

Annex SFB

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

Responsible: Faculty of Chemistry and Pharmacy

Responsible:

Examination regulations version: 2025

Examination regulations version: 2025

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:

ASPO2015

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

??-??-2025 (2025-??)

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 (128 ECTS credits)								
Mathematics								
10-M-FUN1-212-mo1	Mathematics 1 for Students of Functional Materials							
	ECTS	8	Duration	1 semester	Method of grading	numerical grade	Modul level undergraduate	
	Courses	V (5) + Ü (2) Module taught in: Ü: German or English						
	Method of assessment	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-mo1	Mathematics 2 for Students of Functional Materials							
	ECTS	8	Duration	1 semester	Method of grading	numerical grade	Modul level undergraduate	
	Courses	V (5) + Ü (2) Module taught in: Ü: German 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 Mathematics/Statistics								
11-E-M-152-mo1	Classical Physics 1 (Mechanics)							
	ECTS	8	Duration	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					
		other prerequisites	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. 1 a) § 77 I Nr. 1 a)						

11-E-E-152-m01	Classical Physics 2 (Heat and Electromagnetism)							
	ECTS	8	Duration	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						
	other prerequisites	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. 1 a) § 77 I Nr. 1 a)							
11-PNNF-152-m01	Laboratory Course Physics for Students of Physics Related Disciplines							
	ECTS	3	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	P (4)						
	Method 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-m01	Mathematical Methods of Physics for Students of Functional Materials							
	ECTS	5	Duration	2 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	V (2) + Ü (1) + V (2) + Ü (1) Module taught in: German or English						
	Method 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 and Computational Data Analysis							
	ECTS	2	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	V (1) + Ü (1)						
	Method of assessment	Exercises (successful completion of approx. 50% of approx. 10 exercise sheets) Assessment offered: Once a year, summer semester						
	other prerequisites	Students are highly recommended to complete module 11-P-FR1 prior to completing module 11-P-FR2.						

Chemistry							
o8-AC-Ex-Chem-152-m01	Experimental Chemistry						
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level undergraduate
	Courses	V (4)					
	Method of assessment	written examination (approx. 90 minutes) Language of assessment: German and/or English					
o8-ACP1-FU-152-m01	General and analytical Chemistry Lab for engineering students						
	ECTS	5	Duration	1 semester	Method of grading	(not) successfully completed	Modul level undergraduate
	Courses	P (5)					
	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-AC-ExChem					
o8-OC1-152-m01	Organic Chemistry 1						
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level undergraduate
	Courses	V (3) + Ü (1)					
	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					
	Referred to in LPO I	§ 62 I Nr. 2					
o8-OC2-152-m01	Organic Chemistry 2 and analytical methods in organic chemistry						
	ECTS	9	Duration	1 semester	Method of grading	numerical grade	Modul level undergraduate
	Courses	V (3) + Ü (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					

o8-OCP1-FU-152-m01	Organic Chemistry for engineering students (practical course)							
	ECTS	2	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, winter semester						
Modules successfully completed	o8-OC1							
o8-PC-TKE-152-m01	Thermodynamics, Kinetics, Electrochemistry							
	ECTS	9	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	V (4) + 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						
Referred to in LPO I	§ 62 I Nr. 1							
o8-PC-QMS-FU-152-m01	Principles of quantum mechanics and spectroscopy for engineering students							
	ECTS	8	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	V (4) + 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-MaV12-212-m01	Molecular Materials (Lectures)							
	ECTS	10	Duration	2 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	V (3) + S (1) + V (3) + S (1)						
	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)] as well as talk (approx. 30 minutes), weighted 75% : 25% Language of assessment: German and/or English creditable for bonus						

o8-FU-Mo-MaP-212-m01	Molecular Materials (Practical Course)							
	ECTS	5	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	P (5)						
	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						
Modules successfully completed	o8-FU-MoMa-V12							
o3-FU-PM1-152-m01	Polymer Chemistry 1 (Lecture and Practical Course)							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	V (2) + P (2)						
	Method of assessment	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, winter semester creditable for bonus						
Engineering								
99-EL-212-m01	Basics of Electronics 1 & 2							
	ECTS	8	Duration	2 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	V (3) + Ü (1) + V (3) + Ü (1)						
	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						
Biology / Medicine								
o3-FU-Zell-152-m01	Principles of Cell Biology and Tissue Regeneration							
	ECTS	5	Duration	1 semester	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	Biomaterials (Lecture and Practical Course / Seminar)							
	ECTS	7	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	V (4) + P (2)						
	Method of assessment	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						
Advanced Laboratory Course								
08-FU-VP-152-m01	Advanced Laboratory Course of Functional Materials							
	ECTS	3	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	P (3)						
	Method of assessment	talk (approx. 15 minutes) Language of assessment: German and/or English						
Compulsory Electives (20 ECTS credits)								
Laboratory courses and lectures (10 ECTS credits)								
11-PPT-212-m01	Laboratory Course Physical Technology of Material Synthesis							
	ECTS	5	Duration	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 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 will the module component be considered successfully completed. Language of assessment: German and/or English Assessment offered: Once a year, winter semester						
	other prerequisites	Students of Funktionswerkstoffe (Functional Materials, Bachelor's) are recommended to take module 11-P-FR1.						
08-PCP-FU-152-m01	Physical Chemistry (lab) for engineering students							
	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	08-PC-QMS-FU or 08-PC-TKE						

o8-PS3-152-m01	Applied Spectroscopy 3							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	V (3)						
	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 courses (5 ECTS credits)								
Engineering								
99-TM-152-m01	Basics of Applied Mechanics							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	V (3) + Ü (1)						
	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, winter semester						
99-IP-212-m01	Laboratory Course of Mechanical and Electrical Engineering							
	ECTS	5	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	P (5)						
	Method of assessment	placement report (15 to 30 pages) Language of assessment: German and/or English Assessment offered: Once a year, summer semester						
	Modules successfully completed	99-EL						
other prerequisites	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	Construction, Calculation and Assembly of Technical Products							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	V (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 creditable for bonus						
Physics								
11-M-D-152-m01	Mathematics 3 for Students of Physics and related Disciplines (Differential Equations)							
	ECTS	8	Duration	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-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
	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							
	ECTS	2	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	V (1) + Ü (1) Module taught in: Ü: German or English						
	Method of assessment	written examination (approx. 120 minutes) Language of assessment: German and/or English						
	other prerequisites	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. 1 c) § 77 I Nr. 1 d)							
11-N-EIN-212-m01	Introduction to Quantum Technology							
	ECTS	7	Duration	2 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	V (2) + S (2) Module taught in: German or English						
	Method of assessment	a) talk (30 to 45 minutes) with discussion and b) written examination (approx. 120 minutes) Language of assessment: German and/or English						
	other prerequisites	Admission prerequisite to assessment: regular attendance (minimum 85% of sessions).						
	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.						

Mathematics and Computer Science							
10-M-COM-152-mo1	Computational Mathematics						
	ECTS	4	Duration	1 semester	Method of grading	(not) successfully completed	Modul level undergraduate
	Courses	V (1) + Ü (2)					
	Method of assessment	project in the form of programming exercises (approx. 20 to 25 hours) Language of assessment: German and/or English Assessment offered: Once a year, winter semester					
	Referred to in LPO I	§ 22 II Nr. 3 f)					
10-M-DGLaf-152-mo1	Ordinary Differential Equations for students of other subjects						
	ECTS	10	Duration	1 semester	Method of grading	numerical grade	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					
10-M-FA-Naf-152-mo1	Introduction to Functional Analysis for Students of other Subjects						
	ECTS	10	Duration	1 semester	Method of grading	numerical grade	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					
10-M-NUM1af-152-mo1	Numerical Mathematics 1 for students of other subjects						
	ECTS	10	Duration	1 semester	Method of grading	numerical grade	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					
10-M-NUM2af-152-mo1	Numerical Mathematics 2 for students of other subjects						
	ECTS	10	Duration	1 semester	Method of grading	numerical grade	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					

10-M-PRG-152-m01	Programming course for students of Mathematics and other subjects							
	ECTS	3	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	P (2)						
	Method of assessment	project in the form of programming exercises (approx. 20 to 25 hours) Language of assessment: German and/or English Assessment offered: Once a year, summer semester						
	Referred to in LPO I	§ 22 II Nr. 3 f)						
10-I-DB-152-m01	Databases							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	V (2) + Ü (2)						
	Method of assessment	written examination (approx. 60 to 120 minutes). 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 candidate). Language of assessment: German and/or English creditable for bonus						
	Referred to in LPO I	§ 49 I Nr. 1 b) § 69 I Nr. 1 b)						
10-I-EIN-152-m01	Introduction to Computer Science for Students of all Faculties							
	ECTS	10	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	V (4) + Ü (2)						
	Method of assessment	written examination (approx. 60 to 120 minutes) Language of assessment: German and/or English						
Chemistry								
o8-PKC-152-m01	Programming and numerical methods							
	ECTS	5	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	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						

o8-BC1-152-m01	Biochemistry 1							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V (2) + Ü (1)					
	Method of assessment		written examination (approx. 60 to 90 minutes)					
	Referred to in LPO I		§ 42 I Nr. 2 § 62 I Nr. 2					
o8-TC-152-m01	Quantum Chemistry							
	ECTS	3	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V (2) + Ü (1)					
	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					
	Referred to in LPO I		§ 22 II Nr. 1 h) § 22 II Nr. 2 f) § 22 II Nr. 3 f)					
Medicine								
o3-FU-TV-152-m01	Physical Technology of Material Synthesis (Lecture and Practical Course)							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V (2) + P (2)					
	Method of assessment		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					
	Referred to in LPO I							
o3-FU-TE-152-m01	Principles of Tissue Engineering							
	ECTS	5	Duration	1 semester	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 Assessment offered: Once a year, summer semester					
	Referred to in LPO I							

Additional Qualifications							
o8-FU-IP1-212-m01	Industrial Internship						
	ECTS	5	Duration	1 semester	Method of grading	(not) successfully completed	Modul level undergraduate
	Courses	P (4)					
	Method of assessment	report (5 to 10 pages) Language of assessment: German and/or English					
	other prerequisites	Please consult with course advisory service in advance.					
o8-FU-AP1-212-m01	Foreign Studies						
	ECTS	5	Duration	1 semester	Method of grading	(not) successfully completed	Modul level undergraduate
	Courses	P (4)					
	Method of assessment	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 prerequisites	Please consult with course advisory service in advance.					
o8-FU-WP1-152-m01	Courses Related to Functional Materials outside of the Natural Sciences						
	ECTS	5	Duration	1 semester	Method of grading	(not) successfully completed	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.					
o8-FU-WP2-152-m01	Courses Related to Functional Materials inside of the Natural Sciences						
	ECTS	5	Duration	1 semester	Method of grading	(not) successfully completed	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 credits)							
General Key Skills (5 ECTS credits)							
Students may select modules offered as part of the pool of general transferable skills (ASQ) of JMU.							
Subject-specific Key Skills (15 ECTS credits)							
o8-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) + Ü (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					
o8-FU-Ma- Wi2-152-m01	Material Science 2 (The Material Groups)						
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level undergraduate
	Courses	V (3) + Ü (1)					
	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					
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)								
o8-FU-BT1-152-m01	Bachelor Thesis Functional Materials Research							
	ECTS	10	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	No courses assigned to module						
	Method of assessment	Bachelor's thesis (20 to 40 pages) Language of assessment: German and/or English						
	Additional Information	Time to complete: 10 weeks.						
o8-FU-BT2-152-m01	Bachelor Thesis Functional Materials Defense							
	ECTS	2	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	K (1)						
	Method of assessment	talk (approx. 20 minutes) with discussion (approx. 20 minutes) Language of assessment: German and/or English						