

## **Annex SFB**

## Studienfachbeschreibung (subject description, SFB) for the subject Functional Materials as a Bachelor's with 1 major with the degree "Bachelor of Science" (180 ECTS credits)

Responsible: Faculty of Chemistry and Pharmacy

Responsible:

Examination regulations version: 2021

Examination regulations version: 2021

Abbreviations used: Course types:  $\mathbf{E} = \text{field trip}$ ,  $\mathbf{K} = \text{colloquium}$ ,  $\mathbf{O} = \text{conversatorium}$ ,  $\mathbf{P} = \text{placement/lab course}$ ,  $\mathbf{R} = \text{project}$ ,  $\mathbf{S} = \text{seminar}$ ,  $\mathbf{T} = \text{tutorial}$ ,  $\mathbf{U} = \text{exercise}$ ,  $\mathbf{V} = \mathbf{V} = \mathbf$ 

= 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

Unless otherwise stated, courses and assessments will be held in German, assessments will be offered every semester and modules are not cre-

modules in this SFB: ditable for bonus.

Information on Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the meassessment procedures: thod 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:

## ASP02015

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

## 17-Mar-2021 (2021-22)

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 spe	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 as	ssessme	ent								
	Only after su completion o		l if applica	if applicable							
	Other prereq	uisites	if applica	if applicable							
	Participants and allocation of places		cati- if applica	if applicable							
	Additional information		on if applica	if applicable							
	Referred to in	n LPO I	if applica	if applicable (examination regulations for teaching-degree programmes)							

<b>Compulsory Cours</b>	ses (128 E	CTS cre	edits)									
Mathematics												
10-M-FUN1-212-	Mather	natics 1	for Stude	ents of Fu	ınctional Mater	ials						
mo1	ECTS	8	Duration		semester	Method of grading	numerical grade	Modul level	undergraduate			
	Course	S		V (5) + Ü Module	V (5) + Ü (2) Module taught in: Ü: German or English							
	Method	d of ass	essment	b) oral e c) oral e Languag	a) written examination (usually chosen, approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups of 2 candidates (approx. 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus							
10-M-FUN2-152-	Mather	natics 2	for Stud	ents of Fu	unctional Mate	rials						
mo1	ECTS 8 Duratio			n 1	semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses			V (5) + Ü Module		erman or English		•				
	Method of assessment			a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups of 2 candidates (groups of 2, approx. 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus								
Modules Mathem	atics/Sta	tistics										
11-E-M-152-m01	Classic	al Phys	ics 1 (Me	chanics)								
	ECTS	8	Duration	n 1	semester	Method of grading	numerical grade	Modul level	undergraduate			
	Course	Courses		V (4) + Ü (2) Module taught in: Ü: German or English								
	Method	Method of assessment			written examination (approx. 120 minutes) Language of assessment: German and/or English							
	other p	rerequi	sites	Admission prerequisite to assessment: completion of exercises (approx. 13 exercise sheets per semester). Students who successfully completed approx. 50% of exercises will qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the semester.								
	Additional Information			Registration: If a student registers for the exercises and obtains the qualification for admission to assessment, this will be considered a declaration of will to seek admission to assessment pursuant to Section 20 Subsection 3 Sentence 4 ASPO (general academic and examination regulations). If the module coordinators subsequently find that the student has obtained the qualification for admission to assessment, they will put the student's registration for assessment into effect. Only those students that meet the respective prerequisites can successfully register for an assessment. Students who did not register for an assessment or whose registration for an assessment was not put into effect will not be admitted to the respective assessment. If a student takes an assessment to which he/she has not been admitted, the grade achieved in this assessment will not be considered.								
	Referred to in LPO I			§ 53 I Nr § 77 I Nr			,					
Rachalor's with 1 major	F .: 1.4						I I I I I I I I I I I I I I I I I I I	d 10-Apr-2025 • evam reg dat		nage 2 / 17		

11-E-E-152-m01	Classical	Physics 2 (Hea	at and Electromagneti	sm)		1					
	ECTS 8	B Duration	n 1 semester	Method of grading	numerical grade	Modul level	undergraduate				
	Courses		V (4) + Ü (2)								
			Module taught in: Ü:								
	Method o	of assessment		written examination (approx. 120 minutes) Language of assessment: German and/or English							
	other pre	requisites	Admission prerequisite to assessment: completion of exercises (approx. 13 exercise sheets per semester). Students who successfully completed approx. 50% of exercises will qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the semester.								
	Additiona	al Information	considered a declara neral academic and the qualification for students that meet t for an assessment of	Registration: If a student registers for the exercises and obtains the qualification for admission to assessment, this will be considered a declaration of will to seek admission to assessment pursuant to Section 20 Subsection 3 Sentence 4 ASPO (general academic and examination regulations). If the module coordinators subsequently find that the student has obtained the qualification for admission to assessment, they will put the student's registration for assessment into effect. Only those students that meet the respective prerequisites can successfully register for an assessment. Students who did not register for an assessment or whose registration for an assessment was not put into effect will not be admitted to the respective assessment. If a student takes an assessment to which he/she has not been admitted, the grade achieved in this assessment will not be considered.							
	Referred	to in LPO I	§ 53   Nr. 1 a) § 77   Nr. 1 a)								
11-PNNF-152-m01	Laboratory Course Physics for Students of Physics Related Disciplines										
	ECTS 3	Duration	n 1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate				
	Courses		P (4)								
	Method o	of assessment	a) practical assignment with oral test (approx. 15 minutes, during experiments) and b) written examination (90 minutes). Each experiment comprises preparation, performance and evaluation. Test as well as performance of experiments can each be repeated once.								
11-M-MR-FW-212-	Mathema	atical Methods	of Physics for Studen	ts of Functional Material	S						
mo1	ECTS 5	Duration	n 2 semester	Method of grading	(not) successfully completed	Modul level	undergraduate				
	Courses		$V(2) + \ddot{U}(1) + V(2) + \ddot{U}(1)$ Module taught in: German or English								
	Method o	of assessment	a) exercises (successful completion of approx. 50% of approx. 13 exercise sheets) or b) talk (approx. 15 minutes)								
11-P-FR2-152-m01	Advanced	d and Computa	tional Data Analysis			'					
	ECTS 2	Duration	n 1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate				
	Courses		V (1) + Ü (1)								
	Method o	of assessment	Exercises (successful completion of approx. 50% of approx. 10 exercise sheets) Assessment offered: Once a year, summer semester								
	other pre	requisites	Students are highly r	ecommended to complet	e module 11-P-FR1 prior to com	pleting module	11-P-FR2.				

Chemistry												
o8-AC-Ex-	Experin	nental (	Chemistry	,								
Chem-152-m01	ECTS	5	Duration	า	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses	S		V (4)				`				
	Method	l of asse	essment	written examination (approx. 90 minutes)								
0.465.511			1 1.4	Language of assessment: German and/or English								
08-ACP1-FU-152- mo1					hemistry Lab for engineering students							
IIIOI		5	Duration		1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Courses			P (5)	/			<del> </del>				
	Method	l of asse	essment				ent examination talks approx. (a) 4 random examinations	15 minutes each	n, log approx. 5 to 10 pages each)			
						: German and/or Eng						
				Asses	ssessment offered: Once a year, summer semester							
	Module comple		essfully	o8-A0	o8-AC-ExChem							
08-0C1-152-m01	Organic	Chemi	istry 1									
	ECTS	5	Duration	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses	S	•	V (3) ·	+ Ü (1)	•		•				
	Method	l of asse	essment	a) wri	a) written examination (approx. 90 to 180 minutes) or							
				b) oral examination of one candidate each (20 to 30 minutes) or								
				c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or								
				e) pre	e) presentation (approx. 30 minutes)							
					Language of assessment: German and/or English							
	Additio	nal Info	rmation		according to § 2 para. 2 sentence 2 APOLmCh in conjunction with No. I 2nd letter b) of annex 1 to the APOLmCh and No. 2 of annex 2 to the APOLmCh							
	Referre	d to in L	_PO I	§ 62 l	Nr. 2							
08-0C2-152-m01	Organic	c Chemi	istry 2 an	d analy	tical methods in or	ganic chemistry						
	ECTS 9 Duration Courses Method of assessment				1 semester	Method of grading	numerical grade	Modul level	undergraduate			
					+ Ü (1) + V (2)							
				d of assessment a) written examination (approx. 90 to 180 minutes) or								
				b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or								
				d) log (approx. 20 pages) or								
				e) presentation (approx. 30 minutes) Language of assessment: German and/or English								
				Langu	lage of assessment	: German and/or Eng	lish					

08-0CP1-FU-152-	Organic Chemistry for engineering students (practical course)											
mo1	ECTS	2	Duratio	1	1 semester	Method of gradin	g (not) successfully complet	ted Modul level	undergraduate			
	Course	S		P (4)								
				and a Langu	Vortestate/Nachtestate (pre and post-experiment examination talks approx. 15 minutes each, log approx. 5 to 10 pages each) and assessment of practical performance (2 to 4 random examinations)  Language of assessment: German and/or English  Assessment offered: Once a year, winter semester							
	Module comple		essfully	08-0	C1							
08-PC-TKE-152-	Thermo	odynam	ics, Kinet	ics, El	ectrochemistry							
mo1	ECTS	9	Duratio	า	1 semester	Method of gradin	g numerical grade	Modul level	undergraduate			
	Course	S		V (4)	+ Ü (2)	·						
	Method of assessment			b) ora c) ora d) log e) pre Langu credit	a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes) Language of assessment: German and/or English creditable for bonus							
	Referre	d to in I	LPO I	§ 62 l	Nr. 1							
o8-PC-QMS-			uantum n	nechar	ics and spectroso	copy for engineering	students					
FU-152-m01	ECTS	8	Duratio		1 semester	Method of gradin	g numerical grade	Modul level	undergraduate			
	Course				+ Ü (2)							
	Method of assessment			a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes) Language of assessment: German and/or English creditable for bonus								
o8-FU-Mo-	Molecu	lar Mat	erials (Le	ctures	)							
MaV12-212-m01	ECTS	10	Duratio	1	2 semester	Method of gradin	g numerical grade	Modul level	undergraduate			
	Course	S	-1	V (3)	+ S (1) + V (3) + S (	(1)		•	•			
	Method of assessment			exam (appr Langu	ination in groups ox. 30 minutes)] a	of up to 3 candidates	(approx. 15 minutes per cand c. 30 minutes), weighted 75%	didate) or d) log (ap	each (20 to 30 minutes) or c) oral oprox. 20 pages) or e) presentation			

o8-FU-Mo-	Molecu	lar Mat	erials (Pr	actical	Course)							
MaP-212-m01	ECTS	5	Duratio	1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Courses	S		P (5)								
	Method	l of ass	essment					15 minutes each	n, log approx. 5 to 10 pages each)			
							o 4 random examinations)					
	Madula	S 51166	accfully.		Language of assessment: German and/or English 08-FU-MoMa-V12							
		Modules successfully completed			20-1 O-1810181Q-8 12							
03-FU-PM1-152-	Polyme	r Chem	istry 1 (Le	cture	and Practical Cours	e)						
mo1	ECTS	5	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses	S		V (2) ·	+ P (2)							
	Method	l of ass	essment	prox. Langu Asses	5 to 10 pages each) lage of assessment		oractical assignments (2 to 4 ra lish		pprox. 15 minutes each, log apions)			
Engineering												
99-EL-212-m01	Basics	of Elect	ronics 1 8	<b>2</b>								
	ECTS	8	Duration	1	2 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses	S		V (3) ·	+ Ü (1) + V (3) + Ü (1)	)						
	Method	l of ass	essment	a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes) Language of assessment: German and/or English								
Biology / Medicine	е											
03-FU-Zell-152-	Princip	les of C	ell Biolog	y and	Tissue Regeneratio	n						
mo1	ECTS	5	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses	S		V (4)								
	Method of assessment			a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes) Language of assessment: German and/or English								

03-FU-BM-152-m01	Biomate	erials (Le	cture ar	d Prac	tical Course / Sem	inar)					
			Duration		1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Courses			V (4) -	+ P (2)	, ,	<u>.                                     </u>		<u>.                                      </u>		
	Method	of asses	sment	a) ass prox. Langu Asses	essment and b) Vo 5 to 10 pages each) lage of assessment	rtestate/Nachtestate and assessment of p : German and/or Eng e a year, summer ser	oractical assignments (2 to 4 ra lish	nination talks a ndom examinat	pprox. 15 minutes each, log ap- ions)		
Advanced Laborato	ry Cours	e									
08-FU-VP-152-m01	Advance	ed Labora	atory Co	urse o	f Functional Materi	als					
	ECTS	3 [	Duration		1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate		
	Courses	5		P (3)							
	Method	l of asses	sment		lk (approx. 15 minutes) Inguage of assessment: German and/or English						
<b>Compulsory Electiv</b>	es (20 E	CTS credi	its)								
Laboratory courses	and lect	tures (10	ECTS cr	edits)							
11-PPT-212-m01	Laboratory Course Physical Technology of Material Synthesis										
	ECTS 5 Duratio				1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate		
	Courses			P (5) Module taught in: German or English							
	Method of assessment			Preparation of the experiment will be considered successfully completed if a pre-experiment oral test (approx. 15 minutes) is passed. Performing and evaluating the experiments will be considered successfully completed if a if a Testat (exam) is passed. An experiment log (approx. 8 pages) must be prepared. Each component of the assessment can be repeated once in the respective semester. Only if both components of the assessment have been successfully completed in the same semester the module component be considered successfully completed.  Language of assessment: German and/or English Assessment offered: Once a year, winter semester							
		rerequisit				· · · · · · · · · · · · · · · · · · ·	Naterials, Bachelor's) are recom	mended to tak	e module 11-P-FR1.		
08-PCP-FU-152-					gineering students						
mo1	ECTS	5 [	Duration		1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate		
	Courses	_		P (4)							
	Method of assessment			Vortestate/Nachtestate (pre and post-experiment examination talks approx. 15 minutes each, log approx. 5 to 10 pages each) and assessment of practical performance (2 to 4 random examinations)  Language of assessment: German and/or English Assessment offered: Once a year, summer semester							
	Modules successfully completed			o8-PC-QMS-FU or o8-PC-TKE							

08-PS3-152-m01	Applied S	pectroscopy	3			,				
	ECTS 5	Duratio	n	1 semester	Method of grading numerical grade	Modul level	undergraduate			
	Courses		V (3)		·					
	Method o	fassessment	b) ora c) ora d) log e) pro	al examination of al examination in g (approx. 20 pago esentation (appro		es per candidate) or				
Other courses (5 E	CTS credits	5)								
Engineering										
99-TM-152-m01	Basics of	Applied Mech	anics							
	ECTS 5	Duratio	n	1 semester	Method of grading numerical grade	Modul level	undergraduate			
	Courses		V (3)	+ Ü (1)	·					
	Method o	f assessment	b) ora c) ora d) log e) pro Lang	a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes) Language of assessment: German and/or English Assessment offered: Once a year, winter semester						
99-IP-212-m01	Laborator	ry Course of M	echan	ical and Electrical	Engineering					
	ECTS 5	Duratio		1 semester	Method of grading (not) successfully com	pleted   Modul level	undergraduate			
	Courses		P (5)							
	Method o	f assessment	placement report (15 to 30 pages) Language of assessment: German and/or English Assessment offered: Once a year, summer semester							
	Modules : complete	successfully d	99-EI	99-EL						
	other prei	requisites	Students are highly recommended to complete module 99-TM prior to completing module 99-IP as well as to complete modules 99-CA and 99-IP simultaneously.							

99-CA-152-m01	Constr	uction,	Calculatio	n and	n and Assembly of Technical Products							
	ECTS	5	Duration	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Course	S	•	V (2) -	+ Ü (2)	<u>.</u>		•	•			
	Method	d of ass	essment	b) ora c) ora d) log e) pre Langu Asses	a) written examination (approx. 90 to 180 minutes) or color or candidate each (20 to 30 minutes) or coloral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or coloral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or coloral examination (approx. 20 pages) or coloral examination (approx. 30 minutes)  Language of assessment: German and/or English  Assessment offered: Once a year, summer semester creditable for bonus							
Physics												
11-M-D-152-m01	Mathematics 3 for Students of Physics and related Disciplines (Differential Equations)											
	ECTS	8	Duration	า	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Course	S		V (4) + Ü (2) Module taught in: Ü: German or English								
	Method	Method of assessment			written examination (approx. 120 minutes) Language of assessment: German and/or English							
11-M-F-152-m01	Mather	matics 4	for Stud	ents of	Physics and relate	ed Disciplines (Compl	ex Analysis)					
	ECTS	8	Duration	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses			V (4) + Ü (2) Module taught in: Ü: German or English								
	Method of assessment			written examination (approx. 120 minutes) Language of assessment: German and/or English								

11-P-FR1-152-m01	Data and Error Analysis											
			ition	1 semester	Method of grading (not) successfully completed	Modul level	undergraduate					
	Courses	5		V (1) + Ü (1) Module taught in: Ü: German or English								
	Method	of assessmo		written examination (approx. 120 minutes) Language of assessment: German and/or English								
	other pr	rerequisites	succ	Admission prerequisite to assessment: completion of exercises (approx. 13 exercise sheets per semester). Students who successfully completed approx. 50% of exercises will qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the semester.								
	Addition	nal Informati	cons nera the c stud for a sess	Registration: If a student registers for the exercises and obtains the qualification for admission to assessment, this will be considered a declaration of will to seek admission to assessment pursuant to Section 20 Subsection 3 Sentence 4 ASPO (general academic and examination regulations). If the module coordinators subsequently find that the student has obtained the qualification for admission to assessment, they will put the student's registration for assessment into effect. Only those students that meet the respective prerequisites can successfully register for an assessment. Students who did not register for an assessment or whose registration for an assessment was not put into effect will not be admitted to the respective assessment. If a student takes an assessment to which he/she has not been admitted, the grade achieved in this assessment will not be considered.								
	Referred	d to in LPO I		§ 53   Nr. 1 c) § 77   Nr. 1 d)								
11-N-EIN-152-m01	Introduction to Nanoscience											
	ECTS	7 Dura	ition	2 semester	Method of grading   numerical grade	Modul level	undergraduate					
	Courses	5		+ S (2) ule taught in: Germ	nan or English							
	Method	of assessmo		a) talk (30 to 45 minutes) with discussion and b) written examination (approx. 120 minutes) Language of assessment: German and/or English								
	other pr	rerequisites	Adm	Admission prerequisite to assessment: regular attendance (minimum 85% of sessions).								
	Addition	nal Informati	cons neral the c stud- for a sess	Registration: If a student registers for the exercises and obtains the qualification for admission to assessment, this will be considered a declaration of will to seek admission to assessment pursuant to Section 20 Subsection 3 Sentence 4 ASPO (general academic and examination regulations). If the module coordinators subsequently find that the student has obtained the qualification for admission to assessment, they will put the student's registration for assessment into effect. Only those students that meet the respective prerequisites can successfully register for an assessment. Students who did not register for an assessment or whose registration for an assessment was not put into effect will not be admitted to the respective assessment. If a student takes an assessment to which he/she has not been admitted, the grade achieved in this assessment will not be considered.								

Mathematics and C	ompute	r Scienc	:e									
10-M-COM-152-	Comput	tational	Mathema	atics								
mo1	ECTS	4	Duration	1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Courses	5		V (1) -	+ Ü (2)							
	Method	l of asse	essment				(approx. 20 to 25 hours)					
						German and/or Eng						
	Doforro	ا ده نما	DO I			e a year, winter seme	ester		_			
10-M-DGLaf-152-	Referred to in LPO I § 22 II Nr. 3 f)  Ordinary Differential Equations for students of other subjects											
mo1		10	Duration		1 semester	Method of grading	numorical grado	Modul level	undorgraduato			
	Courses		Duration		+ Ü (2)	Method of grading	Humerical grade	Modul level	undergraduate			
			occmont	. ,.		nnrov oo to 400 min	utes, usually chosen) or					
	Method	1 01 asst	essinent									
				c) ora	) oral examination of one candidate each (15 to 30 minutes) or oral examination in groups (groups of 2, 10 to 15 minutes per candidate)							
					nguage of assessment: German and/or English editable for bonus							
	1	-4 4 -	F4:			fathan Callasta						
10-M-FA- Naf-152-m01					lysis for Students o	· · · · · · · · · · · · · · · · · · ·	Lavorania al amada	NA 1	Turn danning divista			
1101	ECTS 10 Duratio				1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses			. ,.	+ Ü (2)		, 11 1		_			
	Method of assessment					pprox. 90 to 180 min e candidate each (15	utes, usually chosen) or					
							to 15 minutes per candidate)					
				Langu	lage of assessment	German and/or Eng						
					able for bonus							
10-M-NUM1af-152-					tudents of other su	·		T				
mo1		10	Duration		1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses				+ Ü (2)							
	Method	l of asse	essment	a) wri	a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or							
				Langu	c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English							
					able for bonus			1				
10-M-NUM2af-152-	Numeri	cal Mat	hematics	2 for	students of other su	· · · · · · · · · · · · · · · · · · ·						
mo1	ECTS	10	Duration				Modul level	undergraduate				
	Courses			V (4) + Ü (2)								
	Method of assessment			a) written examination (approx. 90 to 180 minutes, usually chosen) or								
				b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate)								
				Language of assessment: German and/or English								
			creditable for bonus									
Bachelor's with 1 major F	unctional Ma	aterials (20	021)			· · ·	JMU Würzburg • generated 19-Apr-20	o25 • exam. reg. data	record 82 g81 - - H 2021 page 12 / 17			

10-M-PRG-152-m01	Progra	mming	course fo	r stude	ents of Mathematics	and other subjects					
	ECTS	3	Duration		1 semester	Method of grading (not) successfully completed	Modul level	undergraduate			
	Course	S		P (2)				, -			
	Method	d of ass	essment	Langu	lage of assessment:	gramming exercises (approx. 20 to 25 hours) German and/or English e a year, summer semester					
	Referre	d to in I	LPO I		I Nr. 3 f)	, , , , , , , , , , , , , , , , , , , ,		-			
10-I-DB-152-m01	Databa	ses					-				
	ECTS	5	Duratio	n	1 semester	Method of grading   numerical grade	Modul level	undergraduate			
	Course			V (2) -	+ Ü (2)			, -			
	Method	d of ass	essment	If ann of one date). Langu	ritten examination (approx. 60 to 120 minutes). announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination fone candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candiate). anguage of assessment: German and/or English reditable for bonus						
	Referred to in LPO I				Nr. 1 b) Nr. 1 b)						
10-l-EIN-152-m01	Introduction to Computer Science for Students of all Faculties										
	ECTS	10	Duration	1	1 semester	Method of grading numerical grade	Modul level	undergraduate			
	Course	S		V (4) -	+ Ü (2)						
	Method	d of ass	essment	written examination (approx. 60 to 120 minutes) Language of assessment: German and/or English							
Chemistry											
08-PKC-152-m01	Progra	mming	and nume	rical n	nethods						
	ECTS	5	Duration	1	1 semester	Method of grading (not) successfully completed	Modul level	undergraduate			
	Course	S		S (2) -	+ Ü (2)						
	Method of assessment			a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes) Language of assessment: German and/or English Assessment offered: Once a year, summer semester							

08-BC1-152-m01	Biochemistry 1												
	ECTS 5 Duration			1	1 semester	Method of grading numerical grade	Modul level	undergraduate					
	Courses			V (2) + Ü (1)									
	Method	of ass	essment	written examination (approx. 60 to 90 minutes)									
	Addition	ial Info	rmation	according to § 2 para. 2 sentence 2 APOLmCh in conjunction with No. II 2nd letter e) and No. II 1st letter c) of annex 1 to the APOLmCh and No. 3 of annex 3 to the APOLmCh									
	Referred to in LPO I			§ 42   Nr. 2 § 62   Nr. 2									
08-TC-152-m01	Quantum Chemistry												
	ECTS :	3	Duration	1	1 semester	Method of grading numerical grade	Modul level	undergraduate					
	Courses		•	V (2) ·	+ Ü (1)								
	Method	of ass	essment	a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes) Language of assessment: German and/or English creditable for bonus									
	Referred to in LPO I			§ 22    Nr. 1 h) § 22    Nr. 2 f) § 22    Nr. 3 f)									
Medicine													
03-FU-TV-152-m01	Physical Technology of Material Synthesis (Lecture and Practical Course)												
	ECTS 5 Duration			1	1 semester	Method of grading   numerical grade	Modul level	undergraduate					
	Courses			V (2) ·	+ P (2)								
	Method	of ass	essment	a) assessment and b) Vortestate/Nachtestate (pre and post-experiment examination talks approx. 15 minutes each, log approx. 5 to 10 pages each) and assessment of practical assignments (2 to 4 random examinations)  Language of assessment: German and/or English  Assessment offered: Once a year, summer semester creditable for bonus									
03-FU-TE-152-m01	Principle	es of Ti	issue Eng	ineerii	ng								
	ECTS	5	Duration	ı	1 semester	Method of grading numerical grade	Modul level	undergraduate					
	Courses			V (4)									
	Method	of asso	essment	a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes) Language of assessment: German and/or English Assessment offered: Once a year, summer semester									
Bachelor's with 1 major F						IMILIAN:	2d 10-Δnr-202ε • evam reα data i	record \$2 g\$1 .  H 2021   D2G8 14 / 17					

<b>Additional Qualific</b>	ations											
08-FU-IP1-212-m01	Industrial In	ternship										
	ECTS 5 Duration		1	1 semester	Method of grading	(not) successfully complete	ed Modul level	undergraduate				
	Courses		P (4)									
	Method of a	ssessment	report (5 to 10 pages) Language of assessment: German and/or English									
	other prereq	uisites	Pleas	Please consult with course advisory service in advance.								
08-FU-AP1-212-	Foreign Studies											
mo1	ECTS 5	Duration	1	1 semester	Method of grading	(not) successfully complete	ed Modul level	undergraduate				
	Courses	•	P (4)	•	•	•						
	Method of a	ssessment	report (approx. 2 pages); proof of having completed lab course Language of assessment: German and/or English or potentially language of the respective country									
	other prereq	uisites	Please consult with course advisory service in advance.									
08-FU-WP1-152-	Courses Rel	ated to Fund	tional	Materials outside	of the Natural Science	es						
mo1	ECTS 5	Duratio	<u> </u>	1 semester	Method of grading	(not) successfully complete	d Modul level	undergraduate				
	Courses	·	Ü (o)									
	Method of a	ssessment	a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes) Language of assessment: German and/or English									
	other prereq		Please consult with course advisory service in advance.									
08-FU-WP2-152-	Courses Rel	rses Related to Functional Materials inside of the Natural Sciences										
mo1	ECTS 5	Duration	1	1 semester	Method of grading	(not) successfully complete	ed Modul level	undergraduate				
	Courses		Ü (o)									
	Method of a	ssessment	a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes) Language of assessment: German and/or English									
	other prereq	luisites	Please consult with course advisory service in advance.									

Key Skills Area (20 ECTS credits)											
<b>General Key Skills</b> Students may select			d as par	t of the	pool of general tran	sferable skills (ASQ)	of JMU.				
Subject-specific Ke	y Skills (1	5 ECTS	credits)								
o8-FU-Ma- Wi1-212-mo1	Material Science 1 (Basic introduction)										
	ECTS 5 Duration					Method of grading	numerical grade	Modul level	undergraduate		
	Courses				V (2) + Ü (1) + V (2)						
				a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes) Language of assessment: German and/or English							
o8-FU-Ma-		Science	e 2 (The	Materi	al Groups)						
Wi2-152-m01	ECTS 5		Duration		1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Courses			V (3) +							
	method c	n asses	SSIIICIII	a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes) Language of assessment: German and/or English							
11-TMS-212-m01	Introduction to the Physics of Functional Materials										
	ECTS 5 Duration			1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses			V (3) + R (1) Module taught in: German or English							
	Method of assessment			a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes).  If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest.  Language of assessment: German and/or English  Assessment offered: Once a year, summer semester							

Thesis (12 ECTS credits)										
08-FU-BT1-152- m01	Bachelor Thesis Functional Materials Research									
	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	undergraduate	
	Course	S		No courses assigned to module						
	Method	d of asse	essment	Bachelor's thesis (20 to 40 pages) Language of assessment: German and/or English						
	Additio	nal Info	rmation	Time to complete: 10 weeks.						
08-FU-BT2-152-	Bachelor Thesis Functional Materials Defense									
mo1	ECTS	ECTS 2 Duration		n	1 semester	Method of grading	numerical grade	Modul level	undergraduate	
	Course	S		K (1)						
	Method	d of asse	essment	talk (approx. 20 minutes) with discussion (approx. 20 minutes) Language of assessment: German and/or English						