

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 – Legal Affairs and Academic Quality Management is the version that is legally binding.

**Note:** Students who started their studies before the latest amendment came into effect are requested to also comply with previous amendments and the respective transitory provisions.

**Degree Programme and Examination Regulations for the  
Bachelor's degree programme in Nanotechnology and the  
Master's degree programme in Nanotechnology at the  
Faculty of Engineering at Friedrich-Alexander-Universität  
Erlangen-Nürnberg (FAU)  
– FPONT –  
Dated 15 December 2008**

amended by statutes of  
2 March 2010  
30 July 2010  
15 March 2011  
5 August 2011  
31 July 2012 (joint amendment statute)  
6 February 2014  
2 July 2015  
9 September 2020  
29 September 2021

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

**Contents:**

<b>Part I: General Provisions</b> .....	<b>2</b>
Section 35 Scope .....	2
Section 36 Bachelor's Degree Programme, Related Degree Programmes .....	2
Section 37 Master's Degree Programme, Standard Duration of Studies, Start of Degree Programme, Related Degree Programmes, Teaching and Examination Language .....	3

<b>Part II: Special Provisions</b> .....	<b>3</b>
1. Bachelor's Examination .....	3
Section 38 Scope of the Grundlagen- und Orientierungsprüfung .....	3
Section 39 Scope and Structure of the Bachelor's Examination.....	3
Section 40 Bachelor's Thesis .....	4
2. Master's degree programme.....	4
Section 41 Qualification for a Master's Degree, Certificates, Admission Requirements, Admission Subject to Conditions.....	4
Section 42 Master's Degree Examinations .....	5
Section 42a Core modules (M6–M9).....	6
Section 42b Scientific-technical modules (M10 + M11) .....	6
Section 42c Soft Skills (M13).....	7
Section 43 Requirements for Admission to the Master's Thesis.....	7
Section 44 Master's Thesis.....	7
<b>Part III: Transitory and Final Provisions</b> .....	<b>8</b>
Section 45 Legal Validity .....	8
Appendix 1: Structure of the Degree Programme in Nanotechnology .....	9
Appendix 2: Structure of the Master's Degree Programme .....	14

## Part I: General Provisions

### Section 35 Scope

<sup>1</sup>The degree programme and examination regulations stipulate conditions for admission to and provisions for examinations in the Bachelor's degree programme in Nanotechnology and the consecutive Master's degree programme in Nanotechnology, leading to a Bachelor of Science (BSc) and Master of Science (MSc) degree. <sup>2</sup>They complement the current version of the General Examination Regulations for Bachelor's and Master's Examinations of the Faculty of Engineering at FAU – **ABMPO/TechFak** – dated 18 September 2007.

### Section 36 Bachelor's Degree Programme, Related Degree Programmes

(1) The Bachelor's degree programme in Nanotechnology shall begin in the winter semester.

(2) <sup>1</sup>The standard duration of the Bachelor's degree programme in Nanotechnology is six semesters. <sup>2</sup>The modules and recommended programme structure of the Bachelor's degree programme are set forth in **Appendix 1**.

(3) The provisions in Section 24 (1)(2)(2) **ABMPO/TechFak** do not apply to related degree programmes.

## **Section 37 Master's Degree Programme, Standard Duration of Studies, Start of Degree Programme, Related Degree Programmes, Teaching and Examination Language**

<sup>1</sup>The consecutive Master's degree programme in Nanotechnology consists of modules worth 120 ECTS credits. <sup>2</sup>These include compulsory modules, modules in the core subject, elective modules and the Master's thesis module including presentation and discussion.

(2) The modules and recommended programme structure of the Master's degree programme are set forth in **Appendix 2**.

(3) The standard duration of study in the Master's degree programme in Nanotechnology is four semesters.

(4) The Master's degree programme in Nanotechnology starts in both the winter and the summer semester.

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

(6) <sup>1</sup>In deviation from Section 4 (5) **ABMPO/TechFak**, the teaching and examination language in the Master's degree programme is English. <sup>2</sup>Individual teaching units and examinations in (compulsory) elective modules may be held in German. <sup>3</sup>This shall not affect the rest of Section 4 (5) **ABMPO/TechFak**.

## **Part II: Special Provisions**

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

#### **Section 38 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 for NT 1
2. B2: Mathematics for NT 2
3. B7: Basics of nanotechnology I
4. B9: Basics of materials.

<sup>2</sup>The type and scope of the examinations and the ECTS credits allocated to the modules are set forth in Appendix 1.

(2) The Grundlagen und Orientierungsprüfung shall have been passed if the modules listed in (1) worth 35 ECTS credits have been passed.

#### **Section 39 Scope and Structure of the Bachelor's Examination**

(1) <sup>1</sup>All modules in the Bachelor's degree programme are compulsory. <sup>2</sup>The distribution across the semesters and the required number of ECTS credits to be obtained in each of the modules are set forth in **Appendix 1**.

(2) The Bachelor's examination shall consist of:

1. The examinations of the preliminary examination according to Section 38 (1)
2. The examinations in modules B3–B6, B8 and B10–B21
3. Bachelor's thesis (module B22).

(3) The examination and course achievements for the modules are set forth in **Appendix 1**.

(4) <sup>1</sup>The Bachelor's degree programme shall have been passed once the student has passed all modules pursuant to Appendix 1 and has acquired 180 ECTS credits. <sup>2</sup>Proof of having completed ten weeks industrial internship approved by the Degree Programme Committee as part of module B21 (industrial internship) shall be governed by the internship guidelines stipulated in the module handbook.

#### **Section 40 Bachelor's Thesis**

(1) <sup>1</sup>The Bachelor's thesis is intended to enable students to learn to solve problems relating to nanotechnology 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 with a maximum length of 30 minutes followed by a discussion. <sup>4</sup>The date of the presentation shall be determined by the supervising lecturer at the latest when the student submits their Bachelor's thesis and the student shall be informed of the date in good time. <sup>5</sup> 12.5 ECTS credits shall be awarded for the Bachelor's thesis including the presentation.

(2) The topic of the Bachelor's thesis shall be allocated by a full-time university lecturer or Privatdozent from the Department of Materials Science and Engineering at FAU.

(3) <sup>1</sup>It is recommended to start the Bachelor's thesis no earlier than the end of the lecture period in the 5th semester. <sup>2</sup>Admission to the Bachelor's thesis shall be governed by Section 27 (3)(2) **ABMPO/TechFak**.

## **2. Master's degree programme**

### **Section 41 Qualification for a Master's Degree, Certificates, Admission Requirements, Admission Subject to Conditions**

(1) <sup>1</sup>Subject-specific degree as specified in Section 29 (1)(1) **ABMPO/TechFak** is the Bachelor's degree in Nanotechnology according to these degree programme and examination regulations or an equivalent degree in Nanotechnology from another university in Germany or abroad that leads to a qualification equivalent to the Bachelor's degree completed according to these degree programme and examination regulations. <sup>2</sup> Subject-related degrees that show no considerable differences in terms of qualification pursuant to Section 29 (1)(1) alt. 2 **ABMPO/TechFak** shall be Bachelor's or Diplom

degrees in Materials Science and Engineering, Physics, Chemistry or in degree programmes with a focus on nanotechnology, provided the following minimum content was covered:

1. at least 10 ECTS credits in mathematics
2. at least 20 ECTS credits in physics and chemistry
3. at least 10 ECTS credits in laboratory courses and IT
4. at least 20 ECTS credits in the basics of nanotechnology.

<sup>3</sup>In accordance with (5)(4) of the **Appendix to the ABMPO/TechFak**, applicants with a subject-related degree as defined in Section 29 (1)(1) **ABMPO/TechFak** or a degree as defined in Section 29 (2)(2) **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 section (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 certificates issued by a language school or university.

<sup>2</sup>The following are considered suitable proof of language skills:

1. 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

2. 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 the

3. International English Language Testing System (IELTS) 5.0 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 Nanotechnology according to paragraph 5 (2)(2) in the **Appendix to ABMPO/TechFak** if they have passed modules B7, B8 and B16 with an average grade of 3.0 or better.

(4) In the oral admission examination according to (5)(3) et seq. of the **Appendix to ABMPO/TechFak**, applicants shall be evaluated according to the following criteria and weighting:

1. Basic knowledge in materials science and engineering, physics and chemistry of condensed materials (in particular atomic structure, thermodynamic, optical, electronic and magnetic properties of materials as well as characterisation methods) (50 percent)

2. Sound knowledge of nanotechnology, for example chemical materials processing or nano characterisation methods (50 percent).

#### **Section 42 Master's Degree Examinations**

(1) Type and scope of the course and examination achievements are set out in **Appendix 2**.

(2) The Master's examination shall have been passed if the modules specified in **Appendix 2** have been passed.

### Section 42a Core modules (M6–M9)

(1) <sup>1</sup>The learning outcome of the core modules is to give students the opportunity to expand their professional skills in materials science and engineering. At the same time, by choosing the modules they wish to study, students can tailor their education to suit their own interests and their future profession and/or personality. <sup>2</sup>The core modules comprise the foundation module (M6), the supplementary module (M7) and two elective modules (M8 and M9). <sup>3</sup>Each Chair in the Department of Materials Science and Engineering offers one core subject. <sup>4</sup>Laboratory courses teach theoretical and practical content.

(2) The core subject foundation module M6 generally consists of lectures (4 SWS), tutorials (2 SWS) and a laboratory course (2 SWS), or lectures (4 SWS), tutorials (2 SWS) and a seminar (2 SWS), or a combination of lectures, tutorials, laboratory courses and a seminar coming to a total of 8 SWS.

(3) The core subject supplementary module M7 generally consists of one lecture (2 SWS) and one tutorial (2 SWS), or one lecture (1 SWS), one laboratory course (2 SWS) and one seminar (1 SWS), or one laboratory course (4 SWS).

(4) The elective modules M8 and M9 generally consist of one lecture (2 SWS) and one laboratory course (2 SWS) or one lecture (1 SWS), one tutorial (1 SWS) and one practical course (2 SWS).

(5) <sup>1</sup>Any deviations from the provisions in (2) to (4) and the module structure are set out in the module handbook. <sup>2</sup>The type and scope of the examinations depend on the chosen modules. Details can be found in the module handbook. <sup>3</sup>Examinations in the modules shall take one of the following forms: written examination (90 or 45 min), oral examination (30 or 15 min), seminar achievement or practical achievement pursuant to Section 6(3) **ABMPO/TechFak**. <sup>3</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>Other examination forms are possible if so decided by the Degree Programme Committee. <sup>6</sup>The module handbook is published before the beginning of the semester in accordance with local practice.

### Section 42b Scientific-technical modules (M10 + M11)

(1) <sup>1</sup>The learning outcome of the elective modules M10 to M11 is for students to expand their subject-related skills and gain more advanced knowledge in the various subject areas. <sup>2</sup>The choice of elective modules, in particular in combination with the core modules M6 to M9, gives students the opportunity to tailor their profile in view of their future careers.

(2) <sup>1</sup>The scientific-technical modules M10 and M11 may be chosen from the modules offered by the Faculty of Engineering and from those offered by the Faculty of Sciences. <sup>2</sup>No modules may be taken twice, see Section 4 (3) **ABMPO/TechFak**.

(3) <sup>1</sup>The elective modules generally consist of one lecture (1 SWS), one tutorial (1 SWS) and one laboratory course (2 SWS), one lecture (1SWS), one tutorial (1 SWS) and one seminar (2 SWS), or one laboratory course (4 SWS). <sup>2</sup>Any deviations and the exact structure of the modules are stipulated in the module handbook.

(4) <sup>1</sup> The type and scope of the examination are dependent on the skills for the relevant module according to the module handbook. <sup>2</sup>Examinations in the modules shall take one of the following forms: written examination, oral examination, seminar achievement or practical achievement pursuant to Section 6(3) **ABMPO/TechFak**. <sup>3</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>4</sup>Other examination forms are possible if so decided by the Degree Programme Committee. <sup>5</sup>The module handbook is published before the beginning of the semester in accordance with local practice.

### **Section 42c Soft Skills (M13)**

(1) <sup>1</sup>The first learning outcome of the module “soft skills” is to allow students to acquire relevant skills that will enable them to present and discuss scientific results and findings independently in a topic covered in the Master's degree programme. <sup>2</sup>A second learning outcome is aimed at promoting personal and social skills through preparing, reporting on and presenting a topic relating to the subject for a specialist audience at a Master's level and in a manner tailored to suit the target group, as well as working under supervision in a group to develop and test subject-related applications and possibilities for implementation with respect to the chosen subject. <sup>3</sup>Thirdly, the choice of excursions allows students to tailor their profile in view of their career plans and/or their own personality. <sup>4</sup>Section 44 (3) applies.

(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> Students have to complete one ungraded seminar achievement for each module pursuant to Section 6 (3) **ABMPO/TechFak**, depending on the specific manner in which the module is taught. <sup>3</sup>In addition, students must show that they have taken part in at least two excursions. <sup>4</sup>The module handbook is published before the beginning of the semester in accordance with local practice.

(3) <sup>1</sup>The module generally consists of one seminar in presentation skills (4 SWS) and two excursions. <sup>2</sup>Any exceptions are detailed in the module handbook.

### **Section 43 Requirements for Admission to the Master's Thesis**

(1) The requirements for admission to the Master's thesis shall be as follows:  
1. Acquiring at least 60 ECTS credits in the Master's degree programme  
2. Submission of relevant certificates if admission to the Master's degree programme was granted with conditions according to Section 29 (2)(2) **ABMPO/TechFak**.

(2) In justified, exceptional cases, the Examinations Committee shall be entitled to grant early admission to the Master's thesis.

### **Section 44 Master's Thesis**

(1) <sup>1</sup>The Master's thesis module shall be worth 30 ECTS credits. <sup>2</sup>It consists of the written Master's thesis worth 27.5 ECTS credits and the presentation worth 2.5 ECTS credits.

(2) <sup>1</sup>The Master's thesis is intended to demonstrate students' ability to solve scientific problems in the field of nanotechnology independently. It shall usually deal with a scientific subject from the core subject. <sup>2</sup>The thesis shall have a workload of approximately 840 hours to be completed within six months. <sup>3</sup>Sections 40(2) and (3)(2) shall apply accordingly. <sup>4</sup>The Master's thesis shall be written in English.

(3) <sup>1</sup>The presentation on the Master's thesis shall last approximately 30 minutes. <sup>2</sup>The presentation shall cover the Master's thesis and its results, and shall be followed by a discussion. <sup>3</sup>The date of the presentation shall be determined by the supervisor at the latest by the date the Master's thesis is due, and the student shall be informed of the date in good time.

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

#### **Section 45 Legal Validity**

(1) <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 who enter the degree programme in the winter semester 2008/2009 or later.

(2) <sup>1</sup>The eighth amendment statute shall come into effect on the day after its publication. <sup>2</sup>It shall apply to all students starting a degree programme from winter semester 2020/2021 onwards. <sup>3</sup>Examinations in accordance with previous versions of the degree programme and examination regulations will be offered for the last time in summer semester 2025 for the Bachelor's degree programme and in winter semester 2023/2024 for the Master's degree programme. <sup>4</sup>From the date stated in sentence 3, those students who are affected by the examination regulations becoming invalid shall take their examinations in accordance with the currently valid version of the degree programme and examination regulations.

(3) <sup>1</sup>The ninth amendment statute shall come into effect on the day after its publication. <sup>2</sup>It shall apply to all students studying in accordance with the FPONT dated 9 September 2020 at the time the amendment statute comes into effect or those who intend to start the Master's degree programme in the future. <sup>3</sup>Notwithstanding sentence 2, the amendments concerning the change to the name of the Master's degree programme and those stipulated in Sections 37(6), 41 and 44 (2)(4) shall only apply to students intending to start the Master's degree programme as of winter semester 2022/2023.



### Appendix 1: Structure of the Degree Programme in Nanotechnology

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 for NT 1 (GOP)	Mathematics for NT 1	4	2			7.5	7.5							EA (written examination, 90 mins) + CA (TA)
B2	Mathematics for NT 2 (GOP)	Mathematics for NT 2	4	2			7.5		7.5						EA (written examination, 90 min) + CA (TA)
B3	Mathematics for NT 3	Mathematics for NT 3	4	2			7.5			7.5					EA (written examination, 90 min) + CA (TA)
B4 a	Experimental physics I	Experimental physics I	3	1			5	5							EA (written examination, 90 min)
B4 b	Experimental physics II	Experimental physics II	3	1			5		5						EA (written examination, 90 min)
B5	General and inorganic chemistry	General and inorganic chemistry	4		7		12.5	5	7.5						EA (written examination, 45 min) + CA (LA)

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	
B6	Physical chemistry of nanostructures	Physical chemistry of nanostructures	2	2			5				5			EA (written examination, 90 min)
B7	Foundations of nanotechnology I Preliminary examination (GOP)	Nano I: Introduction to nanotechnology	2				10	2.5						EA (written examination, 90 min) + CA (LA)
		Nano II: Characterisation	2						2.5					
		Nano laboratory course I			5				5					
B8	Foundations of nanotechnology II	Nano III: Materials	2				15			2.5				EA (written examination, 90 min) + CA (LA)
		Nano IV: Semiconductor devices	2								2.5			
		Nano laboratory course II / III			10					7.5	2.5			
B9	Foundations of materials (GOP)	Materials structure/metallic materials	3	1			10	4.5						EA (written examination, 120 min)
		Non-metallic inorganic materials	2						2.5					
		Organic materials	2	1					3					
B10	Mechanical properties of materials	Mechanical properties of materials	2				2.5		2.5				EA (written examination, 45 min)	
B11	Testing methods and characteristics	Characterisation and inspection of materials	2				5				2.5			

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		
		Electric, magnetic, and optic properties	2								2.5			EA (written examination, 90 min)	
B1 2	Physical chemistry of materials	Solid state thermodynamics	1	1			5				2			EA (written examination, 90 min) + CA (written examination, 90 min)	
		Process engineering interfaces	2	1							3				
B1 3	Quantum mechanics	Quantum mechanics	4	2			7.5			7.5				EA (written examination, 90 min)	
B1 4	Solid-state physics	Solid-state physics	4	2			7.5				7.5			EA (written examination, 90 min)	
B1 5	Academic working	Methodical working	1	1		1	5			3				SA + CA <sup>1</sup>	
		English for Engineers		1		1				2					
B1 6	Applied nanotechnology I	Nano devices, nano sensors, MEMS, micro-machining	2	1			10					3.5		EA (written examination, 120 min)	
		Nanosurfaces and structures	2									3			
		Nanocomposites	1	1									2.5		
		Nanotoxicology	1										1		

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	
B17	Applied nanotechnology II	Process engineering interfaces	2	1			7.5				3.5			EA (written examination, 90 min)
		Mechanical process engineering	2	1							4			
B18	Materials	Materials science – elective lecture I	2				10					3		EA (written examination, 120 min) + CA (presentation, 30 min)
		Materials science – elective lecture II	2								3			
		Materials science – elective lecture III	2								3			
		Metrology	1	1							1			
B19	Laboratory: Clean room	Laboratory: Clean room			5		5					5		CA (LA)
B20	Literature research and presentation techniques	Advanced seminar in English language				2	5						3	EA (seminar presentation 20 min) + CA (2 short presentations each lasting 15 min) <sup>3</sup>
		Presentation techniques				2							2	
B21	Professional environment	Industrial internship <sup>2</sup>					12.5						11.5	CA (LA + ExA)
		Excursion										1		
	Bachelor's thesis	Bachelor's thesis					12.5						10	

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		
B2 1		Advanced seminar Bachelor's thesis											2.5	EA (Bachelor's thesis) + EA (presentation, 30 min and discussion) (80 % + 20 %)	
Total SWS and ECTS credits:			75	24	27	6	180	30	30	30	31	29	30		
Total SWS:			92												

<sup>1</sup>The type and scope of the examination depend on the specific manner in which the module is taught; see module handbook for details. As a rule, the course achievement shall consist of homework exercises taking the form of online exercises or a short presentation.

<sup>2</sup>Industrial placement: 10 weeks, see Section 39 (3)(2).

<sup>3</sup>The type and scope of the examination depend on the specific manner in which the respective module is taught; see module handbook for details.

GOPGrundlagen- und Orientierungsprüfung; Preliminary examination

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

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

WE = written examination

TA = tutorial achievement

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

ExA = Excursion achievement

## Appendix 2: Structure of the Master's Degree Programme

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	4. sem	
M1	Nanocharacterisation	Electron microscopy	2				10	3				EA: (oral 30 min)
		Nanospectroscopy	2					3				
		Scanning electron microscopy / Nanoindentation	2	1				4				
M2	Laboratory course: Synthesis/characterisation				5		5					LA
M3	Computational nanoscience		2	2			5		3	2		EA (written examination, 45 min)
M4	Top-down nanostructuring	Nanoelectronics	2				10		3			EA: (oral 30 min)
		Photolithography	2	1				4				
		Plating technology	2					3				
M5	Bottom-up nano synthesis / self-assembly	Molecular nanostructures	2				10			3		EA (oral, 30 min)
		Nanotechnology of disperse systems	2	1						4		
		Self-assembly on surfaces	2						3			
M6	Core subject – foundational module	cf. Section 42a	4	(0-4)	(0-4)	(0-2)	10	5	5			EA (written examination, 90 min or oral 30 min, or

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	4. sem	
												seminar achievement, or laboratory achievement) cf. Section 42a
M7	Core subject – supplementary module	cf. Section 42a	0-2	(0-2)	(0-4)	(0-2)	5	5				EA (written examination, 45 min or oral, 15 min, or seminar achievement, or laboratory achievement) cf. Section 42a
M8	1. Elective module in materials science and engineering from core subject	cf. Section 42a	(0-2)	(0-2)	(0-4)	(0-2)	5		5			EA (written examination, 45 min or oral, 15 min, or seminar achievement or laboratory achievement, cf. Section 42a
M9	2. Elective module in materials science and engineering from core subject	cf. Section 42a	0-2	(0-2)	(0-4)	(0-2)	5	3	2			EA (written examination, 45 min or oral, 15 min, or seminar achievement or laboratory achievement, cf. Section 42a

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	4. sem		
M10	1. Elective module: Engineering or sciences (from Faculty of Engineering including materials science or Faculty of Sciences)	cf. Section 42b	0-2	(0-2)	(0-4)	(0-2)	5		5			EA, cf. Section 42b	
M11	2. Elective module: Engineering or sciences (from Faculty of Engineering including materials science or Faculty of Sciences)	cf. Section 42b	(0-2)	(0-2)	(0-4)	(0-2)	5			5		EA, cf. Section 42b	
M12	Academic project	Literature research and methods				4	10			5		SA	
		Advanced seminar				4				5			
M13	Soft skills	Presentation techniques				4	5			4		SA, cf. Section 42c	
		2 excursions								1			
M14	Master's thesis	Master's thesis					30				27.5	EA (MT) + EA (presentation, 30 min and discussion) (90% + 10%)	
		Presentation									2.5		
Total SWS and ETCS credits:			24 - 34	5 - 19	5 - 29	11 - 23	120	31	30	29	30		
Total SWS:			69										

Key:

EA = graded examination achievement, see Section 6 (3)(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