

These degree programme and examination regulations have been worded carefully to be up to date; however, errors cannot be completely excluded. The official German text available from L1 – Office of Legal Affairs and Academic Quality Management is the version that is legally binding.

# Degree Programme and Examination Regulations for the Bachelor's and Master's Degree Programmes in Clean Energy Processes at the Faculty of Engineering at Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) – FPOCEP – Dated 4 March 2021

Based on Section 13 (1)(2), Section 43 (5), Section 58 (1) and Section 61 (2)(1) of the Bavarian Higher Education Act (Bayerisches Hochschulgesetz, **BayHSchG**), FAU enacts the following degree programme and examination regulations:

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## Part I: General Provisions

### Section 35 Scope

<sup>1</sup>These degree programme and examination regulations govern studies and examinations for the Bachelor's and consecutive Master's degree programmes in Clean Energy Processes leading to a Bachelor of Science or Master of Science degree. <sup>2</sup>They complement the current version of the General Examination Regulations for the Bachelor's and Master's Degree Programmes of the Faculty of Engineering at FAU – **ABMPO/TechFak** – dated 18 September 2007.

### Section 36 Bachelor's Degree Programme, Teaching and Examination Language, Related Degree Programmes

<sup>1</sup>In deviation from Section 3 (6) **ABMPO/TechFak**, the teaching and examination language in the Bachelor's degree programme is English. <sup>2</sup>Individual teaching units and examinations or modules classed as elective modules may be held in German; further details are stipulated in the module handbook. <sup>3</sup>The provision in Section 30 (3)(2) **ABMPO/TechFak** does not apply to related degree programmes.

### Section 37 Master's Degree Programme, Part-time Study, Start of Degree Programme, Teaching and Examination Language, Related Degree Programmes

(1) <sup>1</sup>The Master's degree programme in Clean Energy Processes can be completed as a full-time or as a part-time degree programme. <sup>2</sup>The Master's degree programme may be started in the summer semester or in the winter semester.

(2) Students must complete an internship lasting at least twelve weeks during the Master's degree programme in Clean Energy Processes (M15 pursuant to **Appendix 2** or **3**).

(3) In deviation from Section 4 (5) **ABMPO/TechFak**, the teaching and examination language in the Master's degree programme is English.

(4) The provisions in Section 30 (3)(2) **ABMPO/TechFak** do not apply to related degree programmes.

### Section 38 Master's Degree Programme, Specialisations

(1) <sup>1</sup>Master's students shall choose one of the following specialisations in order to establish a subject-specific profile:

1. Energy Technologies or
2. Energy Systems.

<sup>2</sup>The Degree Programme Committee shall draw up a module catalogue for each specialisation which shall be announced according to local practice by the end of the second week of the lecture period. <sup>3</sup>The catalogue shall include specialisation modules with laboratory courses for each specialisation worth 15 ECTS credits each and specialisation modules without laboratory courses worth 20 ECTS credits each. <sup>4</sup>Students shall also complete compulsory elective modules worth 15 ECTS credits. <sup>5</sup>Further details are stipulated in the following paragraphs, **Appendix 2** (full-time) or **Appendix 3** (part-time), as well as Sections 45 and 46.

(2) <sup>1</sup>The overriding learning outcome of the specialisations which can be chosen pursuant to paragraph 1 is to allow students to gain more advanced knowledge in the

selected specialisation. <sup>2</sup>This should allow them to acquire skills of relevance to research.

(3) <sup>1</sup>In the 'Energy Technologies' specialisation, students focus on acquiring skills relevant to the application of clean energy technologies. <sup>2</sup>Fundamental methods for developing and implementing new technologies for the conversion and transformation of renewable energies are explored in greater depth.

(4) <sup>1</sup>The specialisation 'Energy Systems' focuses on students acquiring skills relevant to the application of energy systems. <sup>2</sup>Methods for developing process chains for generating, using and integrating renewable energies in chemical processes are explored in greater depth.

## **Part II: Special Provisions**

### **1. Bachelor's Examination**

#### **Section 39 Scope of the Grundlagen- und Orientierungsprüfung**

(1) <sup>1</sup>The Grundlagen und Orientierungsprüfung, GOP, shall consist of the modules set forth in **Appendix 1**

1. B1: Mathematics I
2. B2: Foundations of chemical reaction engineering
3. B3: Physics I
4. B4: Renewable Energies
5. B6: Mathematics II
6. B7: Interface Engineering and Particle Technology
7. B8: Electrochemistry.

<sup>2</sup>The ECTS credits allocated to each module and the type and scope of the examinations are stipulated in **Appendix 1**.

(2) The GOP shall have been passed if at least 30 ECTS credits (from a total of 40 ECTS credits) have been earned from the modules listed in paragraph 1.

#### **Section 40 Scope and Structure of the Bachelor's Examination**

<sup>1</sup>The Bachelor's examination shall consist of the modules set forth in **Appendix 1**. <sup>2</sup>The length and type of examination for each module are also specified in **Appendix 1**.

#### **Section 41 Modules B5 and B28 (Elective Modules I and II)**

<sup>1</sup>Students select their elective modules B5 and B28, worth 5 ECTS credits each, from the range of modules offered at FAU. <sup>2</sup>The type and scope of the lectures and seminars and the examination are dependent on the skills for the chosen module according to the relevant **degree programme and examination regulations** and the module handbook.

#### **Section 42 Bachelor's Thesis**

(1) <sup>1</sup>The aim of the Bachelor's thesis is to enable students to learn to solve problems in the field of clean energy processes independently. <sup>2</sup>Requirements for the thesis shall be such that it can be completed with a workload of approximately 360 hours. <sup>3</sup>The results of the Bachelor's thesis shall be presented in a presentation lasting approximately 30 minutes within the context of an advanced seminar. <sup>4</sup>The date of the presentation shall

be determined by the supervising lecturer either after the student has submitted their Bachelor's thesis or during the final stage of thesis work and the student shall be informed of the date in good time.

(2) <sup>1</sup>The topic of the Bachelor's thesis shall be allocated by a university lecturer from the Department of CBI at FAU. <sup>2</sup>Deviations from this shall be subject to the approval of the chairperson of the Degree Programme Committee.

(3) In deviation from Section 27 (6) **ABMPO/TechFak**, the Bachelor's thesis shall be written in English.

## 2. Master's Examination

### Section 43 Qualification for a Master's Degree, Certificates, Admission Requirements

(1) <sup>1</sup>A relevant degree in engineering within the meaning of Section 29 (1)(1) **ABMPO/TechFak** is a Bachelor's degree completed according to these examination regulations or an equivalent degree from Germany or another country that leads to a learning outcome equivalent to the Bachelor's degree in Clean Energy Processes completed according to these examination regulations. <sup>2</sup>Completed Bachelor's degrees in chemical engineering, chemical and biological engineering, and energy technology shall generally be considered relevant. <sup>3</sup>In accordance with (5)(4) of the **Appendix to ABMPO/TechFak**, applicants with a subject-related degree or an equivalent degree as defined in Section 29 (1)(1) **ABMPO/TechFak** shall only be admitted to the Master's degree programme after passing an oral admission examination according to (4).

(2) <sup>1</sup>As stipulated in paragraph 2 (4) of the **Appendix to ABMPO/TechFak**, applicants are required to provide additional proof of English language skills equivalent to at least Level B2 of the Common European Framework of Reference (CEFR) by submitting either relevant school reports or relevant certificates issued by a language school or university. <sup>2</sup>The following are considered suitable proof of language skills:

- a) A school leaving certificate or another certificate issued by the school providing evidence that English courses have been taken at school up until a level equivalent to B2 CEFR,
- b) A certificate indicating that the applicant has successfully passed the Test of English as a Foreign Language (TOEFL), attaining at least 85 points in the iBT test, or
- c) A certificate from the English Language Testing System (IELTS) with a grade of 5.0<sup>1</sup> or above; other possible alternatives for proving evidence of language proficiency are listed in the table of equivalence published by the FAU Language Centre. <sup>3</sup>Proof of language proficiency does not need to be submitted if the applicant acquired their university entrance qualification or relevant undergraduate degree in English.

(3) Applicants shall be deemed as qualified for the Master's degree programme in Clean Energy Processes according to paragraph 5 (2)(2) of the **Appendix to ABMPO/TechFak** if they have passed at least four of the modules B17 to B20, B23

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<sup>1</sup> **Please note:** The following is considered suitable proof of language skills: A certificate from the English Language Testing System (IELTS) with a grade of 5.5 or above. The correction shall be made in the context of the next amendment.

and B25 to B27 in the Bachelor's degree programme with an average grade of 3.0 or better.

(4) <sup>1</sup>In the oral admission examination according to paragraph 5 (3) et seq of the **Appendix to ABMPO/TechFak**, applicants shall be evaluated according to the following criteria:

1. Ability to analyse complex issues from the area of clean energy processes whilst taking relevant process and measuring techniques into consideration, to work out solutions and to critically discuss results (40 percent),
2. Standard of fundamental knowledge acquired during the Bachelor's degree programme corresponding to a subject specialisation in line with the modules available in the Master's degree programme (30 percent),
3. Ability to give an opinion on issues relating to current research using the correct technical terms (30 percent).

<sup>2</sup>The admission examination does not affect the student's choice of specialisation in the Master's degree programme.

#### **Section 44 Scope and Structure of the Master's Examination**

<sup>1</sup>The Master's examination consists of the modules pursuant to **Appendix 2** (full-time) or **Appendix 3** (part-time). <sup>2</sup>The length and type of examination for each module are also specified in **Appendix 2** or **3**.

#### **Section 45 Learning Outcome of Specialisation Modules – M1 - M6**

(1) <sup>1</sup>The learning outcome of the specialisation modules M1 to M6 is for students to expand their subject-related skills and gain more advanced knowledge in the areas of energy technologies or energy systems by using scientific methods in theory and in laboratory practice. <sup>2</sup>This should allow them to acquire skills of relevance to research. <sup>3</sup>The learning outcome for the specialisation modules M1 to M6 is to give students the opportunity to choose their individual focus and tailor their profile in view of their future career and/or personal development. <sup>4</sup>The laboratory courses allow students to put the theory they have covered into practice.

(2) <sup>1</sup>The type and scope of the examination are dependent on the skills for the relevant module according to paragraph 1 and the module handbook. <sup>2</sup>Examinations in the modules shall take one of the following forms: written examination (60, 90, 120 min), oral examination (20-30 min), seminar achievement, tutorial achievement or laboratory achievement pursuant to Section 6 (3) **ABMPO/TechFak**. <sup>3</sup>Other examination forms are possible if so decided by the Degree Programme Committee. <sup>4</sup>In accordance with Section 6 (2)(3) **ABMPO/TechFak**, combinations of the individual achievements stated in sentence 3 may also be possible in justified exceptional circumstances. <sup>5</sup>Pursuant to sentence 3, in modules M1 and M2 students shall complete an (ungraded) practical achievement and a further examination achievement pursuant to sentence 2 depending on the specific manner in which the module is taught. <sup>6</sup>Further details are stipulated in the module handbook. <sup>7</sup>The module handbook is published before the beginning of the semester in accordance with local practice.

(3) <sup>1</sup>The specialisation modules with laboratory course are worth 7.5 ECTS credits and usually consist of a lecture (2 SWS), a tutorial (3 SWS) and a laboratory course (3 SWS). <sup>2</sup>The specialisation modules without a laboratory course are worth 5 ECTS credits and usually consist of a lecture (2 SWS) and a tutorial (3 SWS). <sup>3</sup>Any exceptions are detailed in the module handbook.

### **Section 46 Learning Outcome of Compulsory Elective Modules – M7 - M9**

(1) <sup>1</sup>The learning outcome of the compulsory elective modules M7 to M9 is for students to expand their subject-related skills and gain more advanced knowledge in the area of clean energy processes. <sup>2</sup>The choice of compulsory elective modules, in particular in combination with the choice of specialisation modules M1 - M6, gives students the opportunity to tailor their profile in view of their future careers.

(2) <sup>1</sup>The type and scope of examinations are dependent on the skills for the relevant module according to paragraph 1 and the module handbook. <sup>2</sup>Examinations in the modules shall take one of the following forms: written examination (60, 90, 120 min), oral examination (20-30 min), seminar achievement, tutorial achievement or practical achievement pursuant to Section 6 (3) **ABMPO/TechFak**. <sup>3</sup>Other examination forms are possible if so decided by the Degree Programme Committee. <sup>4</sup>Section 6 (2)(3) **ABMPO/TechFak** stipulates that in justified exceptional circumstances, combinations of the individual achievements stated in sentence 2 may also be possible. <sup>5</sup>Further details are stipulated in the module handbook. <sup>6</sup>The module handbook is published before the beginning of the semester in accordance with local practice.

(3) <sup>1</sup>The compulsory elective modules are worth 5 ECTS credits and usually consist of a lecture (2 SWS) and a tutorial (3 SWS). <sup>2</sup>Any exceptions are detailed in the module handbook.

### **Section 47 Learning Outcome of Elective Modules from the Other Specialisation – M10 and M11**

(1) <sup>1</sup>The learning outcome of the elective modules from the other specialisation (M10 and M11) is for students to obtain additional information relevant to their subject from the other specialisation, providing them with an all-round education in the area of clean energy processes. <sup>2</sup>By taking elective modules from the other specialisation, students can steer their own career prospects by choosing modules from the other specialisation which are relevant to them. <sup>3</sup>Students can choose from modules included in the module catalogue for specialisation modules M3 to M6.

(2) <sup>1</sup>The type and scope of examinations are dependent on the skills for the relevant module according to paragraph 1 and the module handbook. <sup>2</sup>Examinations in the modules shall take one of the following forms: written examination (60, 90, 120 min), oral examination (20-30 min), seminar achievement, tutorial achievement or practical achievement pursuant to Section 6 (3) **ABMPO/TechFak**. <sup>3</sup>Other examination forms are possible if so decided by the Degree Programme Committee. <sup>4</sup>Section 6 (2)(3) **ABMPO/TechFak** stipulates that in justified exceptional circumstances, combinations of the individual achievements stated in sentence 2 may also be possible. <sup>5</sup>Further details are stipulated in the module handbook. <sup>6</sup>The module handbook is published before the beginning of the semester in accordance with local practice.

(3) <sup>1</sup>The optional modules are generally worth 5 ECTS credits and usually consist of a lecture (2 SWS) and a tutorial (3 SWS). <sup>2</sup>Any exceptions are detailed in the module handbook.

### **Section 48 Elective Modules – M12 and M13**

<sup>1</sup>Students select their elective modules (M12 and M13) worth 10 ECTS credits each, from the range of modules offered at FAU. <sup>2</sup>The type and scope of the lectures and

seminars and the examination are dependent on the skills for the chosen module according to the relevant **degree programme and examination regulations** and the module handbook.

#### **Section 49 Admission Requirements for the Master's Thesis**

<sup>1</sup>In order to qualify for admission to the Master's thesis (Module M17 in **Appendix 2** or **3**), students shall be required to successfully complete modules pursuant to **Appendix 2** or **Appendix 3** worth at least 90 ECTS credits. <sup>2</sup>The chairperson of the Degree Programme Committee may grant exceptions upon the student's request.

#### **Section 50 Master's Thesis**

(1) <sup>1</sup>The topic of the Master's thesis shall be allocated by a university lecturer from the Department of Chemical and Biological Engineering. <sup>2</sup>The topic of the Master's thesis may also be allocated by a university lecturer at FAU who is responsible for one of the modules M1 to M6. <sup>3</sup>Deviations from this shall be subject to the Degree Programme Committee's approval.

(2) <sup>1</sup>The Master's thesis and its results shall be presented in a presentation lasting approximately 30 minutes within the context of an advanced seminar. <sup>2</sup>The date of the presentation shall be determined by the supervising lecturer either after the student has submitted their Master's thesis or during the final stage of thesis work and the student shall be informed of the date in good time. <sup>3</sup>27 ECTS credits shall be awarded for the thesis and 3 ECTS credits shall be awarded for the presentation.

(3) In deviation from Section 32 (6)(1) **ABMPO/TechFak**, the Master's thesis shall be written in English.

### **Part III: Transitory and Final Provisions**

#### **Section 51 Legal Validity and Transitory Provisions**

<sup>1</sup>These degree programme and examination regulations shall come into effect on the day after their publication. <sup>2</sup>They shall apply to all students starting a degree programme from the winter semester 2021/2022 onwards.

## Appendix 1: Structure of the Bachelor's Degree Programme in Clean Energy Processes

No.	Module name	Teaching unit	SWS (semester hours)				Total ECTS credits	Distribution of workload per semester in ECTS credits						Type and scope of the examination
			L	T	P	S		1st sem.	2nd sem.	3rd sem.	4th sem.	5th sem.	6th sem.	
B1	Mathematics I (GOP)		4	2			7.5	7.5						EA (WE, 90 min)
B2	Foundations of chemical reaction engineering (GOP)		2	2			5	5						EA (WE, 90 min)
B3	Physics I (GOP)		3	1			5	5						EA (WE, 90 min)
B4	Renewable energies (GOP)		2	2			5	5						EA (WE, 90 min)
B5	Elective module I, see Section 41		(2-3)	(1-2)			5			5				EA <sup>1</sup>
B6	Mathematics II (GOP)		4	2			7.5		7.5					EA (WE, 90 min)
B7	Interface engineering and particle technology (GOP)		2	3			5		5					EA (WE, 90 min)
B8	Electrochemistry (GOP)		2	3			5		5					EA (WE, 90 min)
B9	Physics II		3	1			5		5					EA (WE, 90 min)
B10	Materials and structure		1	1		2	5		5					EA (WE, 90 min)
B11	Fundamentals of electrical engineering		2	2			5		5					EA (WE, 90 min)
B12	Mathematics III		4	2			7.5			7.5				EA (WE, 90 min)
B13	Thermodynamics and heat and mass transfer		4	2			7.5			7.5				EA (WE, 90 min)
B14	Microeconomics		2	2			5	5						EA (WE, 90 min)
B15	Measurement systems		2	1		2	5			5				EA (WE, 90 min)
B16	Active project	Active project	1	1		3	5			5				EA (SA)
		Advanced seminar												
B17	Chemical thermodynamics		2	2			5				5			EA (WE, 90 min)



No.	Module name	Teaching unit	SWS (semester hours)				Total ECTS credits	Distribution of workload per semester in ECTS credits						Type and scope of the examination
			L	T	P	S		1st sem.	2nd sem.	3rd sem.	4th sem.	5th sem.	6th sem.	
B18	Fluid dynamics		2	2			5				5			EA (WE, 90 min)
B19	Chemical reaction engineering		2	2			5				5			EA (WE, 90 min)
B20	Decentralized energy supply		2	2			5				5			EA (WE, 90 min)
B21	Scientific computing in engineering		2		4		5				5			EA (WE, 90 min)
B22	Fundamentals of energy resources		2	2			5				5			EA (WE, 90 min)
B23	Electrocatalysis		2	2			5					5		EA (WE, 90 min)
B24	Data science for engineers		2	2			5					5		EA (WE, 90 min)
B25	Process systems dynamics 1		2	2			5					5		EA (WE, 90 min)
B26	Energy economics		2	2			5					5		EA (WE, 90 min)
B27	Storage technologies		2	2			5					5		EA (WE, 90 min)
B28	Elective module II, see Section 41		(2-3)	(1-2)			5					5		EA <sup>1</sup>
B29	Sustainability management		2	2			5						5	EA (WE, 90 min)
B30	Laboratory course: Process engineering				10		10						10	CA (LA)
B31	Bachelor's thesis	Thesis					15						12	EA (BT) and EA (seminar achievement) (80 % + 20 %)
		Advanced seminar				2							3	
							180	27.5	32.5	30	30	30	30	
		Total SWS (semester hours):	139-143					Total ECTS credits:		180				

<sup>1</sup> see Section 41. The type and scope of the examination depend on the specific manner in which the respective module is taught; see module handbook for details. Notwithstanding Section 28 (2)(2) **ABMPO/TechFak**, failed attempts are not counted and these modules do not have to be repeated within the set deadline if failed.

**Key:**

GOP = Grundlagen- und Orientierungsprüfung; Preliminary examination

EA = graded examination achievement, see Section 6 (3) sentence 7 **ABMPO/TechFak**

CA = ungraded course achievement, see Section 6 (3) sentence 8 **ABMPO/TechFak**

WE = written examination

o = oral examination

TA = tutorial achievement, see Section 6 (3) sentence 3 and 5 **ABMPO/TechFak** and module handbook

LA = laboratory achievement, see Section 6 (3) sentences 3 and 5 **ABMPO/TechFak** and module handbook

SA = seminar achievement, see Section 6 (3) sentence 4 and 5 **ABMPO/TechFak** and module handbook

BT = Bachelor's thesis

## Appendix 2: Structure of the Master's Degree Programme in Clean Energy Processes Full-time

No.	Module name <sup>1</sup>	Teaching unit	SWS (semester hours)				Total ECTS Credits	Distribution of workload per semester in ECTS credits				Type and scope of the examination
			L	T	P	S		1st sem.	2nd sem.	3rd sem.	4th sem.	
M1	Specialisation module with laboratory course 1		2	3	3		7.5	5				see Section 45 (2) <sup>2</sup>
								2.5				
M2	Specialisation module with laboratory course 2		2	3	3		7.5		5			see Section 45 (2) <sup>2</sup>
									2.5			
M3	Specialisation module 1		2	3			5	5				see Section 45 (2) <sup>2</sup>
M4	Specialisation module 2		2	3			5	5				see Section 45 (2) <sup>2</sup>
M5	Specialisation module 3		2	3			5		5			see Section 45 (2) <sup>2</sup>
M6	Specialisation module 4		2	3			5			5		see Section 45 (2) <sup>2</sup>
M7	Compulsory elective module 1		2	3			5	5				see Section 46 (2) <sup>2</sup>
M8	Compulsory elective module 2		2	3			5		5			see Section 46 (2) <sup>2</sup>
M9	Compulsory elective module 3		2	3			5			5		see Section 46 (2) <sup>2</sup>
M10	Elective module from other specialisation 1		2	3			5		5			see Section 47 (2) <sup>2</sup>
M11	Elective module from other specialisation 2		2	3			5			5		see Section 47 (2) <sup>2</sup>
M12	Elective module 1		2	2-3			5		5			EA <sup>3</sup>
M13	Elective module 2		2	2-3			5			5		EA <sup>3</sup>
M14	Seminar: Sustainability and environmental ethics					4	5	5				EA (SA)
M15	Internship						10			10		CA (LA)

No.	Module name <sup>1</sup>	Teaching unit	SWS (semester hours)				Total ECTS Credits	Distribution of workload per semester in ECTS credits				Type and scope of the examination
			L	T	P	S		1st sem.	2nd sem.	3rd sem.	4th sem.	
M16	Advanced seminar					4	5		5			EA (SA)
M17	Master's thesis	Thesis					30				27	EA (MT) and EA (presentation, 20-30 min and discussion) (90 % + 10 %)
		Advanced seminar				2					3	
							120	27.5	32.5	30	30	
			Total SWS (semester hours): 79-81					Total ECTS credits:		120		

<sup>1</sup> Due to the specific subject knowledge that must be acquired as part of the qualification goals of the Master's degree programme, as detailed in the module descriptions, modules that have been completed in a previous Bachelor's degree programme may not generally be accredited for the Master's examination.

<sup>2</sup> see Section 45 et seq. The type and scope of the examination and any exceptions to the number of credits awarded or nature and distribution of teaching units depend on the specific manner in which the respective module is taught; see module handbook for details. The module handbook is published before the beginning of the semester in accordance with local practice.

<sup>3</sup> see Section 48. The type and scope of the examination depend on the specific manner in which the respective module is taught; see module handbook for details. Notwithstanding Section 28 (2)(2) **ABMPO/TechFak**, failed attempts are not counted and these modules do not have to be repeated within the set deadline if failed.

**Key:**

EA = graded examination achievement, see Section 6 (3) sentence 7 **ABMPO/TechFak**

CA = ungraded course achievement, see Section 6 (3) sentence 8 **ABMPO/TechFak**

WE = written examination

o = oral examination

LA = laboratory achievement, see Section 6 (3) sentences 3 and 5 **AMBPO/TechFak** and module handbook

SA = seminar achievement, see Section 6 (3) sentence 4 and 5 **ABMPO/TechFak** and module handbook

MT = Master's thesis

### Appendix 3: Structure of the Master's Degree Programme in Clean Energy Processes Part-time

No.	Module name <sup>1</sup>	Teaching unit	SWS (semester hours)				Total ECTS credits	Distribution of workload per semester in ECTS credits								Type and scope of the examination
			L	T	P	S		1st	2nd	3rd	4th	5th	6th	7th	8th	
M1	Specialisation module with laboratory course 1		2	3	3		7.5	5								see Section 45 (2) <sup>2</sup>
								2.5								
M2	Specialisation module with laboratory course 2		2	3	3		7.5		5							see Section 45 (2) <sup>2</sup>
									2.5							
M3	Specialisation module 1		2	3			5			5						see Section 45 (2) <sup>2</sup>
M4	Specialisation module 2		2	3			5				5					see Section 45 (2) <sup>2</sup>
M5	Specialisation module 3		2	3			5					5				see Section 45 (2) <sup>2</sup>
M6	Specialisation module 4		2	3			5					5				see Section 45 (2) <sup>2</sup>
M7	Compulsory elective module 1		2	3			5		5							see Section 46 (2) <sup>2</sup>
M8	Compulsory elective module 2		2	3			5			5						see Section 46 (2) <sup>2</sup>
M9	Compulsory elective module 3		2	3			5				5					see Section 46 (2) <sup>2</sup>
M10	Elective module from other specialisation 1		2	3			5			5						see Section 47 (2) <sup>2</sup>
M11	Elective module from other specialisation 2		2	3			5				5					see Section 47 (2) <sup>2</sup>
M12	Elective module 1		2	3			5									EA <sup>3</sup>
M13	Elective module 2		2	3			5		5			5				EA <sup>3</sup>
M14	Seminar: Sustainability and environmental ethics					4	5	5								EA (SA)
M15	Internship						10						10			CA (LA)
M16	Advanced seminar					4	5						5			EA (SA)
M17	Master's thesis	Thesis					30							15	12	EA (MT, 90 %) and EA (presentation, 20-30 min and discussion, 10 %)
		Advanced seminar				2									3	
								12.5	17.5	15	15	15	15	15	15	
		Total SWS (semester hours):					120	Total ECTS credits: 120								

<sup>1</sup> Due to the specific subject knowledge that must be acquired as part of the qualification goals of the Master's degree programme, as detailed in the module descriptions, modules that have been completed in a previous Bachelor's degree programme may not generally be accredited for the Master's examination.

<sup>2</sup> see Section 45 et seq. The type and scope of the examination and any exceptions to the number of credits awarded or nature and distribution of teaching units depend on the specific manner in which the respective module is taught; see module handbook for details. The module handbook is published before the beginning of the semester in accordance with local practice.

<sup>3</sup> see Section 48. The type and scope of the examination depend on the specific manner in which the respective module is taught; see module handbook for details.  
Notwithstanding Section 28 (2)(2) **ABMPO/TechFak**, failed attempts are not counted and these modules do not have to be repeated within the set deadline if failed.

**Key:**

EA = graded examination achievement, see Section 6 (3) sentence 7 **ABMPO/TechFak**  
CA = ungraded course achievement, see Section 6 (3) sentence 8 **ABMPO/TechFak**  
WE = written examination  
o = oral examination  
LA = laboratory achievement, see Section 6 (3) sentences 3 and 5 **AMBPO/TechFak** and module handbook  
SA = seminar achievement, see Section 6 (3) sentence 4 and 5 **ABMPO/TechFak** and module handbook  
MT = Master's thesis

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Erlangen, 4 March 2021

Prof. Dr.-Ing. Joachim Hornegger  
President

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