

**Study and examination regulations  
for the Master's degree programme in Engineering  
at Rosenheim University of Applied Sciences -  
Fachhochschule Rosenheim**

**of 14 January 2015**

**In the first formally amended version of 18 May 2016**

On the basis of Article 13 (1) Sentence 2, (2) Sentence 2, Article 43 (5) and Article 61 (2) of the Bavarian Higher Education Act (BayHSchG), Rosenheim University of Applied Sciences issues the following rules:

**Section 1**

**Purpose of the study and examination regulations**

These study and examination regulations serve as a supplement to the current versions of the Basic Examination Regulations for Universities of Applied Sciences in Bavaria (*Rahmenprüfungsordnung für die Fachhochschulen in Bayern – RaPO*) of 17 October 2001 and the General Examination Regulations of Rosenheim University of Applied Sciences (*Allgemeine Prüfungsordnung der Hochschule Rosenheim - APO*) of 24 January 2011.

**Section 2**

**Study objectives**

(1) The Master's Degree Programme in Engineering is devised as an application-focused course. Its aim is to provide its students with advanced and specialist knowledge of engineering and related areas on a scientific foundation.

(2) The consecutive Master's Degree Programme in Engineering is designed to prepare students for demanding specialist engineering tasks and a fast track into project and leadership responsibility in a technical field, in particular, in international companies. The international focus of the course is demonstrated by the fact that its lectures are offered in English as far as is possible.

(3) In the specialist field of electrical/mechanical engineering, the students deepen their knowledge of the basics of mathematics and natural sciences and important application-focused fields and, by taking an interdisciplinary approach, improve their understanding of connections between systems, especially in the areas of automation technology and/or communications technology and/or mechatronics and/or mechanical engineering and/or plastics engineering. The ability to choose between specialist fields of Automation Technology (AUT), Communications Technology (COM), Mechatronics (MEC), Mechanical Engineering (MEN) and Plastics Engineering (PEN) enables students to shape their studies in accordance with their personal interests and career aspirations.

(4) In addition to providing advanced training in engineering, the course is intended to also promote general skills such as teamwork, inter-cultural communication and English language skills. This is aided by the Master's project, which is conducted as group work in a project situation that is as realistic as possible in which students are trained in methodological skills to organise and complete complex tasks as well work together effectively in a group.

**Section 3**

**Admission requirements**

(1) Admission to the Master's degree programme requires a Bachelor's degree in Electrical Engineering and Information Technology or in Mechatronics, Mechanical Engineering, Plastics Engineering or a related field, or an equivalent qualification gained in Germany or abroad. An overall grade of "good" or higher is required. The Examination Committee shall decide on the equivalence of degrees and other qualifications stated in Sentence 1 and 2 in accordance with Article 63 (1) of the Bavarian Higher Education Act (BayHSchG).

(2) Another requirement for admission to studies is a good command of the English language. The following apply as proof of required English language skills:

1. TOEFL with 550 or more points.
2. CBTOEFL with 213 or more points.
3. Internet-based TOEFL with 84 or more points
4. IELTS with a band score of 6.0 or higher.
5. Cambridge CEFR CPE at Grade C or higher.
6. Cambridge CEFR CAE at Grade B or higher.
7. A grade of at least "good" in the "Technical English" module or a comparable English module from a previous degree.

Native English speakers are not required to submit proof of adequate English language skills. In cases of doubt or non-submission of proof, applicants may be required additionally/alternatively to pass a language test comparable to those listed above at Rosenheim University of Applied Sciences.

(3) If German is not the candidate's native language, sufficient German language skills must be evidenced by passing German courses at a university which covers at least 4 ECTS credits, or via the following certificates:

- Deutsches Sprachdiplom Level 1 (level GER A2/B1)
- Goethe certificate at level A2
- TELC certificate at level A2.

(4) The Examination Committee shall decide on the equivalence and relevance of qualifications required for admission and the fulfilment of other admission requirements, in particular, the equivalence of foreign university qualifications. Article 63 (1) of the Bavarian Higher Education Act (BayHSchG) applies.

(5) If applicants submit proof of a qualification required for admission that is worth less than 210 ECTS credit points but at least 180 ECTS credit points or equivalent, they must acquire the missing credit points from relevant undergraduate courses at Rosenheim University of Applied Sciences before completing their studies. On admission, the Examination Committee shall determine which courses and examinations need to be taken. For each individual case, the Examination Committee shall determine which modules need to be taken in order to catch up on required credit points as defined in Sentence 1 in order to consolidate basic engineering knowledge as defined in Paragraph 1. Catch-up examinations must be taken before the Master's thesis is issued. Section 16 of the General Examination Regulations of Rosenheim University of Applied Sciences (*Allgemeine Prüfungsordnung der Hochschule Rosenheim - APO*) applies accordingly to opportunities to resit failed examinations.

## Section 4 Course structure

(1) The Master's degree programme covers a standard period of study of 3 semesters of full-time study or a maximum of 6 semesters of part-time study. It includes a practical project as well as a Master's thesis to be completed in the final semester.

(2) The applicant can choose from one of the following specialist fields:

- Automation Technology (AUT)
- Communications Technology (COM)
- Mechatronics (MEC)
- Mechanical Engineering (MEN)
- Plastics Engineering (PEN)

A binding decision on the chosen specialist field must be made within a week of starting the degree programme. This choice can be changed once, subject to approval by the Examination Committee. For a specialist field, at least 20 CPs for advanced modules (see Appendix, Item 2) must be derived from modules assigned to the particular specialist subject.

## **Section 5**

### **Modules and examinations**

- (1) The modules, their number of hours, credit points, type of lecture as well as type, scope and grading of examinations are set out in the Appendix to these rules. The regulations defined in these rules are supplemented by the study plan.
- (2) All modules are either basic mathematics and natural sciences modules, advanced modules from the fields of automation technology, communications technology, mechatronics, mechanical engineering and plastics engineering, application-focused modules or specialist required elective courses:

## **Section 6**

### **Study plan**

- (1) The Faculty of Engineering produces a study plan detailing the course structure for the students' information and to ensure compliance with the curriculum. It is approved by the Faculty Council and is published within the university. New regulations must be published at the latest at the start of the semester in which the regulations come into force for the first time. In particular, the study plan includes regulations and information on:
  1. Objectives, content, hours per week per semester, credit points and types of lecture used in individual modules, if this is not regulated conclusively in these rules, and, in particular, a list of current required elective modules, including conditions and restrictions regarding student numbers.
  2. Allocation of the modules to specialist fields.
  3. More detailed conditions relating to examinations, certificates of attendance and admission requirements.
- (2) No assertion is made that all specialist fields, required elective modules and elective modules shall actually be available. Equally, no assertion is made that associated lectures shall be conducted if there are insufficient attendees. The Examination Committee can also set requirements for attendance as well as maximum numbers of attendees for certain lectures.

## **Section 7**

### **Academic Advising**

If students do not obtain at least 30 credit points after two semesters of full-time study, or four semesters of part-time study, they are required to seek assistance from Academic Advising by order of the Examination Committee.

## **Section 8**

### **Master's thesis**

- (1) A student may submit the subject for his/her Master's thesis at the start of the second semester at the earliest. Irrespective of suggestions for a subject for the Master's thesis by the member of staff appointed by the Examination Committee, students may also submit their own suggestions to such a member of staff.
- (2) In full-time study the processing period is six months.
- (3) In part-time study it is twelve months.
- (4) Section 19 of the General Examination Regulations of Rosenheim University of Applied Sciences (*Allgemeine Prüfungsordnung der Hochschule Rosenheim - APO*) applies accordingly.

## **Section 9**

### **Examination Committee**

The Faculty Council shall appoint an Examination Committee comprising at least three professors from the Faculty of Engineering as well as a Chair elected from within and by the Examination Committee itself for a term of two years.

## **Section 10**

### **Overall examination grade and certificate**

- (1) The overall examination grade is the arithmetic average of significant individual grades weighted with credit points, rounded off to one decimal point.
- (2) A certificate and a diploma supplement shall be issued for the passed Master's examination in accordance with the relevant templates provided in the Appendix to the General Examination Regulations of Rosenheim University of Applied Sciences (*Allgemeine Prüfungsordnung der Hochschule Rosenheim - APO*).

## **Section 11**

### **Academic title**

- (1) On passing the Master's examination, the student shall be awarded the academic title of "Master of Engineering", or "M. Eng." for short.
- (2) The academic title shall be awarded together with a certificate set out according to the template provided in the Appendix to the General Examination Regulations of Rosenheim University of Applied Sciences (*Allgemeine Prüfungsordnung der Hochschule Rosenheim - APO*).

## **Section 12**

### **Effective date, transitional regulations**

- (1) These study and examination regulations come into force on 1 October 2014.
- (2) The Faculty Council of the Faculty of ... can establish general regulations or regulations specific to an individual case for the degree programme, the relevant Examination Committee can establish special regulations for examinations, insofar as this seems necessary in order to prevent hardship.

Produced on the basis of the resolution by the Senate of Rosenheim University of Applied Sciences of 17 December 2014 and the approval of the President of Rosenheim University of Applied Sciences. The agreement of the Bavarian State Ministry of Education, Science and the Arts was issued with its correspondence of 4 June 2014 No. C 7-H 3441.RO/21/3.

Rosenheim, 14 January 2015

Prof. Heinrich Köster  
President

These rules were laid down on 14 January 2015 at Rosenheim University of Applied Sciences. This was published within the university on 14 January 2015. The publication date is therefore 14 January 2015.

**Appendix to the study and examination regulations for the Master's degree programme in Engineering at Rosenheim University of Applied Sciences.**

**1. Advanced mathematics and natural sciences basic modules**

Lfd. Nr.	Module	SWS	Art der Lehrveranstaltung	Prüfungen Art u. Dauer in Minuten 1) 2)	Ergänzende Regelungen	Leistungspunkte
MG01	Advanced Engineering Mathematics Angewandte Mathematik	4	SU, Ü	SchrP 90-120		5
MG02	Electrodynamics Elektrodynamik	4	SU, Pr	SchrP 90-120		5
MG03	Solid State Electronics Festkörperelektronik	4	SU, Pr	MdIP		5
MG04	Statistics Statistik	4	SU, Ü	SchrP 90-120		5
MG05	Fluid Mechanics Strömungsmechanik	4	SU, Ü	SchrP 90-120		5
Gesamt						10 <sup>3)</sup>

**2. Advanced modules from the fields of Automation Technology (AUT), Communications Technology (COM), Mechatronics (MEC), Mechanical Engineering (MEN), Plastics Engineering (PEN)**

Lfd. Nr.	Module	SWS	Art der Lehrveranstaltung	Prüfungen Art u. Dauer in Minuten 1) 2)	Ergänzende Regelungen	Leistungspunkte	AUT	COM	MEC	MEN	PEN
MV01	Advanced Control Systems Regelungstechnik	4	SU, Pr	SchrP 90-120		5	X		X	X	
MV02	Industrial Process Control Industrielle Steuerungstechnik	4	SU, Pr	SchrP 90-120		5	X				
MV03	Electrical Motion Control Servoantriebssysteme	4	SU, Pr	SchrP 90-120		5	X		X		
MV04	Automation Systems Automatisierungssysteme	4	SU, Pr	SchrP 90-120		5	X				
MV05	Reliability of Mechatronic Systems Zuverlässigkeit Mechatronischer Systeme	4	SU, Pr	SchrP 90-120		5			X	X	
MV06	Wireless Communication Systems Drahtlose Kommunikationssysteme	4	SU, Pr	SchrP 90-120		5		X			
MV07	Advanced Digital Communication Nachrichtenübertragung	4	SU, Pr	SchrP 90-120		5		X	X		
MV08	Digital Signal Processing Digitale Signalverarbeitung	4	SU, Pr	SchrP 90-120		5		X	X		
MV09	Advanced FEM FEM	4	SU, Pr	SchrP 90-120		5			X	X	
MV10	Electromagnetic Compatibility Elektromagnetische Verträglichkeit	4	SU, Pr	SchrP 90-120		5		X	X		
MV11	Image Processing for Automated Production Bildverarbeitung in der Produktion	4	SU, Pr	SchrP 90-120		5	X	X			
MV12	Mechanical Design Mechanische Konstruktion	4	SU, Pr	PSTA		5				X	
MV13	Model-Based Development Modell-basierter Entwurf	4	SU, Pr	SchrP 90-120		5			X	X	
MV14	Advanced Phenomena of Heat Transfer Phänomene der Wärmeübertragung	4	SU, Ü	SchrP 90-120		5					X
MV15	Modeling and Simulation of Polymer Materials Modellierung und Simulation von Polymermaterialien	4	SU, Ü	PSTA		5					X
MV16	Plastic-based Lightweight Construction Kunststoff-basierter Leichtbau	4	SU, Ü	SchrP 90-120		5					X
MV17	Advanced injection molding Spritzgusstechnologie	4	SU, Ü	PSTA		5					X
MV18	Selected topics of Polymer Chemistry and Materials Science Ausgewählte Themen der Polymerchemie und Materialwissenschaften	4	SU, Pr	MdIP 30		5					X
Gesamt						20 <sup>4)</sup>					

### 3. Application-based focus modules

Lfd. Nr.	Module	SWS	Art der Lehrveranstaltung	Prüfungen Art u. Dauer in Minuten 1) 2)	Ergänzende Regelungen	Leistungspunkte
MA01	Real-Time Systems Realzeitsysteme	4	SU, Pr	SchrP 90-120		5
MA02	Integrated Circuit System Design and Test IC-Systementwurf und -test	4	SU, Pr	SchrP 90-120		5
MA03	Mixed Signal Systems Mixed-Signal-Systeme	4	SU, Pr	SchrP 90-120		5
MA04	Selected Topics in Assembly Technology Ausgewählte Themen in der Montagetechnik	4	SU, Pr	SchrP 90-120		5
MA05	Freeform-Surfaces Freiformflächen	4	SU, Pr	PSTA		5
MA06	Automatisation of Polymer Processing Machinery Automatisierung Polymer-verarbeitender Anlagen	4	SU, Pr	SchrP 90-120		5
MA07	Materials from Renewable Resources Materialien aus erneuerbaren Quellen	4	SU, S	MdIP 30		5
MA08	Enterprise Resource Planning for Plastics Engineering Warenwirtschaft in der Kunststofftechnik	4	SU, Ü	SchrP 90-120		5
Gesamt						10 <sup>5)</sup>

### 4. Specialist required elective courses

Lfd. Nr.	Module	SWS	Art der Lehrveranstaltung	Prüfungen Art u. Dauer in Minuten 1) 2)	Ergänzende Regelungen	Leistungspunkte
MF01	Fachwissenschaftliche Wahlpflichtmodule <sup>6)</sup>		SU, Ü, Pr	PStA, mdlP, schrP	7)	
Gesamt						13 <sup>6)</sup>

### 5. Project course, Master's thesis

Lfd. Nr.	Module	SWS	Art der Lehrveranstaltung	Prüfungen Art u. Dauer in Minuten 1) 2)	Ergänzende Regelungen	Leistungspunkte
MP01	Master's Project Masterprojekt	10	SU, Ü, Pr	PStA	7)	12
MP02	Master's Thesis Masterarbeit	---	---	M		25
Gesamt						37

1) The Faculty Council specifies further details in the study plan.

2) A sufficient evaluation is required to pass the Master's examination.

3) A minimum of 10 credit points must be earned from the listed modules (MG01 to MG05).

4) A minimum of 20 credit points must be earned from the listed modules (MV01 to MV18).

5) A minimum of 10 credit points must be earned from the listed modules (MA01 to MA08).

6) Approved modules are listed in the study plan for the degree programme. A minimum of 13 credit points must be earned from the listed modules. If the Examination Committee agrees, advanced modules (from the MV group) may be recognised.

7) The required elective courses and the Master's project aim to provide advanced qualifications in the fields of electrical engineering and information technology, mechatronics, mechanical engineering, plastics engineering or a related field.

## **6. Explanation of abbreviations:**

MdIP	=	oral examination
PStA	=	coursework (such as a work experience report, or a colloquium for group work with an additional, individual examination)
MA	=	Master in application-focussed advanced modules
MF	=	Master in specialist modules
MG	=	Master in basic modules
MP	=	Master in project-oriented modules
MV	=	Master in advanced modules
Pr	=	work experience
S	=	seminar
SchrP	=	written examination
SU	=	seminar-based lectures
SWS	=	hours per week per semester
Ü	=	practical exercise
ZV	=	admission requirements
mE	=	pass
M	=	Master's thesis