

## **Study and examination regulations for the Bachelor's degree programme in Medical Engineering at the East Bavarian Technical University of Applied Sciences Amberg-Weiden**

**from 27/03/2024**

**(these study and examination regulations are subject to the General Study and Examination Regulations (ASPO) of the Ostbayerische Technische Hochschule Amberg-Weiden dated 27 May 2020)**

Based on Art. 9 sentence 1, Art. 80 para. 1 sentence 1 and sentence 2, Art 84 para. 2 sentence 1 of the Bavarian Higher Education Innovation Act (BayHIG) of 05 August 2022 (GVBl. p. 414, BayRS 2210-1-3-WK), which was amended by § 3 of the law of 23 December 2022 (GVBl. p. 709), the East Bavarian Technical University Amberg-Weiden issues the following statutes:

### **§ 1**

#### **Purpose of the study and examination regulations**

The study and examination regulations serve to complete and supplement the General Study and Examination Regulations (ASPO) of the Ostbayerische Technische Hochschule Amberg-Weiden of 27 May 2020 in the currently valid version.

### **§ 2**

#### **Study objective**

- (1) 1The Medical Engineering degree programme comprises an interdisciplinary, international education at the intersection of medicine and technology and serves to acquire specialist and interdisciplinary skills. 2The professional and interdisciplinary competence-oriented qualification goals are the ability to actively, critically, integratively and responsibly participate in the planning, development, realisation, marketing and approval processes of medical products in internationally active researching, developing and producing companies and service providers, intercultural sensitisation and the ability to work multilingually in English, German and, if necessary, in another language area. 3In addition, the qualification for a relevant Master's degree programme is taught.
- (2) 1 Graduates of the degree programme are able to systematically develop solutions for technical and organisational tasks on the basis of technical and methodological knowledge and to implement them in accordance with legal and normative requirements. 2They acquire the ability to plan and design medical technology products and to analyse, integrate and optimise complex mechanical, electronic and optical components using modelling, simulation and mechatronic knowledge.
- (3) <sup>1</sup>In addition to teaching subject-related and business management expertise and developing leadership and decision-making skills, the Bachelor's degree programme promotes

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Medical Engineering, social skills and the ability to communicate and co-operate in teams, which are important for professional practice.

- (4) <sup>1</sup> Graduates are able to work both individually and as members of international and interdisciplinary groups, to organise projects effectively and carry them out in an agile manner, and to take on appropriate management responsibility.<sup>2</sup> In doing so, they communicate and cooperate with other specialists and non-specialists, taking into account cultural differences, at a language level appropriate to the target group in a technical, medical and academic context in English and have at least level B2 German according to the Common European Framework of Reference for Languages or comparable.
- (5) <sup>1</sup>Due to the interdisciplinary nature of the degree programme, the professional field extends to all corporate functions in the value chain of manufacturing companies, research institutions and service providers in the medical technology and life science sector. <sup>2</sup>Graduates of the degree programme will therefore find a wide range of job opportunities in the areas of research and development, production, quality management and regulatory affairs, sales and service if they choose the appropriate modules.
- (6) In addition to specialist and methodological skills, the degree programme aims to convey the joy of learning and the creative application of knowledge, promote the ability to criticise and reflect and encourage an attitude of responsibility in the profession and society.

## § 3

### Standard period of study, start and structure of the programme

- (1) <sup>1</sup>Applicants with a school-leaving qualification from a foreign school are recommended to submit a certificate of recognition of the school-leaving qualification issued by a certified institution (e.g. uni-assist) by the end of the application period. <sup>2</sup>The decision on admission to the degree programme is made by the examination board.
- (2) <sup>1</sup>Students who have not obtained their higher education entrance qualification in German are given the subject and language skills in the first two study sections to enable them to enter the German labour market at the start of the practical semester and to be able to complete the third study section partly in German if they choose the appropriate specialisation modules. <sup>2</sup>The modules German 1-4 specified in the module handbook are to be used for this purpose. <sup>3</sup>In order to enable this acquisition of skills within the first two study sections, sufficient knowledge of the German language must be demonstrated at the beginning of the programme by means of a language certificate corresponding to level A2 according to the Common European Framework of Reference for Languages. <sup>4</sup> Proof is not required if the higher education entrance qualification or an existing higher education degree was obtained in German.
- (3) Students who have obtained their university entrance qualification in German are obliged to choose the modules Basic Electives 1 - 4 specified in the module handbook instead of the modules German 1 - 4.
- (4) <sup>1</sup>All applicants must also provide proof of English language proficiency at B2 level according to the Common European Framework of Reference for Languages at the start of their studies. <sup>2</sup>This proof can be provided by German students through the Abitur grade in English, alternatively by international applicants through a valid/current proof of sufficient knowledge of the English language in accordance with § 3 para. 6 sentence 2 of the statutes on the enrolment, leave of absence, re-registration and de-registration procedure of OTH Amberg-Weiden. <sup>3</sup> Proof is not required if the university entrance qualification or a university degree already obtained was obtained in English.

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- (5) <sup>1</sup>This Bachelor's degree programme is offered as a full-time course. <sup>2</sup>The programme comprises a standard period of study of seven semesters with a total of 210 ECTS credits. <sup>3</sup>It includes a practical semester.
- (6) <sup>1</sup>As a rule, the programme begins in the winter semester. <sup>2</sup>If the programme is also scheduled to start in the summer semester, this will be announced publicly before the application procedure begins.
- (7) The degree programme is divided into
- the first study phase with semesters 1 to 2,
  - the second study phase with semesters 3 to 4,
  - the third study phase with semesters 5 to 7.
- (8) Detailed information on the structure of the degree programme and the timetable (study plan) can be found in the module handbook.

## § 4

### Curricular structure, modules and certificates of achievement

- (1) The programme has the following curricular structure:

Scientific / technical modules	31 %
Medicine-specific modules	19 %
Interdisciplinary modules	31 %
Practice	14 %
Bachelor thesis	5 %

- (2) <sup>1</sup>The modules, their ECTS credits and number of hours, the type of courses as well as the examinations and course-related assessments are set out in Annex 1 to these Statutes. <sup>2</sup>The corresponding regulations for the compulsory elective modules are set out in the module handbook.
- (3) <sup>1</sup>The learning objectives and content of the compulsory modules and the practical semester are set out in the module handbook. <sup>2</sup>The compulsory elective modules serve to deepen the content of the compulsory modules.
- (4) <sup>1</sup>There is no entitlement to all compulsory elective modules and elective modules being offered. <sup>2</sup>Similarly, there is no entitlement to courses being offered if the number of participants is insufficient.
- (5) One ECTS credit point generally corresponds to 30 hours of work

## § 5

### Practical semester

- (1) <sup>1</sup>The practical semester is the fifth semester of study and includes 20 weeks of practical work experience. <sup>2</sup> It is supervised by the university and supplemented by practical courses. <sup>3</sup>It is successfully completed if
1. the completion of the practical training in the company is evidenced by a certificate from the internship firm that corresponds to the model specified by the university, and
  2. the required practical report has been submitted.
- (2) <sup>1</sup>Students who have obtained their higher education entrance qualification outside Germany are recommended to complete their internship in Germany, ideally in a

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Company with an international orientation. 2German students are recommended to complete the internship in a non-German-speaking country.

## § 6

### Curriculum and module handbook

- (1) 1In addition to the study and examination regulations, <sup>the</sup> Faculty of Business, Engineering and Healthcare creates a module handbook and a study plan, which are adopted by the Faculty Council and publicised at the university. 2The announcement of new regulations shall be made at the latest at the beginning of the lecture period of the semester to which they apply for the first time.
- (2) 1The modules and the associated coursework and examinations are described in the module handbook. 2The module handbook contains in particular the following information on the individual modules:
  - a) Name/description of the module (German/English)
  - b) Frequency of the offer
  - c) ECTS points (incl. distribution of the workload)
  - d) Teachers/module leaders
  - e) Admission requirements
  - f) Learning objectives
  - g) Teaching content
  - h) Study and examination achievements
  - i) the language of instruction and examination in the individual modules (English or German)
  - j) Applicability in the further course of study or university-wide.
- (3) 1The study programme is described in the curriculum. 2The curriculum contains the following information:
  - a) Timing of the programme, chronological order of the modules
  - b) Number of attendance hours (SWS) per module
  - c) ECTS points per module

## § 7

### Study progress

- (1) 1The examinations in the following modules must be taken for the first time <sup>by</sup> the end of the second semester (foundation and orientation examinations in accordance with Section 39 (2) sentence 1 ASPO):
  - Mathematics 1
  - Informatics2If the aforementioned examinations have not been taken by this date, they shall be deemed to have been taken for the first time and failed.
- (3) 1Enrolment in the third stage of studies requires that all modules of the first stage of studies have been passed. 2In order to ensure sufficient language skills to complete the practical semester and to enable participation in all compulsory elective modules, some of which are offered in German, sufficient knowledge of the German language must also be demonstrated by means of a language certificate corresponding to level B2 according to the Common European Framework of Reference for Languages.

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3 Proof is not required if the university entrance qualification or the university degree was obtained in German. 4 Proof of language proficiency must be provided <sup>before</sup> the start of the practical semester.

- (4) In justified exceptional cases, the examination board may make different arrangements upon request.

## § 8

### Study counselling

Students who, at the end of the second semester, have not acquired at least the number of ECTS credits required for the first semester should visit the Student Advisory Service.

## § 9

### Bachelor thesis

- (1) The Bachelor's thesis can be submitted in the first semester following the practical semester at the earliest and should be submitted no later than one month after the start of the second semester following the practical semester.
- (2) 1The processing time for the Bachelor's thesis is five months. 2It can be extended by two months by the examination board if the reasons for the extension are not the responsibility of the respective student.
- (3) The Bachelor's thesis must be written in German or English.

## § 10

### Assessment of examination performance and overall examination grade

- (1) ECTS points are awarded in full for each module graded at least "sufficient" and for the Bachelor's thesis graded at least "sufficient" in accordance with Annex 1.
- (2) The degree programme is successfully completed when all coursework and examinations have been successfully completed.
- (3) The overall grade is calculated as the weighted average of the individual module grades with the weights specified in Annex 1.

## § 11

### Academic degrees

On successful completion of the Bachelor's examination, the academic degree Bachelor of Engineering, abbreviated to "B.Eng." is awarded.

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## **§ 12**

### **Examination board**

The examination board responsible for the degree programme is the examination board of the Faculty of Industrial Engineering and Healthcare with a chairperson and two further members appointed by the Faculty Council.

## **§ 13**

### **Entry into force**

These study and examination regulations enter into force on 1 October 2024 and apply to students commencing their studies in the winter semester 2024/2025 or later.

Issued on the basis of the resolution of the Senate of the Ostbayerische Technische Hochschule Amberg-Weiden of 20 March 2024 and the legal supervisory approval by the President.

Amberg, 27/03/2024

Prof Dr Clemens Bulitta President

The study and examination regulations for the Bachelor's degree programme in Medical Engineering at the Ostbayerische Technische Hochschule Amberg-Weiden were announced on 05.04.2024 via the Internet by posting on the homepage of the Ostbayerische Technische Hochschule Amberg-Weiden (at [www.oth-aw.de](http://www.oth-aw.de)). The date of the announcement is 05/04/2024.

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## Appendix 1: Modules and examinations of the Bachelor's degree programme in Medical Engineering

1	2	3	4	5	6	7
No.	Module name	ECTS-Points	SWS	Type of course	Module examination <sup>2)</sup>	Weight for overall examination grade
	<b>Study section 1</b>					
T1	Mathematics I	5	4	SU/Ü	CI 90	1
T2	Technical Mechanics	5	4	SU/Ü	CI 90	1
T3	Mathematics II	5	4	SU/Ü	CI 90	1
T4	Mechanical Development	5	4	SU/Ü	CI 90	1
M1	Anatomy and Physiology	5	4	SU/Ü	CI 90	1
M2	Microbiology and Biophysics	5	4	SU/Ü	CI 90	1
M3	Medical Device Technology	5	4	SU/Ü	CI 90	1
I1.1	German 1	5	4	SU/Ü	ModA	1
or I1.2	Basic Elective	5	4	SU/Ü or Sem or Proj	KI 90 or ModA or Präs or mdIP	1
I2.1	German 2	5	4	SU/Ü	ModA	1
or I2.2	Basic Elective	5	4	SU/Ü or Sem or Proj	KI 90 or ModA or Präs or mdIP	1
I5	Informatics	5	4	SU/Ü	ModA	1
I6	Statistics and Quantitative Methods	5	4	SU/Ü	CI 90	1
I7	Intercultural Communications	5	4	SU/Ü	ModA	1
	<b>Total ECTS / SWS</b>	<b>60</b>	<b>48</b>			

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1	2	3	4	5	6	7
No.	Module name	ECTS-Points	SWS	Type of course	Module examination <sup>2)</sup>	Weight for overall examination grade
	<b>Study section 2</b>					
T5	Production Technology	5	4	SU/Ü	CI 90	1
T6	Physics	5	4	SU/Ü	CI 90	1
T7	Industrial Engineering	5	4	SU/Ü	CI 90	1
T8	Electrical Engineering	5	4	SU/Ü	CI 90	1
T9	Materials Engineering	5	4	SU/Ü	CI 90	1
M4	Quality Management and Regulatory Affairs	5	4	SU/Ü	CI 90	1
M5	Medical Imaging	5	4	SU/Ü	CI 90	1
I3.1	German 3	5	4	SU/Ü	ModA	1
or I3.2	Basic Elective	5	4	SU/Ü or Sem or Proj	KI 90 or ModA or Präs or mdlP	1
I4.1	German 4	5	4	SU/Ü	ModA	1
or I4.2	Basic Elective	5	4	SU/Ü or Sem or Proj	KI 90 or ModA or Präs or mdlP	1
I8	Project Management and Agile Methods	5	4	SU/Ü	ModA	1
I9	Object Oriented Coding	5	4	SU/Ü	CI 90	1
I10	Databases	5	4	SU/Ü	CI 90	1
	<b>Total ECTS / SWS</b>	<b>60</b>	<b>48</b>			



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1	2	3	4	5	6	7
No.	Module name	ECTS-Points	SWS	Type of course	Module examination <sup>2)</sup>	Weight for overall examination grade
	<b>Study section 3</b>					
	Science /Technology Elective 1	5	4	SU/Ü or Sem or Proj	KI 90 or ModA or Präs or mdIP	1
	Science /Technology Elective 2	5	4	SU/Ü or Sem or Proj	KI 90 or ModA or Präs or mdIP	1
	Science /Technology Elective 3	5	4	SU/Ü or Sem or Proj	KI 90 or ModA or Präs or mdIP	1
	Science /Technology Elective 4	5	4	SU/Ü or Sem or Proj	KI 90 or ModA or Präs or mdIP	1
	Medical Elective 1	5	4	SU/Ü or Sem or Proj	KI 90 or ModA or Präs or mdIP	1
	Medical Elective 2	5	4	SU/Ü or Sem or Proj	KI 90 or ModA or Präs or mdIP	1
	Medical Elective 3	5	4	SU/Ü or Sem or Proj	KI 90 or ModA or Präs or mdIP	1
	Interdisciplinary Elective 1	5	4	SU/Ü or Sem or Proj	KI 90 or ModA or Präs or mdIP	1
	Interdisciplinary Elective 2	5	4	SU/Ü or Sem or Proj	KI 90 or ModA or Präs or mdIP	1
	Interdisciplinary Elective 3	5	4	SU/Ü or Sem or Proj	KI 90 or ModA or Präs or mdIP	1
PS	Internship	30				0
BA	Bachelor Thesis	10				4
	<b>Total ECTS / SWS</b>	<b>90</b>	<b>40</b>			

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<sup>1)</sup> Programme-specific compulsory elective modules:

This is a module group with several compulsory elective modules, for each of which ECTS points are earned upon successful completion of the respective module. In total, the ECTS points defined in the SPO must be earned for each group.

Compulsory elective modules for teaching specialist/methodological skills are closely related to the degree programme and serve to acquire specialist and methodological skills in selected areas (cf. HQR of 16.02.2017).

Compulsory elective modules for teaching social/self-competences serve to teach and deepen interdisciplinary skills and qualifications (cf. HQR of 16 February 2017).

The detailed qualification objectives of the compulsory elective modules can be found in the respective module descriptions.

<sup>2)</sup> The module examinations can be supplemented on a voluntary basis via a bonus system (see General Study and Examination Regulations (ASPO) of OTH Amberg-Weiden).

