Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

Annex SFB

Studienfachbeschreibung (subject description, SFB) for the subject Technology of Functional Materials as a Bachelor's with 1 major

with the degree "Bachelor of Science" (180 ECTS credits)

Responsible: Faculty of Chemistry and Pharmacy

Examination regulations version: 2006

Abbreviations used:

Course types: **E** = field trip, **K** = colloquium, **O** = conversatorium, **P** = placement/lab course, **R** = project, **S** = seminar, **T** = tutorial, **Ü** = exercise, **V** = lecture

Term: **SS** = summer semester, **WS** = winter semester

Methods of grading: **NUM** = numerical grade, **B/NB** = (not) successfully completed

Regulations: **(L)ASPO** = general academic and examination regulations (for teaching-degree programmes), **FSB** = subject-specific provisions, **SFB** = list of modules

Other: **A** = thesis, **LV** = course(s), **PL** = assessment(s), **TN** = participants, **VL** = prerequisite(s)

Conventions for the modules in this SFB:

Unless otherwise stated, courses and assessments will be held in German, assessments will be offered every semester and modules are not creditable for bonus.

Information on assessment procedures:

Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the method of assessment to be used in the current semester by two weeks after the start of the course at the latest and will communicate this in the customary manner.

Should a module comprise more than one graded assessment, all assessments will be equally weighted, unless otherwise stated below.

Should the assessment comprise several individual assessments, successful completion of the module will require successful completion of all individual assessments.

In accordance with the general regulations governing the degree subject described in this module catalogue:

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associated official publications (FSB (subject-specific provisions)/SFB (list of modules)):

14-Mar-2007 (2007-5)

03-Sep-2007 (2007-19)

This module handbook seeks to render, as accurately as possible, the data that is of statutory relevance according to the examination regulations of the degree subject. However, only the FSB (subject-specific provisions) and SFB (list of modules) in their officially published versions shall be legally binding. In the case of doubt, the provisions on, in particular, module assessments specified in the FSB/SFB shall prevail.

Every module will be described using the following form:

Abbreviation	**Module title**							
	ECTS		Duration	(in semesters)	Method of grading		Module level	
	Courses	To be specified in the form X (y) with course type X abbreviated as specified above and number of weekly contact hours y						
	Method of assessment							
	Only after successful completion of	if applicable						
	Other prerequisites	if applicable						
	Participants and allocation of places	if applicable						
	Additional information	if applicable						
	Referred to in LPO I	if applicable (examination regulations for teaching-degree programmes)						

Compulsory Courses (135 ECTS credits)								
08-IAC-062-m01	**Experimental Chemistry, General and analytical laboratory course for engineering students**							
	ECTS	10	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		This module comprises 2 module components. Information on courses will be listed separately for each module component. • 08-IAC-1-062: V (no information on SWS (weekly contact hours) and course language available) • 08-IAC-2-062: P (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments. **Assessment in module component 08-IAC-1-062:** Experimental Chemistry • 5 ECTS, Method of grading: numerical grade • written examination (approx. 90 minutes) **Assessment in module component 08-IAC-2-062:** General and analytical Chemistry Lab for engineering students • 5 ECTS, Method of grading: (not) successfully completed • Vortestate (pre-experiment exams, approx. 15 minutes each), assessment of practical performance, Nachtestate (post-experiment exams, approx. 15 minutes each)					
08-IOC-062-m01	**Organic Chemistry for students of medicine, biomedicine, dental medicine, engineering and natural science**							
	ECTS	10	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		This module comprises 3 module components. Information on courses will be listed separately for each module component. • 08-IOC-1-072: V (no information on SWS (weekly contact hours) and course language available) • 08-IOC-2-062: P (no information on SWS (weekly contact hours) and course language available) • 08-IOC-3-062: S (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments. **Assessment in module component 08-IOC-1-072:** Organic Chemistry for students of medicine, biomedicine, dental medicine, engineering and natural science • 3 ECTS, Method of grading: numerical grade • written examination (approx. 60 minutes) **Assessment in module component 08-IOC-2-062:** Organic Chemistry Lab for engineering students • 4 ECTS, Method of grading: (not) successfully completed • Vortestate (pre-experiment exams, approx. 15 minutes each), assessment of practical performance, Nachtestate (post-experiment exams, approx. 15 minutes each) • Only after successful completion of module components: 08-IOC-1 **Assessment in module component 08-IOC-3-062:** Tutorial on the Organic Chemistry Lab for engineering students • 3 ECTS, Method of grading: numerical grade • written examination (60 minutes)					

<table>
<tr><td>08-IPC-062-m01</td><td colspan="8">Physical Chemistry for engineering students</td></tr>
<tr><td></td><td>ECTS</td><td>20</td><td>Duration</td><td>1 semester</td><td>Method of grading</td><td>numerical grade</td><td>Modul level</td><td>undergraduate</td></tr>
<tr><td></td><td colspan="3">Courses</td><td colspan="5">This module comprises 3 module components. Information on courses will be listed separately for each module component.
• 08-IPC-1-062: V + Ü (no information on SWS (weekly contact hours) and course language available)
• 08-IPC-2-062: V + Ü (no information on SWS (weekly contact hours) and course language available)
• 08-IPC-3-062: P (no information on SWS (weekly contact hours) and course language available)</td></tr>
<tr><td></td><td colspan="3">Method of assessment</td><td colspan="5">Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

Assessment in module component 08-IPC-1-062: Physical Chemistry 1 (thermodynamics, electrochemistry) for engineering students Lecture, exercises Physical Chemistry 1 (thermodynamics, electrochemistry) for engineering students Lecture, exercises
• 6 ECTS, Method of grading: numerical grade
•
Assessment in module component 08-IPC-2-062: Physical Chemistry 2 (basics of quantum mechanics and spectroscopy) for engineering students Physical Chemistry 2 (basics of quantum mechanics and spectroscopy) for engineering students
• 8 ECTS, Method of grading: numerical grade
• written examination (approx. 90 minutes)
Assessment in module component 08-IPC-3-062: Physical Chemistry for engineering students, laboratory course
• 6 ECTS, Method of grading: (not) successfully completed
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<tr><td>10-I-EPIN-062-m01</td><td colspan="8">Introduction to computer science of all faculties</td></tr>
<tr><td></td><td>ECTS</td><td>5</td><td>Duration</td><td>1 semester</td><td>Method of grading</td><td>numerical grade</td><td>Modul level</td><td>undergraduate</td></tr>
<tr><td></td><td colspan="3">Courses</td><td colspan="5">V + Ü (no information on SWS (weekly contact hours) and course language available)</td></tr>
<tr><td></td><td colspan="3">Method of assessment</td><td colspan="5">written examination (50 minutes) or oral examination (one candidate each: 20 minutes, groups of 2: 25 minutes, groups of 3: 25 minutes)</td></tr>
<tr><td>99-TM-062-m01</td><td colspan="8">Fundamentals of Engineering Mechanics</td></tr>
<tr><td></td><td>ECTS</td><td>5</td><td>Duration</td><td>1 semester</td><td>Method of grading</td><td>numerical grade</td><td>Modul level</td><td>undergraduate</td></tr>
<tr><td></td><td colspan="3">Courses</td><td colspan="5">V + Ü (no information on SWS (weekly contact hours) and course language available)</td></tr>
<tr><td></td><td colspan="3">Method of assessment</td><td colspan="5">written examination (90 minutes)</td></tr>
<tr><td>10-M-TFU1-062-m01</td><td colspan="8">Mathematics 1 for students of Technology of Functional Materials</td></tr>
<tr><td></td><td>ECTS</td><td>8</td><td>Duration</td><td>1 semester</td><td>Method of grading</td><td>numerical grade</td><td>Modul level</td><td>undergraduate</td></tr>
<tr><td></td><td colspan="3">Courses</td><td colspan="5">V + Ü (no information on SWS (weekly contact hours) and course language available)</td></tr>
<tr><td></td><td colspan="3">Method of assessment</td><td colspan="5"></td></tr>
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11-MPI3-062-m01	**Mathematics 3 for students of Physics and Engineering**							
	ECTS	8	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V + Ü (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		written examination (approx. 120 minutes)					
	other prerequisites		Admission prerequisite to assessment: successful completion of approx. 50% of exercises. Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.					
11-ENNF1-062-m01	**Introduction to Physics Part 1 for students of Physics Related Minor Subjects**							
	ECTS	7	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V + Ü (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		written examination (approx. 120 minutes)					
	Participants and allocation of places		Only as part of pool of general key skills (ASQ): 20 places. Places will be allocated by lot.					
11-ENNF2-062-m01	**Introduction to Physics Part 2 for students of Physics Related Minor Subjects**							
	ECTS	7	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V + Ü (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		written examination (approx. 120 minutes)					
	Participants and allocation of places		Only as part of pool of general key skills (ASQ): 20 places. Places will be allocated by lot.					
08-CT-062-m01	**Chemical Technology of Material Synthesis Lecture, exercises**							
	ECTS	10	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		This module comprises 2 module components. Information on courses will be listed separately for each module component. • 08-CT-1-062: V + Ü (no information on SWS (weekly contact hours) and course language available) • 08-CT-2-062: P (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments. **Assessment in module component 08-CT-1-062:** Chemical Technology of Material Synthesis Lecture, exercises Chemical Technology of Material Synthesis Lecture, exercises • 4 ECTS, Method of grading: numerical grade • **Assessment in module component 08-CT-2-062:** Chemical Technology of Material Synthesis Lecture, exercises • 6 ECTS, Method of grading: (not) successfully completed •					

11-PPT-062-m01	**Physical Technology of Material Synthesis, laboratory course**							
	ECTS	4	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		P (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment							
03-TV-062-m01	**Technology of Composite Materials and Technology of Composite Materials laboratory course**							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		This module comprises 2 module components. Information on courses will be listed separately for each module component. • 03-TV-1-062: V (no information on SWS (weekly contact hours) and course language available) • 03-TV-2-062: P (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments. **Assessment in module component 03-TV-1-062:** Technology of Composite Materials • 3 ECTS, Method of grading: numerical grade • **Assessment in module component 03-TV-2-062:** Technology of Composite Materials, laboratory course • 2 ECTS, Method of grading: (not) successfully completed •					
99-IP-062-m01	**Laboratory Course of Engineering (mechanical and electrical engineering)**							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		P (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment							
99-CA-062-m01	**Computer-based Construction and Assembly**							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V + Ü (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment							
10-M-TFU2-062-m01	**Mathematics 2 for students of Technology of Functional Materials**							
	ECTS	7	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V + Ü (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment							
11-PNNF-062-m01	**Physics Laboratory Course for students of Physics Related Minor Subjects**							
	ECTS	3	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses		P (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		a) oral test (approx. 15 minutes) during experiment and b) ungraded written examination (approx. 90 minutes)					
	Participants and allocation of places		Only as part of pool of general key skills (ASQ): 15 places. Places will be allocated by lot.					

11-TMS-062-m01	**Physical Technology of Material Synthesis. Lecture, exercises**							
	ECTS	6	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V + Ü (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment							
99-EL1-062-m01	**Basics of Electronics 1**							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V + Ü (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment							
99-EL2-062-m01	**Basics of Electronics 2**							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V + Ü (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment							
Compulsory Electives (5 ECTS credits)								
10-I-DB-072-m01	**Data bases**							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V + Ü (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		written examination (50 minutes) or oral examination (one candidate each: 15 minutes, groups of 2: 20 minutes, groups of 3: 25 minutes)					
11-N1-072-m01	**Basics of NanostructureTechnology**							
	ECTS	6	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V + S (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		written examination (approx. 90 minutes)					
10-M-ODE-082-m01	**Ordinary Differential Equations**							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V + Ü (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: German, English if agreed upon with the examiner					
	other prerequisites		Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.					

08-BC-TF-062-m01	**Biochemistry for students of Technology of Functional Materials**							
	ECTS	3	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V + Ü (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		written examination (60 minutes)					
08-BM-062-m01	**From Biomineralisation to biologically inspired Materials Synthesis**							
	ECTS	2	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		oral examination (approx. 15 minutes)					
08-SGC-062-m01	**Sol-Gel Chemistry 1: Basics**							
	ECTS	2	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses		V (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		oral examination (approx. 15 minutes)					
03-TF-FBM-062-m01	**Functional Biomaterials for students of Technology of Functional Materials. Lectures, laboratory course**							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V + P (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		placement report / fieldwork report / report on practical training / report on practical course / project report / report on technical course (approx. 10 pages)					
08-AC1-TF-062-m01	**Basics of General and Analytical Chemistry for students of Technology of Functional Materials**							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V + Ü (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		written examination (60 minutes)					
08-NT-091-m01	**Chemically and biologically inspired Nanotechnology for Materials Synthesis**							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		This module comprises 2 module components. Information on courses will be listed separately for each module component. • 08-NT-1-091: V (no information on SWS (weekly contact hours) and course language available) • 08-NT-2-091: V (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments. **Assessment in module component 08-NT-1-091:** Chemically and biologically inspired Nanotechnology for Materials Synthesis • 2 ECTS, Method of grading: numerical grade • oral examination (approx. 15 minutes) **Assessment in module component 08-NT-2-091:** From Biomineralisation to biologically inspired Materials Synthesis • 3 ECTS, Method of grading: numerical grade • oral examination (approx. 20 minutes)					

10-M-COM-072-m01	**Computeroriented Mathematics**								
	ECTS	3	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate	
	Courses		V + Ü (no information on SWS (weekly contact hours) and course language available)						
	Method of assessment		project in the form of programming exercises (expenditure of time as specified at the beginning of the course)						
10-M-FAN-072-m01	**Introduction to Functional Analysis**								
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate	
	Courses		V + Ü (no information on SWS (weekly contact hours) and course language available)						
	Method of assessment		written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: German, English if agreed upon with the examiner						
	other prerequisites		Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.						
	Referred to in LPO I		§ 73 (1) 1. Mathematik Analysis						
08-PKC-072-m01	**Programming course for Chemistry Majors**								
	ECTS	5	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate	
	Courses		V + Ü (no information on SWS (weekly contact hours) and course language available)						
	Method of assessment		practical examination: completion of programming exercises						
	other prerequisites		Registration for assessment: Yes, as specified.						
Subject-specific Key Skills (15 ECTS credits)									
08-FS1-062-m01	**Material Science 1 (basic introduction)**								
	ECTS	4	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate	
	Courses		V (no information on SWS (weekly contact hours) and course language available)						
	Method of assessment								
08-FS2-062-m01	**Material Science 2 (the material groups)**								
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate	
	Courses		V + Ü (no information on SWS (weekly contact hours) and course language available)						
	Method of assessment		written examination (60 minutes)						
08-FS3-062-m01	**Material testing: Solid State Analytics**								
	ECTS	6	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate	
	Courses		V + P (no information on SWS (weekly contact hours) and course language available)						
	Method of assessment		written examination (60 minutes)						

Thesis (12 ECTS credits)								
08-BT-062-m01	**Bachelor's Thesis**							
	ECTS	12	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		no courses assigned					
	Method of assessment		written thesis Language of assessment: German or English					
	other prerequisites		Registration for assessment on a continuous basis as agreed upon with supervisor.					
Colloquium (3 ECTS credits)								
08-BKOLL-062-m01	**Bachelor Thesis' Colloquium**							
	ECTS	3	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		K (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment		final colloquium (60 minutes)					