

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: Chair of Chemical Technology of Material Synthesis

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

Examination regulations version: 2021

Examination regulations version: 2021

= 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: ditable for bonus.

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

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	Module title											
	ECTS		Duration	(in semesters)	Method of grading		Module level						
	Courses		To be spe	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	ssessm	ent										
	Only after su completion of		ıl if applica	if applicable									
	Other prereq	uisites	if applica	if applicable									
	Participants on of places		ocati- if applica	if applicable									
	Additional in	format	ion if applica	if applicable									
	Referred to in	n LPO I	if applica	if applicable (examination regulations for teaching-degree programmes)									

Compulsory Cours	ses (128 ECTS c	redits)									
Mathematics (16	ECTS credits)										
10-M-FUN1-212-	Mathematics	1 for Stud	ents of	Functional Mater	ials						
mo1	ECTS 8	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses			V (5) + Ü (2) Module taught in: Ü: German or English							
	Method of as	sessment	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 (approx. 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus								
10-M-FUN2-152-	Mathematics	2 for Stud	ents o	f Functional Mater	ials						
mo1	ECTS 8	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses			V (5) + Ü (2) Module taught in: Ü: German or English							
	Method of as	sessment	minu Langi	a) written examination (approx. 90 to 120 minutes, usually chosen) or b) oral examination of one candidate each (approx. 2 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							
Modules Mathem	atics/Statistics	(22 ECTS	credits)							
11-E-M-152-m01	Classical Phy	sics 1 (Me	chanic	s)							
	ECTS 8	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses		V (4) + Ü (2) Module taught in: Ü: German or English								
	Method of as	sessment	Langı	written examination (approx. 120 minutes) Language of assessment: German and/or English							
	other prerequ	iisites	succe	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 In		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		Nr. 1 a) Nr. 1 a)							

11-E-E-152-m01	Classical Pl	hysics 2 (He	at and Electromagnetis	sm)	-							
	ECTS 8	Duratio	n 1 semester	Method of grading numerical grade	e Modul le	vel undergraduate						
	Courses		V (4) + Ü (2) Module taught in: Ü: (German or English								
	Method of a	assessment	written examination (a	written examination (approx. 120 minutes) Language of assessment: German and/or English								
	other prered	quisites	Admission prerequisit successfully complete	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 I	nformation	considered a declarat neral academic and ex the qualification for a students that meet the for an assessment or v	egistration: If a student registers for the exercises and obtains the qualification for admission to assessment, this will be onsidered 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 are qualification for admission to assessment, they will put the student's registration for assessment into effect. Only those rudents that meet the respective prerequisites can successfully register for an assessment. Students who did not register are 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 ill not be considered.								
	Referred to	in LPO I	§ 53 Nr. 1 a) § 77 Nr. 1 a)	77 Nr. 1 a)								
11-PNNF-152-m01	Laboratory Course Physics for Students of Physics Related Disciplines											
	ECTS 3	Duratio	n 1 semester	Method of grading (not) successfu	lly completed Modul le	vel undergraduate						
	Courses		P (4)									
	Method of a	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-	Mathematic	cal Methods	of Physics for Student	s of Functional Materials	,							
mo1	ECTS 5	Duratio	n 2 semester	Method of grading (not) successfu	lly completed Modul le	vel undergraduate						
	Courses		$V(2) + \ddot{U}(1) + V(2) + \ddot{U}$ Module taught in: Ger									
	Method of a	assessment	sessment a) exercises (successful completion of approx. 50% of approx. 13 exercise sheets) or b) talk (approx. 15 minutes)									
11-P-FR2-152-m01	Advanced a	nd Computa	tional Data Analysis									
	ECTS 2	Duratio	n 1 semester	Method of grading (not) successfu	lly completed Modul le	vel undergraduate						
	Courses		V (1) + Ü (1)									
	Method of a	assessment		completion of approx. 50% of approx. 10 Once a year, summer semester	exercise sheets)							
1		prerequisites Students are highly recommended to complete module 11-P-FR1 prior to completing module 11-P-FR2.										

Chemistry (63 ECT	S credits))									
o8-AC-Ex-	Experin	nental (Chemistry	,							
Chem-152-m01	ECTS	5	Duration		1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Courses	S		V (4)							
	Method	l of asse	essment	writte Lang	en examination (appuage of assessment	orox. 90 minutes) t: German and/or En	glish				
08-ACP1-FU-152-	Genera	l and ar	nalytical (hemi	stry Lab for enginee	ering students					
mo1	ECTS	5	Duration	า	1 semester Method of grading (not) successfully completed Modul level under				undergraduate		
	Courses	5		P (5)	(5)						
				and a	ortestate/Nachtestate (pre and post-experiment examination talks approx. 15 minutes each, log approx. 5 to 10 pages each) assessment of practical performance (2 to 4 random examinations) assessment offered: Once a year, summer semester anguage of assessment: German and/or English						
	Modules successfully completed Organic Chemistry 1		,	o8-A	-AC-ExChem						
08-0C1-152-m01											
	ECTS	5	Duration		1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Courses	_		_	+ Ü (1)						
	Method of assessment		exam (appr	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) presentatior (approx. 30 minutes) Language of assessment: German and/or English							
	Referre	d to in L	to in LPO § 62 Nr. 2								
08-0C2-152-m01	Organic Chemistry 2 and analytical methods in organic chemistry										
	ECTS	9	Duration	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Courses	5		V (3)	+ Ü (1) + V (2)						
	Method				each (20 to 30 minutes) or c) oral oprox. 20 pages) or e) presentation						
08-0CP1-FU-152-		c Chemi	stry for e	ngine	ering students (pra						
mo1	ECTS	2	Duration		1 semester	Method of grading	(not) successfully complete	d 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) Assessment offered: Once a year, winter semester Language of assessment: German and/or English							
	Modules successfully completed		essfully	08-0	C1						

08-PC-TKE-152-	Thermo	odynam	ics, Kinet	ics, El	ectrochemistry	1						
mo1	ECTS	9	Duratio	า	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Course	S		V (4)	+ Ü (2)		-	-				
	Method	d of ass	essment	exam (appr Langı	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 § 62 Nr. 1											
o8-PC-QMS-	Princip	les of q	uantum n	nechar	ics and spectrosco	py for engineering st	udents					
FU-152-mo1	ECTS	8	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Course	S		V (4)	+ Ü (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 creditable for bonus								
o8-FU-Mo-	Molecu	ılar Mat	erials (Le	ctures)							
MaV12-212-m01	ECTS	10	Duratio		2 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Course	S		V (3) + S (1) + V (3) + S (1)								
	Method	d of ass	essment	[a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) o examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) pres (approx. 30 minutes)] as well as talk (approx. 30 minutes), weighted 75%: 25% creditable for bonus Language of assessment: German and/or English								
o8-FU-Mo-	Molecu	ılar Mat	erials (Pr	actical	Course)							
MaP-212-m01	ECTS	5	Duratio	1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Course	S		P (5)								
	Method	d of ass	essment	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								
	Modules successfully completed			o8-FL	J-MoMa-V12							

03-FU-PM1-152-	Polyme	er Chem	istry 1 (Le	cture and Practic	al Cours	e)			-				
mo1	ECTS	5	Duration	ı 1 semeste	r	Method of grading numerical	grade	Modul level	undergraduate				
	Course			V (2) + P (2)		•		-					
	Method	d of asso	essment	prox. 5 to 10 pag Assessment offe Language of asse	assessment and b) Vortestate/Nachtestate (pre and post-experiment examination talks approx. 15 minutes each, log apox. 5 to 10 pages each) and assessment of practical assignments (2 to 4 random examinations) assessment offered: Once a year, winter semester and offered: Once a year, winter semester and offered: German and offered: German and offered: Once a year, winter semester and offered: Once a year, with year and year, with year and year, with year and year.								
Engineering (10 ECT	S credi	its)											
99-EL-212-m01	Basics	of Elect	ronics 1 8	2									
	ECTS	8	Duration	2 semeste	er	Method of grading numerical	grade	Modul level	undergraduate				
	Course	es.		V (3) + Ü (1) + V (3) + Ü (1)								
	Method	d of asso	essment	examination in g (approx. 30 minu	roups of ites)				each (20 to 30 minutes) or c) oral oprox. 20 pages) or e) presentation				
Biology / Medicine	(12 ECT	ECTS credits)											
03-FU-Zell-152-	Principles of Cell Biology and Tissue Regeneration												
mo1	ECTS 5 Duration			1 semeste	r	Method of grading numerical	grade	Modul level	undergraduate				
	Courses			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		terials (I	Lecture ar	d Practical Cours	se / Semi								
	ECTS	7	Duration		r	Method of grading numerical	grade	Modul level	undergraduate				
	Course			V (4) + P (2)					_				
	Method	d of ass	essment	prox. 5 to 10 pag Assessment offe	es each) red: Onc essment:	rtestate/Nachtestate (pre and po and assessment of practical ass e a year, summer semester e German and/or English							
Advanced Laborato	ry Cour	se (3 EC	TS credits)									
08-FU-VP-152-m01	Advand	ced Labo	oratory Co	urse of Functiona	l Materi	als							
-		3	Duration			Method of grading (not) succ	essfully completed	Modul level	undergraduate				
	Course	?S		P (3)									
	Method	d of asso	essment	talk (approx. 15 r Language of asse		: German and/or English							

Compulsory Elective	ves (20 EC	CTS cre	dits)									
Laboratory courses	s and lect	ures (m	in. 10 EC	TS cree	dits)							
11-PPT-212-m01	Laborat	ory Coι	rse Phys	ical Te	chnology of Materia	al Synthesis						
	ECTS	5	Duration	1	1 semester	Method of grading	(not) successfully compl	leted	Modul level	undergraduate		
	Courses	5		P (5) Module taught in: German or English								
	Method	of asse	essment	passe sed. A respe the m Asses	reparation of the experiment will be considered successfully completed if a pre-experiment oral test (approx. 15 minutes) is assed. Performing and evaluating the experiments will be considered successfully completed if a if a Testat (exam) is pased. An experiment log (approx. 8 pages) must be prepared. Each component of the assessment can be repeated once in the espective semester. Only if both components of the assessment have been successfully completed in the same semester will be module component be considered successfully completed. Assessment offered: Once a year, winter semester anguage of assessment: German and/or English							
	other pr	erequis	ites	Stude	ents of Funktionswer	kstoffe (Functional M	laterials, Bachelor's) are	recom	mended to take	e module 11-P-FR1.		
08-PCP-FU-152-	Physical Chemistry (lab) for engineering students											
mo1	ECTS 5 Duratio			1	1 semester	Method of grading	(not) successfully compl	leted	Modul level	undergraduate		
	Courses	5		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) Assessment offered: Once a year, summer semester Language of assessment: German and/or English								
	Module: complet		ssfully	08-PC	-QMS-FU or o8-PC-T	KE						
08-PS3-152-m01	Applied	Spectr	oscopy 3									
	ECTS	5	Duration	1	1 semester	Method of grading	numerical grade		Modul level	undergraduate		
	Courses	5		V (3)								
	Method	hod 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							

Other courses (min	. 5 ECTS credits)								
Engineering										
99-TM-152-m01	Basics of Appli	ied Mech	anics							
	ECTS 5	Duration		1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Courses		V (3) +				,			
	Method of asso		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) Assessment offered: Once a year, winter semester Language of assessment: German and/or English							
99-IP-212-m01	Laboratory Cou	urse of Mo	echanic	al and Electrical En	gineering					
	ECTS 5	Duration		1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate		
	Courses		P (5)							
	Method of asse	essment	Assess	eport on practical course (15 to 30 pages) Assessment offered: Once a year, summer semester Anguage of assessment: German and/or English						
	Modules succe completed	essfully	99-EL							
	other prerequis	sites	Studer les 99-	nts are highly recom ·CA and 99-IP simul	nmended to complete taneously.	e module 99-TM prior to comp	leting module 9	9-IP as well as to complete modu-		
99-CA-152-m01	Construction, Calculation and Assembly of Technical Products									
	ECTS 5	Duration	n	1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Courses		V (2) +	Ü (2)	•					
	Method of asso	essment	examir (appro Assess Langua	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) Assessment offered: Once a year, summer semester Language of assessment: German and/or English creditable for bonus						
Physics										
11-M-D-152-m01	Mathematics 3	for Stud	ents of I	Physics and related	d Disciplines (Differe	ntial Equations)				
	ECTS 8	Duration		1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Courses		Module	V (4) + Ü (2) Module taught in: Ü: German or English						
	Method of asso	essment	written examination (approx. 120 minutes) Language of assessment: German and/or English							

11-M-F-152-m01	Mathematics 4 for Students of Physics and related Disciplines (Complex Analysis)											
	ECTS	8	Duration	1 semester	Method of grading numerical grade	Modul level	undergraduate					
	Course	!S		V (4) + Ü (2) Module taught in: Ü: German or English								
	Method of assessment			vritten examination (approx. 120 minutes) anguage of assessment: German and/or English								
11-P-FR1-152-m01	Data ar	nd Error	Analysis									
	ECTS	2	Duration	1 semester	Method of grading (not) successfully complete	d Modul level	undergraduate					
	Courses			V (1) + Ü (1) Module taught in: Ü: Ge	erman or English							
	Method	d of ass		written examination (ap Language of assessme	oprox. 120 minutes) nt: German and/or English							
	other p	rerequi		successfully completed	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.							
	Additio	onal Info		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 c) § 77 Nr. 1 d)								
11-N-EIN-152-m01	Introduction to Nanoscience											
	ECTS	7	Duration	2 semester	Method of grading numerical grade	Modul level	undergraduate					
	Course	·S		V (2) + S (2) Module taught in: German or English								
	Method	d of ass		a) talk (30 to 45 minutes) with discussion and b) written examination (approx. 120 minutes) Language of assessment: German and/or English								
	other p	rerequi	sites	Admission prerequisite	to assessment: regular attendance (minimum 85%	of sessions).						
	Additio	onal Info		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	Compute	r Scien	се									
10-M-COM-152-	Compu	tationa	l Mathem	atics								
mo1	ECTS	4	Duratio		1 semester	Method of grading	g (not) successfully completed	Modul level	undergraduate			
	Course	S		V (1)	+ Ü (2)							
	Method	d of ass	essment	Asses	project in the form of programming exercises (approx. 20 to 25 hours) Assessment offered: Once a year, winter semester Language of assessment: German and/or English							
	Referre	d to in	LPO I	§ 22 Nr. 3 f)								
10-M-DGLaf-152-	Ordina	ry Diffe	rential Eq	uation	s for students of o	ther subjects		,				
mo1	ECTS	10	Duratio	1	1 semester	Method of grading	g numerical grade	Modul level	undergraduate			
	Course	S		V (4)	+ Ü (2)		•					
		a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 r nutes) 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							f one candidate each (15 to 30 mi-			
10-M-FA-	Introdu	iction to	Function	al Ana	llysis for Students	of other Subjects						
Naf-152-mo1	ECTS	10	Duration	ı	1 semester	Method of grading	g numerical grade	Modul level	undergraduate			
	Course	S		V (4)	+ Ü (2)							
	Method of assessment			nutes Langi	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							
10-M-NUM1af-152-	Numeri	ical Mat	thematics 1 for students of other subjects									
mo1	ECTS	10	Duratio						undergraduate			
	Course	S		V (4)	+ Ü (2)		•					
	Method	d of ass	essment	a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 nutes) 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								
10-M-NUM2af-152-	Numeri	ical Mat	thematics	2 for	students of other s	subjects		'				
mo1	ECTS	10	Duratio	ı	1 semester	Method of grading	g numerical grade	Modul level	undergraduate			
İ	Course	S	•	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								

10-M-PRG-152-m01	Program	Programming course for students of Mathematics and other subjects											
	ECTS	3	Duration	1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate				
	Courses			P (2)	•	•		-					
	Method	of ass	essment	project in the form of programming exercises (approx. 20 to 25 hours)									
				Asses	ssment offered: One	ce a year, summer ser	nester						
	Referred	ا دا اد	DO I			t: German and/or Eng	usn						
10 L DD 150 mo1	Data Ba		_PU I	9 22 1	I Nr. 3 f)			-					
10-I-DB-152-m01			Duration		l comostor	Method of grading	numarical grada	Modul level	undergraduate				
	ECTS Courses		Duration		1 semester + Ü (2)	Method of grading	Turriericai grade	Modul level	undergraduate				
			essment			nyov (o to too minute							
	Method	or assi	essment			prox. 60 to 120 minute urer at the beginning (ination may be	replaced by an oral examination				
				of one	If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candi-								
					date). Language of assessment: German and/or English								
					uage of assessment table for bonus	t: German and/or Eng	lisn						
	Referred	l to in I	PO I		49 l Nr. 1b								
	Kererree				Nr. 1b								
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				
	Courses			V (4)	+ Ü (2)								
	Method	of ass	essment			prox. 60 to 120 minute							
				Langu	lage of assessment	t: German and/or Eng	lish						
Chemistry													
08-PKC-152-m01		nming	and nume		nethods								
	ECTS	5	Duration		1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate				
	Courses			. ,	+ Ü (2)								
	Method	of asse	essment						each (20 to 30 minutes) or c) oral				
					ination in groups o ox. 30 minutes)	f up to 3 candidates (a	approx. 15 minutes per candida	te) or d) log (ap	prox. 20 pages) or e) presentation				
				Asses	ssment offered: One	ce a year, summer ser	nester						
						t: German and/or Eng							
08-BC1-152-m01	Biochen	nistry 1	l		'	,		,					
	ECTS	5	Duration	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate				
	Courses			V (2)	+ Ü (1)								
	Method	of ass	essment	writte	n examination (app	prox. 60 to 90 minutes	5)						
	Referred	l to in L	PO I	§ 42 Nr. 2									
				§ 62 l	Nr. 2								

08-TC-152-m01	Quantı	ım Che	mistry										
	ECTS	3	Duration	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate				
	Course	!S		V (2) -	+ Ü (1)								
	Metho	d of ass	essment	exam (appr Langu	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	ed to in	LPO I	§ 22 l	§ 22 Nr. 1 h) § 22 Nr. 2 f) § 22 Nr. 3 f)								
Medicine													
03-FU-TV-152-m01	Physic	ysical Technology of Material Synthesis (Lecture and Practical Course)											
	ECTS	5	Duration	า	1 semester	Method of grading	numerical grade	Modul level	undergraduate				
	Courses			V (2) ·	(2) + P (2)								
				Asses Langu credit	sment offered: Onc lage of assessment able for bonus	ce a year, summer sen :: German and/or Engl							
03-FU-TE-152-m01			of Tissue Engineering										
	ECTS	5	Duration			Method of grading numerical grade		Modul level	undergraduate				
	Course			V (4)									
	Method of assessment			exam (appr Asses	ination in groups o ox. 30 minutes) ssment offered: Ond		pprox. 15 minutes per candida nester		each (20 to 30 minutes) or c) oral prox. 20 pages) or e) presentation				
Additional Qualific	ations												
08-FU-IP1-212-m01	Indust	rial Inte	rnship										
	ECTS	5	Duration	1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate				
	Course			P (4)									
	Metho	d of ass	essment	report (5 to 10 pages) Language of assessment: German and/or English									
	other prerequisites			Please consult with course advisory service in advance.									

08-FU-AP1-212- m01	Foreign Studies											
	ECTS 5 Duration)	1 semester	Method of grading	(not) successfully comp	oleted	Modul level	undergraduate			
	Courses			P (4)								
	Method of assessment			report (approx. 2 pages);								
				proof of having completed lab course								
	- 41 11 -		:4	Language of assessment: German and/or English or potentially language of the respective country								
00 FH WD:		rerequis		Please consult with course advisory service in advance. tional Materials outside of the Natural Sciences								
08-FU-WP1-152- m01			Duration									
	Course	5	Duration	Ü (o)	1 semester	Method of grading	, [(not) successibility comp	oietea	Modul level	undergraduate		
			ssmant									
	Method	ı oı asse	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								
		rerequis		Please consult with course advisory service in advance.								
08-FU-WP2-152- m01	Courses Related to Functional Materials inside of the Natural Sciences											
	ECTS 5 Duratio				1 semester	Method of grading	(not) successfully comp	oleted	Modul level	undergraduate		
		Courses			Ü (o)							
	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								
	other prerequisites			Please consult with course advisory service in advance.								
Key Skills Area (20	ECTS cr	edits)										
General Key Skills Students may select			ed as par	of the	e pool of general t	ransferable skills (ASC	D) of JMU.					
Subject-specific Ke	y Skills	(15 ECTS	credits)									
08-FU-Ma- Wi1-212-m01	Material Sciences 1 (Basic introduction)											
	ECTS	5	Duration		2 semester	Method of grading	numerical grade		Modul level	undergraduate		
	Courses			$V(2) + \ddot{U}(1) + V(2)$								
	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								

08-FU-Ma- Wi2-152-m01	Material Science 2 (The Material Groups)												
	ECTS 5 Duration		า	1 semester	Method of grading	numerical grade	Modul level	undergraduate					
	Courses			V (3) + Ü (1)									
	Method	d 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									
11-TMS-212-m01	Introduction to the Physics of Functional Materials												
	ECTS 5 Duration			1	1 semester	Method of grading	numerical grade	Modul level	undergraduate				
	Courses			V (3) + R (1) Module taught in: German or English									
		d of ass	essment	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. Assessment offered: Once a year, summer semester Language of assessment: German and/or English									
Thesis (12 ECTS cre													
08-FU-BT1-152-					iterials Research		T	1					
mo1	ECTS 10 Duration			1 semester	Method of grading	numerical grade	Modul level	undergraduate					
	Courses			No courses assigned to module									
	Method	d of ass	essment	Bachelor's thesis (20 to 40 pages) Language of assessment: German and/or English									
	Additio	nal Info	ormation	Time to complete: 10 weeks.									
08-FU-BT2-152-	Bachelor Thesis Functional Materials Defense												
mo1		2	Duration		1 semester	Method of grading	numerical grade	Modul level	undergraduate				
	Course	S		K (1)		į							
	Method of assessment			talk (approx. 20 minutes) with discussion (approx. 20 minutes) Language of assessment: German and/or English									