisites for Participation	Formal: None Subject: None
Prerequisites for Awarding of CP	Successfully passed examination credits

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No.	4MECHMA011		
Module Title	Introduction to Electrical Engineering I		
Compulsory/Core Elective	C		
Module Length	1 semester		
Frequency	WS		
Language of Instruction	English		
Credit Points	6 CP		
Weekly Contact Hours	4		
On-Campus Study	60 h		
Independent Study	120 h		
Workload	180 h		
Instructional Format	**Courses/Module Elements (if applicable)**	**Group Size**	**Weekly Contact Hours**
Lecture with exercise	11.1: Linear Control	40	2
Lecture with exercise	11.2: Electrical Engineering	40	2
Academic Requirements	**Format**		**Length / Scope**
Examinations	Written Examination		120 min.
Coursework	None		
Learning Outcomes	The module "Introduction to Electrical Engineering I," as described here in the context of the master's degree in mechatronics, conveys to students the following learning/qualification goal: They acquire the necessary specialist skills in the field of electrical and control engineering at a master's level and acquire the necessary methodological competencies to prepare for the compulsory and core elective modules of the degree program. In terms of learning outcomes, students will gain a deeper understand of the essential methods and theories of electrical engineering and control engineering, as well as signal theory fundamentals with their frequency area processes. Drawing on this basis of understanding, students will be able to apply the conveyed methods in practical situations and can transfer and systematically use the acquired knowledge to resolve ensuing problems. The following learning methodologies are used to achieve this: Technical knowledge is taught and explained in lectures, with case studies used to promote and support discussion and convey competency in methodological application, including through computer-based simulations and media-supported practical examples. The students are provided access to several simulation tools as well as real practical experiments for critical exploration of the competencies to be acquired.		
Course Content	The module "Introduction to Electrical Engineering I" focuses on two subject fields: Fundamental knowledge of classic control engineering in the frequency area (bachelor's level) is conveyed in the course 'Linear Control,' ensuring that students lacking the necessary advance knowledge in the field of control engineering acquire this knowledge as part of the master's degree in mechatronics. As a first step, the necessary fundamental knowledge of classical control engineering in the frequency domain (bachelor's level) is taught. This encompasses the system description through the transformation functions in the Laplace range and their signal engineering interpretation for linear, time-invariant controlled systems. The closed control loop and the related typical controllers are introduced and the impact on the dynamic of the overall system (rapidity and stationary precision) are explored. An extensive foundation will then be established for the conduction of a stability		

	analysis, including presentation of the algebraic Hurwitz procedure and a graphic analysis based on the Nyquist plot. These analytical reviews are supplemented by the root locus plot procedure. The “Electrical Engineering” course is also oriented toward students with a completed first cycle degree in a field other than electrical engineering. The course provides the bachelor's degree level knowledge required in the field of “Fundamentals of Electrical Engineering” for the master’s degree program in mechatronics. After an introduction to fundamental electrical engineering concepts such as current, voltage, and resistance, it then presents direct current circuits and the related analytical procedures. Thereafter the students will learn fundamental relationships between capacitors and inductors. Switching operations in linear electrical networks will be reviewed. This will then be followed by a presentation of alternating and three-phase current engineering with the aid of complex calculations.
Applicable in the following degree programs	MA Mechatronics
Prerequisites for Participation	Formal: None Subject: None
Prerequisites for Awarding of CP	Successfully passed examination credits

Consolidated Text

No.	4MECHMA012		
Module Title	Introduction to Electrical Engineering II		
Compulsory/Core Elective	C*		
Module Length	1 semester		
Frequency	SS		
Language of Instruction	English		
Credit Points	6 CP		
Weekly Contact Hours	4		
On-Campus Study	60 h		
Independent Study	120 h		
Workload	180 h		
Instructional Format	**Courses/Module Elements (if applicable)**	**Group Size**	**Weekly Contact Hours**
Lecture with exercise	12.1: Electrical Machines	40	2
Lecture with exercise	12.2: Power Electronics	40	2
Academic Requirements	**Format**		**Length / Scope**
Examinations	Written Examination		120 min.
Coursework	None		
Learning Outcomes	The module "Introduction to Electrical Engineering II," as described here in the context of the master's degree in mechatronics, conveys to students the following learning/qualification goal: They will acquire the specialized knowledge of electrical machines and methodological competencies in their application as required to study mechatronics. The module element "Electrical Machines" conveys to students the following technical expertise. They will - develop a fundamental understanding of energy conversion through electro-mechanical transformers; - differentiation between fundamental electrical machines and can analyze their functionality; - can independently apply the fundamental formulas for describing the stationary behavior of important electrical machines. They will also learn to - determine the key construction parameters for electrical machines based on the given electrical and mechanical requirements, and - select the appropriate electrical machine for a given application profile. The module element "Power Electronics" conveys to students the following technical expertise: They will - develop a fundamental understanding of the conversion of electrical energy by power electronic circuitry; - differentiate between fundamental conversion topologies and can analyze their mode of operation; - know the fundamental formulas for describing power electronic converters and can apply these on their own; - can analyze and mathematically describe modified conversion circuitry on their own and can develop fundamental control procedures to produce direct and alternating current systems using suitable power electronic circuitry. The following learning methodologies are used to achieve this: Technical knowledge is taught and explained in lectures, with case studies used to promote and support discussion and convey competency in methodological application, including through computer-based simulations and practical examples.		

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Course Content	The course on “Electrical Machines” is focused on the description of constructive properties, functionality, stationary behavior, and application of important electrical machines: direct current machines, asynchronous machines, and synchronous machines. The course on “Power Electronics” focuses on the following topics: - Components of power electronics - Principle functionality and stationary behavior of fundamental topologies in power electronics - Modulation procedures and applications in power electronics, especially in switched-mode power supplies and in drive technology.
Applicable in the following degree programs	MA Mechatronics
Prerequisites for Participation	Formal: None Subject: Advance knowledge of the alignment module 4MECHMA011
Prerequisites for Awarding of CP	Successfully passed examination credits

Consolidated Text

No.	4MECHMA021		
Module Title	Machine Dynamics and System Dynamics		
Compulsory/Core Elective	C		
Module Length	1 semester		
Frequency	SS		
Language of Instruction	English		
Credit Points	6 CP		
Weekly Contact Hours	4		
On-Campus Study	60 h		
Independent Study	120 h		
Workload	180 h		
Instructional Format	**Courses/Module Elements (if applicable)**	**Group Size**	**Weekly Contact Hours**
Lecture	21.1: Machine Dynamics and System Dynamics	40	2
Exercise	21.2: Machine Dynamics and System Dynamics	30	2
Academic Requirements	**Format**		**Length / Scope**
Examinations	Written Examination		120 min.
Coursework	None		
Learning Outcomes	The module "Machine Dynamics and System Dynamics," as described here in the context of the master's degree in mechatronics, conveys to students the following learning/qualification goal: They receive the necessary technical skills to take part in the field of machine and system dynamics at a master's level and acquire methodological competence in their application. In terms of learning outcomes, students will not only understand and describe the key methods and theories of machine and system dynamics technology, but will also be able to select, apply, and critically assess their methods in a manner suitable for practical problem solving. To achieve this, the following learning methodologies are used: Technical knowledge is taught and explained in lectures, with case studies used to promote and support discussion and convey competency in methodological application, including through computer-based simulations and media-supported practical examples. The students are provided access to several simulation tools (Matlab) for critical exploration of the competencies to be acquired. The course builds on the fundamentals of technical mechanics. Through the lectures and exercises, students acquire a solid overview of the problems that arise in machine dynamics. They build skills in correctly recognizing and classifying machine dynamic problems and in applying suitable solution processes. The connection between dynamic and state-space representation expands the students' view into a general, system-oriented approach that can be used to control mechanical systems. This in turn puts students into a position to: - depict the dynamics of machines through mechanical/mathematical models; - interpret the vibration characteristics of a machine or structure; - account for insights from the vibration characteristics in the design/construction of the machine; - apply Matlab to solve oscillation and kinematics tasks in the fields of robotics, transmission engineering, automotive engineering, structural vibration, analytical or modern numerical methods in the state space.		

Sample Text

	A portion of the exercises are conducted using Matlab. The students will train their ability to formulate problems in an engineering context and to implement self-developed dynamic models in a program. After a review for plausibility, the solution will then be discussed as a group. In this way, students master skills in the areas of communication, argumentation, and presentation of results, as well as critical/self-critical handling of results. *Technical Competencies: 90 %; Social Competencies: 10 %*
Course Content	- Introduction to machine dynamics, physical and mathematical modeling - Kinematics/relative movement of rigid bodies and multibody systems - Kinetics: Theorem of momentum and angular momentum, Euler's formula, Lagrange's formula, linearization, state space depiction, dynamics of rigid machines - Oscillation of machines: Sources of vibration, free and forced vibrations - Vibrations of mechanical system with multiple variances, vibration isolation, vibrations in power trains, vehicle vibration, simple active vibration control.
Applicable in the following degree programs	MA Mechatronics
Prerequisites for Participation	Formal: None Subject: "Engineering Mechanics" (4MECHMA002.1) or adequate prior knowledge in the field of "Mechanics"
Prerequisites for Awarding of CP	Successfully passed examination credits

Consolidated Text

No.	4MECHMA022		
Module Title	Automation Technologies		
Compulsory/Core Elective	C		
Module Length	1 semester		
Frequency	Winter Semester		
Language of Instruction	English		
Credit Points	6 CP		
Weekly Contact Hours	4		
On-Campus Study	60 h		
Independent Study	120 h		
Workload	180 h		
Instructional Format	**Courses/Module Elements (if applicable)**	**Group Size**	**Weekly Contact Hours**
Lecture with exercise	22.1: Process Automation	40	2
Lecture with exercise	22.2: Industrial Communication	40	2
Academic Requirements	**Format**		**Length / Scope**
Examinations	Written Examination		120 min.
Coursework	None		
Learning Outcomes	The module "Automation Technologies," as described here in the context of the master's degree in mechatronics, conveys to students the following learning/qualification goal: They receive the necessary specialist skills to take part in the field of industry-standard automation systems and automation engineering at a master's level and acquire methodological competence in their application. In terms of learning outcomes, students will be put in a position to - understand, evaluate, and apply on their own the type and manner of hardware and software through which automation engineering is implemented in the field of machines and systems; - define and sensibly implement digital and analog interfaces to the process, to the user, and to intelligent external devices; - divide production machines and equipment in categories and select suitable automation concepts. Beyond this, students master the knowledge acquired through their specific module focal points such that they can apply it to further development work by analyzing, diagnosing, and evaluating the functionality of the linked overall systems. The following learning methodologies are used to achieve this: Technical knowledge is taught and explained in lectures, with case studies used to promote and support discussion and convey competency in methodological application, including through computer-based simulations and media-supported practical examples.		
Course Content	"Process Automation": Programming and planning with hardware and software PLCs: - Programming languages as per IEC 61131-3 (KOP, FBS, AWL, structured text) - Handling of various variable types - Cyclical, time-controlled and alarm-guided processing of software - Logic controls and sequential controls Interface to the process: - Hardware for Boolean signals - Hardware for communication with position encoders and angle transmitters		

	- Absolute and incremental measurement methods - Analog/digital conversion and vice-versa - Voltage to current and current to voltage conversion - Electromagnetic Compatibility - Processing of digital and analog input signals - Simple digital filters and controllers “Industrial Communication”: - Industrial communications systems and - Networking of installations and processes
Applicability in the following degree programs	MA Mechatronics
Prerequisites for Participation	Formal: None Subject: None
Prerequisites for Awarding of CP	Successfully passed examination credits

Consolidated Text

No.	4MECHMA023		
Module Title	Software Engineering		
Compulsory/Core Elective	C		
Module Length	1 semester		
Frequency	Winter Semester		
Language of Instruction	English		
Credit Points	6 CP		
Weekly Contact Hours	4		
On-Campus Study	60 h		
Independent Study	120 h		
Workload	180 h		
Instructional Format	**Courses/Module Elements (if applicable)**	**Group Size**	**Weekly Contact Hours**
Lecture with integrated exercise	23.1: Software Engineering	40	4
Academic Requirements	**Format**		**Length / Scope**
Examinations	Written Examination		120 min.
Coursework	None		
Learning Outcomes	The master's degree program in mechatronics conveys to students the necessary technical expertise in the field of software engineering at a master's level, including methodological competence in the following fields: - planning and management of software projects in a team, - managing of software modeling and software development, - management of software configuration, and - management of software quality. In terms of learning outcomes, students will understand and evaluate the essential methods and tools of software engineering and be able to apply them in appropriately in software projects. The following learning methodologies are used to achieve this: The technical expertise is taught and discussed in lectures. The subject matter is interactively illuminated and explored through guided discussions and practical examples. Computer-based tools are used to practice and explore exercise scenarios and practical examples, conveying expertise in methodological application for the respective thematic areas. This includes selected platforms and technologies for data and software modeling, configuration management, and software quality assurance.		
Course Content	The lecture on software engineering is broken into four sequential blocks. - The introductory block presents fundamental terms and concepts of software engineering and managing software projects, with a focus on modern agile development methods. - The thematic block on software modeling and software development presents and explores modern modeling languages and the related modeling tools. - The thematic block on software configuration introduces concepts and tools for the planned handling of software variants, software versions and aspects of development in mixed teams. - In the thematic block on software quality, the fundamentals and tools for targeted quality assurance and assessment for software development are reviewed and expanded.		
Applicable in the following degree programs	MA Mechatronics		
Prerequisites for Participation	Formal: None Subject: None		

Hochschule Ruhr West

Prerequisites for Awarding of CP	Successfully passed examination credits

Consolidated Text

No.	4MECHMA031		
Module Title	Advanced Driver Assistance Systems		
Compulsory/Core Elective	CE		
Module Length	1 semester		
Frequency	Every semester; courses are announced separately		
Language of Instruction	English		
Credit Points	6 CP		
Weekly Contact Hours	4		
On-Campus Study	60 h		
Independent Study	120 h		
Workload	180 h		
Instructional Format	**Courses/Module Elements (if applicable)**	**Group Size**	**Weekly Contact Hours**
Lecture with exercise	31.1: Driver-assistance-systems	40	4
Academic Requirements	**Format**		**Length / Scope**
Examinations	Written Examination		60-120 min.
Coursework	None		
Learning Outcomes	Upon successful completion of the module, students will possess the following skills: - understanding of dynamic automotive vehicle behavior, - understanding of the functional methods and impact of automatic interventions in the braking system as well as in the area of directional stability in vehicles, - understanding for active and passive safety systems, - fundamental knowledge of the implementation of driving assistance systems in numerical simulations and - integration of insights from electrical engineering, system dynamics, and control engineering.		
Course Content	The lecture for the Driver Assistance Systems module conveys the fundamentals necessary to understand driver assistance systems. The following topics are explored: - vehicle behavior, driving safety, active and passive systems, - properties of tires, braking processes - Anti-lock Braking Systems (ABS), Anti-Slip Regulation (ASR), - Electronic Stability Program (ESP), - automatic braking functions (such as HHC), Sensotronic Brake Control (SBC), Electro-Mechanical Braking (EMB), - Adaptive Cruise Control (ACC), - lane and lane change assistants, active steering, - passenger protection systems, - parking assistants, vehicle lighting, - vehicle information systems, navigation, and - automated driving. The exercise for the Driver Assistance Systems module conveys the fundamentals necessary to establish simulations for the field of driver assistance systems. The subject of the exercise is: - modeling of vehicle dynamics and - simulations for verification of the functionality of multiple driving assistance systems.		
Applicable in the following degree programs	MA Mechatronics MA Electrical Engineering MA Information Technology MA Mechanical Engineering		
Prerequisites for Participation	Formal: None Subject: Knowledge from the alignment modules or equivalent knowledge in the fields of electrical and mechanical engineering		

Content Text

Prerequisites for Awarding of CP	Successfully passed examination credits

Special stipulations in examination law regarding the module descriptions when used in multiple degree programs

Repeatability of the examination(s) (number / scheduling)	2 repeats of examination as per Section 12 Para. 5 RPO-M			
Supplemental oral examination possible	**Yes:**	**X**	**After each attempt:**	
			After last attempt:	**X**
	No:			
Test can be repeated to improve grade	**Yes:**	**X**		
	No:			
Special Stipulations				

Consolidated Text

No.	4MECHMA032		
Module Title	Mechatronic Systems		
Compulsory/Core Elective	CE		
Module Length	1 semester		
Frequency	Winter Semester		
Language of Instruction	English		
Credit Points	6 CP		
Weekly Contact Hours	4		
On-Campus Study	90		
Independent Study	90		
Workload	180		
Instructional Format	**Courses/Module Elements (if applicable)**	**Group Size**	**Weekly Contact Hours**
Lecture with exercise	Mechatronic Systems	65	2
Lab	Mechatronic Systems, Project	13 * 5	2
Academic Requirements	**Format**		**Length / Scope**
Examinations	Written Examination		120 min.
Coursework	Project Assignment		1 semester
Learning Outcomes	Students achieve the following learning/qualification goals: Specialized expertise at a master's level in the field of mechatronic systems, with a special focus on automation and robotics. Through successful completion of all components of this module, students gain strong methodological competencies in the design of mechatronic systems. As learning outcomes for this module, students will learn to plan robot systems with actuating and sensor elements, construct and program these as a total system, and design and parametrize real-time controllers for them. Beyond this, students learn to apply the acquired knowledge to advanced development work by analyzing, diagnosing, and evaluating the functionality of the overall mechatronic systems. The following instructional methodologies are used to achieve this: The course conveys students with interdisciplinary knowledge of the design, analysis, and synthesis of mechatronic systems as a synergic combination of mechanical, electrical, and software components. They will also learn the benefits of a mechatronic consideration of a system in various application fields. This course conveys specialized expertise in various areas of mechatronics, and especially in robotics engineering. The primary topics are kinetic and dynamic modeling, coordinate transformation, drive engineering, sensor technology, and control concepts. The associated exercise courses test students in their understanding of the theoretical content through practical application cases. Within group projects, students can gain practical project experience, apply theoretical knowledge on real hardware, and also acquire various skills in project management.		
Course Content	The courses for this module offer an advanced view of the following topics: - Mechatronics and robotics - Kinematics and coordinate transformations - Control concepts for mechatronic systems - Dynamic modeling and control - Sensors and actors for mechatronic systems - Simulation technology - Project management		
Applicable in the following	MA Mechatronics		

Digital Text

degree programs	*MA Lehramt BK-B KbF Technische Informatik* (MA Teacher Education BK-B Minor Occ. Specialization Technical Information Sciences)
Prerequisites for Participation	Formal: None Subject: Knowledge from the alignment modules or equivalent knowledge from a prior bachelor's degree
Prerequisites for Awarding of CP	Successfully completed coursework and Successfully passed examination credits

Special stipulations in examination law regarding the aforementioned module descriptions when applied across multiple degree programs

Repeatability of the examination(s) (number / scheduling)	2 repeats of examination as per Section 12 Para. 5 RPO-M			
Supplemental oral examination possible	**Yes:**		**After each attempt:**	
			After last attempt:	
	No:	**X**		
Test can be repeated to improve grade	**Yes:**			
	No:	**X**		
Special Stipulations				

Consolidated Text

No.	4MECHMA033		
Module Title	Materials Science and Engineering		
Compulsory/Core Elective	CE		
Module Length	1 semester		
Frequency	Winter Semester		
Language of Instruction	English		
Credit Points	6 CP		
Weekly Contact Hours	4		
On-Campus Study	90		
Independent Study	90		
Workload	180		
Instructional Format	**Courses/Module Elements (if applicable)**	**Group Size**	**Weekly Contact Hours**
Lecture	Materials Science and Engineering– Lecture	40	2
Exercise and Seminar	Materials Science and Engineering– Exercise and Seminar	40	2
Academic Requirements	**Format**		**Length / Scope**
Examinations	Written Examination or Oral Examination The responsible instructor will indicate the format of the examination credits at latest four weeks after the beginning of the course, in an appropriate form.		60 min. Up to 45. min.
Coursework	None		
Learning Outcomes	The overarching goal of the module is to convey fundamental knowledge in the field of material sciences, with the lecture serving as the direct instrument for knowledge transfer. This knowledge is then deepened through exercises and the seminar and applied by the students to current topics of relevance. In concrete terms, three detailed objectives are pursued: - conveying of fundamentals of material physics to understand the behavior of materials, i.e., microstructural changes - conveying an understanding of materials to the extent that the student can select suitable materials from various classes for specific applications - promoting students to select and apply suitable processes for material review and characterization so as to support the construction process		
Course Content	Lecture: The lecture conveys the fundamentals of materials science, providing students with insights into the structure of atoms, binding mechanisms, and the structure of solids. Beyond this, discussions will be conducted on how structure and, by extension, the subsequent material behavior can be influence by means of technical processing to optimize material for specific applications. This is accompanied by the presentation of various experimental analysis methods through which the desired material properties can be proven. Exercise and Seminar: The aforementioned insights from the lecture are deepened through the exercises and in the seminar. The exercises are used to illuminate and reinforce the acquired insights based on selected examples. In the seminar portion of the event, students select current materials science topics and prepare brief explanatory presentations based on published works, and then conduct those presentations.		

Translated Text

Applicable in the following degree programs	MA Mechatronics
Prerequisites for Participation	None
Prerequisites for Awarding of CP	Successfully passed examination credits

Consolidated Text

No.	4MECHMA061		
Module Title	Master's Thesis		
Compulsory/Core Elective	C		
Module Length	1 semester		
Frequency	Every semester		
Language of Instruction	English		
Credit Points	30 CP		
Weekly Contact Hours			
On-Campus Study			
Independent Study	900 h		
Workload	900 h		
Instructional Format	**Courses/Module Elements (if applicable)**	**Group Size**	**Weekly Contact Hours**
Academic Requirements	**Format**		**Length / Scope**
Examinations	Master's Thesis (70-90%) with Colloquium (10-30 %; approx. 30-min. presentation followed by 10-20-min. discussion)		6 months
Coursework	None		
Learning Outcomes	Through the master's thesis, students demonstrate the skills and competencies gained through the master's studies in mechatronics by addressing a mechatronics problem within a given deadline and using academic methods suitable to a master's level. In this final academic project for the M.Sc., the competencies acquired over the course of the studies, and in particular specialized methodology and interdisciplinary approaches, are to be applied and implemented by the students. Beyond this, the following key qualifications will typically be acquired over the course of the master's thesis: - Planning and organizational skills for the successful execution of the necessary research and development work (project management); - The skills to achieve independently the necessary stage of knowledge based on literature databases and other sources and on the basis of executed, documented preliminary work on the problem to be addressed; - Independent acquisition of knowledge over the course of the master's project, which arises as required from the specific work situations. In the case of an external master's thesis produced in cooperation with partners from industry, additional support is provided for applicability to the professional and labor market; final projects of this type generally promote the acquisition of interdisciplinary expertise by the students.		
Course Content	The concrete subject matter of the master's thesis depends on the respective tasks/selected topic. The work is generally research-oriented—in the case of industry-relevant problems, also with a corresponding practical professional application. It is thematically embedded in the scientific environment of the participating departments of electrical engineering, information sciences, and mechanical engineering. The		

Student Text

	networking of the institutes from these departments with companies, research organizations, and project partnership opens the potential for cooperative tasks related to the master's thesis. The candidate must address a problem from their major field of study, independently and based on academic methods appropriate for a master's level, within the prescribed working time of 26 weeks. The assignment of tasks for the master's thesis is organized thematically such that the execution and documentation, including preparations for a follow-on colloquium, total roughly ca. 900 hours. The master's thesis is designed to accompany the program of studies.
Applicable in the following degree programs	MA Mechatronics
Prerequisites for Participation	Formal: Candidates must have successfully passed the respective modules from the alignment block 4MECHMA001 and 4MECHMA002 and/or 4MECHMA011 and 4MECHMA012, as well have earned at least 60 credit points in the mechatronics degree program. Subject: Knowledge from the alignment block modules, the compulsory blocks, and suitable modules from the core elective block for this master's degree program
Prerequisites for Awarding of CP	Successfully passed examination credits

Annex 8: Module descriptions for the modules that are only offered for export pursuant to Article 5

Not applicable.

Consolidated Text

[*1] Annex 4 amended by the *Ordnung zur Änderung der Fachprüfungsordnung (FPO-M) für das Fach Mechatronics (MECH) im Masterstudium an der Universität Siegen* dated 19 September 2024 (*Amtliche Mitteilung 58/2024*), entered into effect on 20 September 2024, ratified on 4 September 2024.

Change Log							
Version No.	**Change Type**	**Description of Change**	**Requestor**	**Date Submitted**	**Date Implemented**	**Status**	**Comments**
1	Original Document	n.a.	n.a.	26 July 2024	n.a.	Complete	--
1.1	Typos	Two incorrect abbreviations in the Project Overviews were corrected (page 5)	Fachabteil Mechatronik	9 Oct 2024	9 Oct 2024	Complete	--
2	Revisions to source document	Amendments to the FPO-M issued 19 Sep 2024	Hr. Cordes / Dez 3.	15 Jan 2025	4 Aug 2025	Complete	
2.1	Revisions	Improvements to legalese	Hr. Sidore / Übersetzer	4. Aug 2025	7. Aug 2025	Complete	
2.2	Revisions	Improvements to legalese	Hr. Sidore / Übersetzer	15. Sep 2025	15. Sep 2025	Complete	In particular, modified modal verbs to US best practices for legal writing

Consolidated Text