



Hochschule  
Zittau/Görlitz  
UNIVERSITY OF APPLIED SCIENCES

**Degree Course Regulations  
for the  
Master's Degree Course  
in Mechatronics  
at  
Zittau/Görlitz University of  
Applied Sciences  
issued on  
06/04/2011  
  
as amended on  
  
29/05/2019**

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for the Master's Degree Course  
in Mechatronics  
at Zittau/Görlitz University of Applied Sciences**

According to Section 13(4) in conjunction with Section 34 of the act on the autonomy of higher education institutions in Saxony (Saxon Higher Education Autonomy Act, Sächsisches Hochschulfreiheitsgesetz – SächsHSFG), in the version published on 05 January 2013 (SächsGVBl, p 3), last amended by Article 2(27) of the act of 05 April 2019 (SächsGVBl, p 782), the Zittau/Görlitz University of Applied Sciences (hereinafter referred to as “the University”) has adopted the following Degree Course Regulations (as amended on 29/05/2019) for the Master's degree course in Mechatronics as statutes.

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- Annex no. 1): Curriculum
- Annex no. 2): Module guide

## **Division I: General provisions**

### **Section 1 Scope**

These Degree Course Regulations define aims, content, structure and organization of the degree course in Mechatronics at the University based on the underlying Examination Regulations.

### **Section 2 Criteria for admission**

(1) Admission to studies at the University requires a degree conferred in a course of study with a minimum duration of three years (corresponding to a score of at least 210 ECTS points) qualifying for profession in the field of mechatronics or proof of equivalent academic achievements in a related, official or officially recognized degree course. The decision on equivalence shall be made by the faculty's examination committee.

(2) A further requirement for admission to the degree course is a level of proficiency in English that is sufficient enough to follow academic lectures held in English (in particular those during the second semester or winter semester, see Section 6) and to understand the relevant specialist literature. There shall be no separate assessment of the applicant's proficiency in English during the admission procedure.

(3) Applicants are also required to be prepared and able to participate in industrial placements (internships) or study or work abroad at other universities/institutions or companies, in particular during the course of the graduation module (Master's thesis).

### **Section 3 Modules and credit points (ECTS credits)**

(1) A module constitutes a unit that has a time limit, is self-contained and examinable, consistent in method and content, as well as having credit points (hereinafter referred to as "ECTS credits"). At the same time, the unit is defined through intended learning outcomes, described as competencies, knowledge, abilities and skills. Usually the modules take one semester and are completed by a module examination. Module examinations lead to a degree. The latter is set out in the Examination Regulations.

(2) Every module has its own associated ECTS credits. The number of ECTS credits is based on the average workload involved for the student in the individual module. This involves participation in classes, preparation and follow-up of courses, preparation for examinations, the examinations themselves, including placements, lab work, and all kinds of autodidactic study. One credit point corresponds to a workload of 30 hours.

(3) After successfully completing the module, the ECTS credits associated will be recorded and credited to the student. The condition for this is that the student has passed the module examination with a minimum mark of "ausreichend" (Note 4), ("sufficient" (4)). The crediting of all ECTS credits as a quantitative unit will take place in full, independently of the relative and absolute grade.

### **Section 4 Commencement and duration of the degree course**

(1) The Master's degree course in mechatronics commences annually, either with the summer or winter semester and is conceptualized as a full-time course.

(2) The standard time to degree including placements, and the Master's thesis and its defence comprises seven semesters.

(3) In addition to the modules listed in the curriculum, there will normally be information events available during the first semester, usually in September. The exact dates will be made public in due time before the beginning of the course.

## **Division 2: Aim, structure and content of the degree course**

### **Section 5 Aim of the degree course**

(1) The primarily application-oriented engineer training is based on an interdisciplinary technical Master's degree course in mechatronics with a solid grounding in mechanical engineering and electrical engineering in combination with electronics, automation technology and computer science. Graduates are qualified to develop technical systems, products and procedures with a high degree of automation through holistic approaches that include modern engineering techniques, such as CAD, CAE and computer simulations. Being Masters of Engineering, graduates should be able to take on changing responsibilities in their professional lives by improving their knowledge in accordance with the progress of science and technology. They should be capable of facing interdisciplinary challenges in applied research, development and production in mechanical engineering, automation technology, electrical engineering / electronics and computer engineering in managerial positions.

(2) Graduates will primarily find employment in companies developing and manufacturing innovative products, machinery, appliances, devices and equipment that in a large part use automation technology. These products include automation components that incorporate human abilities and experience in the form of artificial intelligence. Another major field of work will be available in smaller-sized companies and engineering offices who are unable to employ multiple specialized engineers, particularly in the industries of device/equipment development and special purpose machinery. Further possibilities for employment are the commissioning, service and distribution, maintenance and reconstruction of machine systems and industrial installations.

(3) Apart from the specialist goals stated, the course aims to enable graduates to act responsibly and think academically. Students are expected to develop qualities that are essential to academic work, e.g.

1. Abstract reasoning and flexibility;
2. Solid specialist skills;
3. Resourcefulness and desire for knowledge;
4. The ability to work independently and access specialist literature;
5. Communication skills and the ability to work in a team;
6. The ability to voice and accept criticism.

(4) Furthermore, graduates should be able to take on changing roles in their careers by expanding their knowledge and skills in accordance with advances in science, technology and society.

### **Section 6 Structure and content of the degree course**

(1) The course structure is organized in modules. The descriptions of the modules reflect the state of scientific knowledge at the time of their creation and are subject to regular updates on the basis of new discoveries in the respective academic field. The curriculum with the titles of the modules, their length in semester credit hours (contact hours per week), the total time commitment for the students in ECTS credits as well as the chronological order of the modules is set out as Annex 1 to these Regulations. The necessary module examinations, examinations and compulsory coursework are listed in the Examination Regulations of the University's degree course in mechatronics. Observing this curriculum enables students to graduate within the standard time to degree.

(2) Notably the modules administered during the second semester or winter semester will normally be held and examined in English. If no international students have been enrolled in the degree course, it may be decided that all classes of the second / winter semester can be taught and examined in German.

(3) Modules are divided into

- Core modules (*Pflichtmodule*, subsection (4));
- Elective core modules (*Wahlpflichtmodule*, subsection (5));
- The final module (*Abschlussmodul*, subsection (6)); and
- Optional modules (*Wahlmodule*, subsection (7)).

(4) Core modules must be completed by the student. They are listed in the curriculum (*Studienablaufplan*) (see Annex 1). By enrolment or re-enrolment, the students are automatically registered for the core modules.

(5) Elective core modules (*Wahlpflichtmodule*) consist of different teaching units. Students must choose a specified number of teaching units totalling a minimum amount of ECTS credits, matching their subject-specific interests from a list of teaching units as set out in Annex 1. For this they register for the teaching units/modules they have chosen in the respective faculty. When registering these then become a mandatory part of their degree course. The relevant teaching unit/module will only be offered if at least five students have registered for it.

(6) The final module in the third course semester includes the graduate thesis and its defence. The final module comprises a workload totalling 30 ECTS credits.

(7) Students also have the option of voluntarily taking part in further teaching units that are not listed in their curriculum (optional modules according to Section 26 of the Examination Regulations). These are not among the obligatory parts of the Degree Course Regulations and are not considered when calculating the student's workload. For the voluntary participation in such teaching units no examination-related work is planned; however, this work can be undertaken voluntarily by the student and upon application may be additionally recorded on the transcript. This work will not count towards the aggregation of the overall grade.

## **Section 7 Module guide**

(1) The modules of the degree course in mechatronics are part of these Regulations as Annex 2 and can be retrieved from the University's module catalogue at <https://web1.hszg.de/modulkatalog/>. The module catalogue contains all the modules offered, including each of their descriptions. In particular, the description contains information on:

- 1) the content and intended learning outcomes;
- 2) the types of teaching;
- 3) the prerequisites for participation;
- 4) the applicability of the module;
- 5) the requirements for awarding ECTS credits;
- 6) the ECTS credits and grades;
- 7) how frequently the module is offered;
- 8) the workload required; and
- 9) the duration of the module.

(2) The Dean of Studies/Officer Responsible for the Degree Course of the respective faculties is responsible for the modules of the degree course in mechatronics and their descriptions.

### Division 3: Implementation of the degree course

#### Section 8 Responsibilities

(1) The Faculty of Electrical Engineering and Computer Science has the overall responsibility for the degree course in mechatronics and guarantees the courses offered. Modules that do not fall into the area of expertise of this faculty are offered by the faculty specializing in this subject. Other faculties provide services by offering modules according to the University's service principle.

The Faculty Council of the Faculty of Electrical Engineering and Computer Science appoints an academic planning committee for mechatronics. This is composed of an equal number of independent teaching staff and students of the faculty. Teaching staff of other faculties can also be appointed. The task of the academic planning committee is the coordination of the degree course and the organization of its content, and the development of binding recommendations for the further development of the degree course for the Faculty Council of the Faculty of Electrical Engineering and Computer Science.

(3) The examination committee of the Faculty of Electrical Engineering and Computer Science is responsible for adherence to the relevant examination regulations.

#### Section 9 Types of learning units

(1) The following are used for teaching and learning in the degree course in mechatronics:

- 1) Lectures (subsection (2)).
- 2) Seminars (subsection (3)).
- 3) Problem classes (subsection (4)).
- 4) Lab work (subsection (5)); and
- 5) Project studies (subsection (6)).

(2) Lecture series are lectures with the aim of providing a coherent presentation of degree course content. This involves teaching facts and methods.

(3) In a seminar, in-depth and specialist knowledge is taught in individual modules involving student presentations/seminar papers, research papers, short presentations and by analysis of these and their discussion under the supervision of a lecturer. Research-based and practically relevant case studies serve to extend specialist knowledge and to consolidate skills which are not subject-specific skills (e.g. the development of rhetorical skills and presentation skills).

(4) Problem classes serve to work through course content more intensively, teach knowledge, rehearse specialist skills, train specialist methods and solve standard problems in conjunction with lecturers and students.

(5) Lab work serves to illustrate teaching contents through practical examples and applications, and to improve practical skills. Lab work is supervised by University professors, lecturers, researchers and contracted external lecturers.

(6) The project study serves as a test of the methodological and specialist knowledge acquired during the degree course in a company or an institution through planning, implementing and evaluating specific independent work experience. It promotes the practising of intervention- or organization-related specialist and ancillary skills of an analytically academic, conceptual, professional and communicative nature. As an alternative, the project study can also be replaced by a clearly defined subtask in a research project.

(7) In addition to the learning units (subsection (1) - subsection (6)), academic autodidactic study is an integral part and a central requirement of the course. During all the phases of the course, this is particularly important for the development and enhancement of discursive, methodical and creative thinking. Teachers are required to support students in questions and problems arising through autodidactic study by advising them. This includes the use of and experimenting with the opportunities of new media, especially the infrastructures of the internet.

## **Section 10 Student advisory services**

- (1) Student advisory services are offered by a lecturer appointed by the faculty. Moreover, all full-time lecturers offer specialized course guidance for their teaching subject.
- (2) Student advisory services are targeted at all prospective and enrolled students. It provides guidance for prospective students concerning the choice of a degree course. At the beginning of the degree course, it provides assistance on content, structure and operation of the course. During studies, it offers help with any unclear questions about organization and content.
- (3) Student advice is mandatory for students who have not yet taken an examination by the beginning of the third semester.



## Division 4: Final provisions

### Section 11 Entry into force

These Degree Course Regulations shall enter into force on the day following the day of publication at the University and apply for all students enrolled in 2019 and later.

Issued based on the decision of the Faculty Council for Electrical Engineering and Computer Science of 08/05/2019 and the approval by the Rector's Office on 29/05/2019.

Zittau/Görlitz, 29/05/2019

The Rector



Prof. Dr. phil. Friedrich Albrecht

**Annex no. 1): Curriculum**

No.	Module	V/S/Ü/P	SCH per semester			SCH	ECTS
			SuSe	WiSe	SuSe/ WiSe		
AW1	103900 Business Management/Languages	V				6	5
		S/Ü	6				
		P					
E13	138100 Fuzzy-Control	V	2			4	5
		S/Ü	1				
		P	1				
I2	102770 Machine-Oriented Programming / Circuit Design	V	2			4	5
		S/Ü	2				
		P					
MK1	199000 Structural Dynamics	V	1			4	5
		S/Ü					
		P	3				
MK2	103230 Machine Dynamics	V	2			4	5
		S/Ü	1.5				
		P	0.5				
MS1	152850 Model-Based Measurement Procedures / Non-Linear Dynamic Systems	V	2			4	5
		S/Ü	1				
		P	1				
E11	214200 Advanced Control Theory	V		2		5	5
		S/Ü		2			
		P		1			
E12	250750 Digital Signal Processing	V		2		4	5
		S/Ü		1			
		P		1			
E14	250800 Digital Communication Technology	V		2		4	5
		S/Ü		2			
		P					
I1	102810 Image Processing	V		2		4	5
		S/Ü		2			
		P					
MS2	214350 Artificial Neuronal Networks	V		2		4	5
		S/Ü		1			
		P		1			
WP1	250250 Mechatronics Project Work/International Project	V				4	5
		S/Ü		4			
		P					
WP2	138300 Final Module (Master's Thesis and Defence)	V			x	0	30
		S/Ü			x		
		P			x		
<b>Total SCH</b>			<b>26</b>	<b>25</b>	<b>0</b>	<b>51</b>	<b>-</b>
<b>Total ECTS credits</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>-</b>	<b>90</b>

**Legend:**

- SCH = Semester Credit Hours (contact hours per week of 45 minutes each)
- V = Lecture
- S/Ü = Seminar/Problems class
- P = Lab/Practical class/Placement
- SuSe = summer semester
- WiSe = winter semester

**Annex no. 2):      **Module guide****

<https://web1.hszg.de/modulkatalog/>