

Module Catalogue

for the Subject

Technology of Functional Materials

as a Bachelor's with 1 major with the degree "Bachelor of Science" (180 ECTS credits)

Examination regulations version: 2010 Responsible: Faculty of Chemistry and Pharmacy

JMU Würzburg • generated 26-Aug-2024 • exam. reg. data record 82|177|-|-|H|2010

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The subject is divided into

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Content and Objectives of the Programme

The Bachelor of Science program (Technology of) Functional Materials at the faculty of Chemistry and Pharmacy prepares students for research and development occupations of both a scientific and a practical nature in the field of materials and natural sciences. Students learn the basic methodical principles of scientific work. The study program's interdisciplinary focus enables students to obtain extensive fundamental knowledge of the fields of chemistry, physics and mathematics. In addition, they acquire expert knowledge of the following engineering and natural sciences subjects: electronics, engineering mechanics, materials science, molecular materials, and compound materials. Close cooperation with the Fraunhofer Institute for Silicate Research ISC, Würzburg-Schweinfurt University of Applied Sciences, the Bavarian Center for Applied Energy Research and the SKZ plastics center guarantees an interdisciplinary education. Thanks to this, students are introduced to multifaceted topics relating to modern functional materials. By means of their bachelor's thesis, students show that they have the ability to act largely independently to solve a specific, time-limited experimental or theoretical assignment of engineering or natural sciences tasks. The results of the bachelor's thesis are presented and defended in a colloquium. The Bachelor of Science degree qualifies students for an occupation of both a scientific and a practical nature in the field of materials and natural sciences in general and of functional materials in particular. However, this generally requires a further qualification to be acquired either through practical experience in industry or through a consecutive master's degree.

Abbreviations used

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

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

Notes

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 the 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:

ASPO2007

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

29-Apr-2010 (2010-22)

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.



Module Catalogue for the Subject Technology of Functional Materials Bachelor's with 1 major, 180 ECTS credits

Compulsory Courses

(143 ECTS credits)

		Abbreviation		
Experimental Chemistry, General and analytical laboratory course for enginee- ring students				
Module coor	rdinator		Module offered by	
lecturer of le Chemistry)	cture "Experimentalchem	nie" (Experimental	Institute of Inorgan	ic Chemistry
ECTS Met	hod of grading	Only after succ. con	npl. of module(s)	
10 num	erical grade		-	
Duration	Module level	Other prerequisites		
1 semester	undergraduate			
Contents	1			
module intro exercises ba autonomous ques, the sy	oduces fundamental mod sed on the lecture on exp sly conduct experiments i	els of chemistry and p perimental chemistry a n the laboratory. The c nces and analyses of u	rinciples of inorgani nd its extension. Aft ourse focuses on lal	omplexometry. In addition, the c chemistry. It includes practical er a safety briefing, the students poratory safety, simple lab techni . In addition, students have the
Intended lea	rning outcomes			
are able to d are able to id loped the ab	lescribe the main quantit dentify fundamental prob	ative and qualitative a llems in chemistry and ssary stoichiometric ca	nalytical methods ar perform experiment	ng the type of reaction. Students nd their application areas. They is to solve them. They have deve- ibe the chemical processes in ar
Courses (type	, number of weekly contact hours	s, language — if other than Ger	rman)	
component. • o8-IAC	comprises 2 module con 2-1-062: V (no information 2-2-062: P (no information	n on SWS (weekly cont	act hours) and cours	
Method of a module is credit		uage — if other than German,	examination offered — if no	ot every semester, information on whether
	stated otherwise, succes			e components as specified be- successful completion of all indi-
 Assessment in module component o8-IAC-1-o62: Experimental Chemistry 5 ECTS, Method of grading: numerical grade written examination (approx. 90 minutes) Assessment in module component o8-IAC-2-o62: General and analytical Chemistry Lab for engineering students 5 ECTS, Method of grading: (not) successfully completed Vortestate (pre-experiment exams, approx. 15 minutes each), assessment of practical performance, Nachtestate (post-experiment exams, approx. 15 minutes each) 				
 Vortes 				of practical performance, Nach-
Vortes testate	e (post-experiment exams			of practical performance, Nach-
 Vortes 	e (post-experiment exams			of practical performance, Nach-
Vortes testate	e (post-experiment exams f places			of practical performance, Nach-

Workload

Teaching cycle

--

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Bachelor' degree (1 major) Technology of Functional Materials (2009) Bachelor' degree (1 major) Technology of Functional Materials (2010) Bachelor' degree (1 major) Technology of Functional Materials (2006)

Module title Abbreviation							
Funda	mentals	of Engineering Mechani		99-TM-062-m01			
Modul	Module coordinator Module				I		
		culty of Mechanical Engi lied Sciences Würzburg-S		University of Applie furt (FHWS)	ed Sciences Würzburg- Schwein-		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Durati	on	Module level	Other prerequisites	i i			
1 seme	ester	undergraduate					
Conter	nts						
Basics	of stati	stics, strength of materia	als and dynamics.				
Intend	ed lear	ning outcomes					
		have methodological con ormations and in dimens		ining forces and stre	ess resultants, in calculating ten-		
Course	es (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)			
V + Ü (no info	mation on SWS (weekly	contact hours) and co	ourse language avail	able)		
		eessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether		
writter	exami	nation (90 minutes)	-				
Alloca	tion of _l	olaces					
Additio	onal inf	ormation					
Worklo	oad						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
Bachelor' degree (1 major) Technology of Functional Materials (2009)							
	-	ree (1 major) Technology					
васпе	Bachelor' degree (1 major) Technology of Functional Materials (2006)						

Module	e title				Abbreviation	
Mathematics 3 for students of Physics and Engineering					11-MPI3-062-m01	
Module	e coord	linator		Module offered by	<u> </u>	
		ector of the Institute of	Theoretical Physics	Faculty of Physics a	and Astronomy	
and As			incoreticat hysics		and Astronomy	
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)		
8	nume	rical grade				
Duratio	on	Module level	Other prerequisites	5		
1 semesterUndergraduateAdmission prerequisite to assessment: successful completion of a 50% of exercises. Certain prerequisites must be met to qualify for a sion to assessment. The lecturer will inform students about the res ve details at the beginning of the course. Registration for the course be considered a declaration of will to seek admission to assessment students have obtained the qualification for admission to assessment into effect. Students who meet all prerequisites will be mitted to assessment in the current or in the subsequent semester. assessment at a later date, students will have to obtain the qualification					ify for admis- the respecti- e course will essment. If ssessment gistration for will be ad- mester. For	
Conten	tc	<u> </u>	for admission to as	sessment anew.		
		partial differential equ	ations in Physics			
	-	ning outcomes			lation models do form	
		nave basic mathemati	cal knowledge of dynar	nic equations and so	olution methods for a	common and
			rs, language — if other than Ge	erman)		
	-		ly contact hours) and c		ahle)	
			guage — if other than German,			ion on whothor
		ble for bonus)	guage — II other than German,		st every semester, mormat	ion on whether
written	exami	nation (approx. 120 m	inutes)			
Allocat						
Additio	nal inf	ormation				
Auunto		ormation				
Worklo	ad					
WOIKIO	au					
Teachi	ng cycl	e				
Referre	ed to in	LPOI (examination regulat	tions for teaching-degree progr	ammes)		
Module appears in						
Bachel	or' deg	ree (1 major) Physics (ree (1 major) Physics (2009)			
	-	ree (1 major) Physics (
Bachelor' degree (1 major) Technology of Functional Materials (2009) Bachelor' degree (1 major) Technology of Functional Materials (2010)						
	-	-				
	-	-	cture Technology (2010 cture Technology (2012			
	-	jor Technology of Functional		-) nerated 26-Aug-2024 • exam.	reg. data record	page 10 / 62
Materials (:				i) Technologie der Funktionsw	-	

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Bachelor' degree (1 major) Nanostructure Technology (2008) Bachelor' degree (1 major) Nanostructure Technology (2007) Bachelor' degree (1 major) Functional Materials (2012) Bachelor' degree (1 major) Technology of Functional Materials (2006)

Module title				Abbreviation		
Introduction to Physics Part 1 for students of Physics Related Minor Subjects					11-ENNF1-062-m01	
Module coordinator				Module offered by		
Managi	ing Dire	ector of the Institute of Ap	oplied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
7	nume	rical grade				
Duratio		Module level	Other prerequisites			
1 seme		undergraduate				
Conten	ts					
		bration theory, thermody	namics.			
Intende	ed learr	ning outcomes				
		nave basic knowledge of	physics for engineeri	ng students.		
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
		mation on SWS (weekly o			able)	
Method	l of ass	· · · · ·			t every semester, information on whether	
		nation (approx. 120 minu	tes)			
Allocat						
		f pool of general key skill	s (ASO): 20 places. P	laces will be allocate	ed by lot.	
		ormation	v () v () v ()			
Worklo	ad					
Teachir	ng cycl	6				
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)		
		· · ·				
Module	appea	irs in				
		ree (1 major) Mathematic	s (2008)			
	-	ree (1 major) Mathematic				
	-	ree (1 major) Mathematic				
		ree (1 major) Mathematic				
Bachel	or' degi	ree (1 major) Mathematic	s (2007)			
		ree (1 major) Technology		lls (2009)		
Bachelor' degree (1 major) Technology of Functional Materials (2010)						
Bachelor' degree (1 major) Computational Mathematics (2009)						
Bachelor' degree (1 major) Computational Mathematics (2014)						
Bachel	Bachelor' degree (1 major) Computational Mathematics (2012)					
Bachelor' degree (1 major) Computational Mathematics (2013)						
Bachelor' degree (1 major) Aerospace Computer Science (2009)						
Bachelor' degree (1 major) Aerospace Computer Science (2014)						
Bachel	or' deg	ree (1 major) Aerospace (Computer Science (20	011)		
Bachel	or' deg	ree (1 major) Functional N	Aaterials (2012)			
Bachelor' degree (1 major) Technology of Functional Materials (2006)						

Module	Module title Abbreviation					
Introdu	ction t	o Physics Part 2 for stud	11-ENNF2-062-m01			
Module	Module coordinator Module offered by					
		ector of the Institute of Ap	plied Physics	Faculty of Physics a	and Astronomy	
ECTS	-	od of grading	Only after succ. com			
7		rical grade				
/ Duratio		Module level	Other prerequisites			
1 seme		undergraduate				
Conten						
Science	e of ele	ctricity, magnetism, optic	cs, Atomic Physics.			
Intende	ed lear	ning outcomes				
The stu	dents l	have basic knowledge of	physics for engineeri	ng students.		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
V + Ü (r	no infoi	rmation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		· · ·			ot every semester, information on whether	
		le for bonus)				
written	exami	nation (approx. 120 minu	tes)			
Allocat		•••	,			
		f pool of general key skill	s (ASO)· 20 places P	laces will be allocat	ed by lot	
	· ·	ormation	5 (15Q). 20 places. 1			
Auuitio	inat init					
Worklo	ad					
Teachi	ng cycl	е				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
Module	e appea	ars in				
Bachel	or' deg	ree (1 major) Mathematic	s (2008)			
Bachel	or' deg	ree (1 major) Mathematic	s (2014)			
Bachel	or' deg	ree (1 major) Mathematic	s (2012)			
Bachel	or' deg	ree (1 major) Mathematic	s (2013)			
Bachel	or' deg	ree (1 major) Mathematic	s (2007)			
		ree (1 major) Technology				
	-	ree (1 major) Technology				
Bachelor' degree (1 major) Computational Mathematics (2009)						
Bachelor' degree (1 major) Computational Mathematics (2014)						
	-	ree (1 major) Computatio				
	Bachelor' degree (1 major) Computational Mathematics (2013)					
	Bachelor' degree (1 major) Aerospace Computer Science (2009)					
	-	ree (1 major) Aerospace (
	-	ree (1 major) Aerospace (•	011)		
		ree (1 major) Functional N				
Bachel	or' deg	ree (1 major) Technology	of Functional Materia	ıls (2006)		

Module title					Abbreviation	
Physics Laboratory Course for students of Physics Related Minor Subjects 11-PNNF-062-m01						
Module coordinator Module						
Managi	ng Dire	ector of the Institute of Ap	oplied Physics	Faculty of Physics a	and Astronomy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
		successfully completed		, , , , , , , , , , , , , , , , , , , ,		
Duratio	ľ	Module level	Other prerequisites			
1 semes		undergraduate				
		unuergrauuate	<u> </u>			
Content						
Mechan Physics		bration theory, thermody	namics, optics, X-ray	s, nuclear magnetic	resonance, Atomic and Nuclear	
Intende	d learr	ning outcomes				
The stu	dents k	know the principles of Ph	ysics.			
		umber of weekly contact hours, l	-	rman)		
		ion on SWS (weekly cont			e)	
		· · · · ·			ot every semester, information on whether	
		le for bonus)	se in other than definidit, i		or every semester, mornation on wildlich	
a) oral t	est (ar	pprox. 15 minutes) during	experiment and b) u	ngraded written exa	mination (approx. 90 minutes)	
Allocati						
				lasas will be allocat	ad by lat	
· · ·		f pool of general key skill	s (ASQ): 15 places. P	laces will be allocat	ed by lot.	
Additio	nal info	ormation				
Workloa	ad					
Teachin	ig cyclo	e				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
			0 ~ 3 F. 33.0			
Module	annea	in in				
		ree (1 major) Mathematic	s (2008)			
	-	ree (1 major) Mathematic				
	-	ree (1 major) Mathematic	-			
	-	ree (1 major) Mathematic				
Bachelor' degree (1 major) Mathematics (2013) Bachelor' degree (1 major) Mathematics (2007)						
Bachelor' degree (1 major) Technology of Functional Materials (2009)						
Bachelor' degree (1 major) Technology of Functional Materials (2010)						
Bachelor' degree (1 major) Computational Mathematics (2009)						
Bachelor' degree (1 major) Computational Mathematics (2009) Bachelor' degree (1 major) Computational Mathematics (2014)						
	Bachelor' degree (1 major) Computational Mathematics (2014) Bachelor' degree (1 major) Computational Mathematics (2012)					
	-					
	-			/		
	-			als (2006)		
Bachelo Bachelo	or' degi or' degi	ree (1 major) Computatio ree (1 major) Computatio ree (1 major) Functional M ree (1 major) Technology	nal Mathematics (20 [.] Materials (2012)	13)		

Module	Module title Abbreviation						
Bachelor Thesis' Colloquiumo8-BKOLL-062-mo1							
Module	Module coordinator Module offered by						
Dean o	f Studi	es Funktionswerkstoffe (F	Functional Materials)	Chair of Chemical T	echnology of Material Synthesis		
ECTS	Meth	od of grading	Only after succ. com	npl. of module(s)			
3	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	Its	·					
Bachel	or's the	esis defence.					
Intend	ed lear	ning outcomes					
Studen	its are a	able to orally defend their	r Bachelor's thesis.				
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)			
K (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	e)		
Metho	d of ass	sessment (type, scope, langua	ge — if other than German, e	examination offered — if no	t every semester, information on whether		
module is	s creditab	ole for bonus)					
final co	olloquit	um (60 minutes)					
Allocat	ion of _l	places					
Additio	onal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
	Bachelor' degree (1 major) Technology of Functional Materials (2009)						
	-	ree (1 major) Technology					
Bachel	Bachelor' degree (1 major) Technology of Functional Materials (2006)						

Module title					Abbreviation
Mathematics 1 for students of Technology of Functional Materials 10-M-TFU1-091-m01					
Module coordinator				Module offer	ed by
Dean o	f Studi	es Mathematik (Mathe	matics)	Institute of M	athematics
ECTS	Metho	od of grading	Only after succ. cor	npl. of module	(s)
10	nume	rical grade			
Duratio	on	Module level	Other prerequisites	5	
1 seme	ster	undergraduate			
Conter	Its	a	·		
		s on numbers and func aces, simple differenti		eries, different	tial and integral calculus in one varia-
Intend	ed lear	ning outcomes			
to simp	ole prot				He/She learns to apply these methods he technology of functional materials,
Course	S (type, r	number of weekly contact hou	rs, language — if other than Ge	rman)	
V + Ü (no infoi	rmation on SWS (week	ly contact hours) and c	ourse language	e available)
		Sessment (type, scope, lan Ile for bonus)	guage — if other than German,	examination offered	d — if not every semester, information on whether
written	exami	nation (approx. 90 mir	nutes)		
Allocat	ion of j	places			
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Modul	e appea	ars in			
	-	•	gy of Functional Materi gy of Functional Materi	-	
Dathel	ueg		Sy of runctional Materi	uis (2010)	

Bachelor's with 1 major Technology of Functional Materials (2010)

Module title					Abbreviation
Physical	Chem	istry for engineering stu	Idents (lecture and la	boratory course)	08-IPC-091-m01
Module coordinator				Module offered by	<u>.</u>
		ervisor "Physikalische C urwissenschaften, Prakti		Institute of Physica	l and Theoretical Chemistry
ECTS I	Netho	d of grading	Only after succ. con	pl. of module(s)	
18 r	numer	ical grade			
Duration		Module level	Other prerequisites		
1 semest	er	undergraduate			
Contents	5				
		rovides students with an fundamental techniques			physical chemistry. In addition, it
Intended	l learn	ing outcomes			
		become familiar with the roblems in chemistry an	•		mistry. They are able to identify
Courses	(type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
• 08 • 08	-IPC-2 -IPC-1 -IPC-3	-091: V + Ü (no information contraction co	on on SWS (weekly con SWS (weekly contained by the second se	ontact hours) and co act hours) and cours	
module is c	reditabl	e for bonus)			ot every semester, information on whether
	ess sta	ated otherwise, successf			e components as specified be- successful completion of all indi-
 Assessment in module component o8-IPC-2-o62: Physical Chemistry 2 (basics of quantum mechanics and spectroscopy) for engineering students Physical Chemistry 2 (basics of quantum mechanics and spectroscopy) for engineering students 8 ECTS, Method of grading: numerical grade written examination (approx. 90 minutes) Assessment in module component o8-IPC-1-o91: Physical Chemistry 1 (thermodynamics, electrochemistry) for engineering students Physical Chemistry 1 (thermodynamics, electrochemistry) for engineering students 5 ECTS, Method of grading: numerical grade written examination (approx. 90 minutes) Assessment in module component o8-IPC-3-o91: Physical Chemistry for engineering students, laboratory course 5 ECTS, Method of grading: (not) successfully completed Vortestate (pre-experiment exams, approx. 15 minutes each), assessment of practical performance, Nach-					
testate (post-experiment exams, approx. 15 minutes each) Allocation of places					
Additional information					
Workload					
Teaching	g cycle	9			

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Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Bachelor' degree (1 major) Technology of Functional Materials (2009) Bachelor' degree (1 major) Technology of Functional Materials (2010)

Module title Abbreviation					
Basics of Electronics 1					99-EL1-091-m01
Module	e coord	inator		Module offered by	
		culty of Electrical Engine Sciences Würzburg-Schwo		University of Applie furt (FHWS)	d Sciences Würzburg- Schwein-
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Theore tors.	tical an	d practical principles of s	science of electricity,	passive linear netwo	orks, principles of semiconduc-
Intende	ed learı	ning outcomes			
		nave basic knowledge of semiconductors.	theoretical and pract	ical science of elect	ricity, especially of passive linear
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
1) Ü + V	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
written	examiı	nation (60 minutes)			
Allocat	ion of p	olaces			
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
	-	ree (1 major) Technology ree (1 major) Technology		-	

Modul	Module title Abbreviation						
Basics	Basics of Electronics 2 99-EL2-091-m01						
Modul	e coord	inator		Module offered by	<u> </u>		
	Dean of the Faculty of Electrical Engineering at the UniversityUniversity of Applied Sciences Würzburg-Schweinty of Applied Sciences Würzburg-Schweinfurtfurt (FHWS)						
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)			
5	nume	rical grade					
Duration Module level Other prerequisites							
1 semester undergraduate							
Conter	nts						
		d practical principles of l logy, combinatorial circu			, basic circuits, basic elements of		
Intend	ed lear	ning outcomes					
The students have theoretical and practical knowledge of the components of electrical engineering, basic cir- cuits, basic elements of digital technology, combinatorial circuits and sequential circuits.							
Course	es (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)			
V + Ü (no infoi	mation on SWS (weekly	contact hours) and co	ourse language avail	able)		
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether		
written	exami	nation (60 minutes)					
Allocat	tion of p	olaces					
Additio	onal inf	ormation					
Worklo	bad						
Teachi	ng cycl	e					
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)			
Modul	e appea	urs in					
	-	ree (1 major) Technology ree (1 major) Technology					

Module title Abbreviation						
Computer-based Construction and Assembly (CAD/CAM) 99-CA-091-m01						
Modul	e coord	inator		Module offered by	J	
Dean of the Faculty of Mechanical Engineering at the Uni versity of Applied Sciences Würzburg-Schweinfurt				University of Appli furt (FHWS)	ed Sciences Würzburg- Schwein-	
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)		
6	nume	rical grade				
Duration Module level Other prerequisites						
1 semester undergraduate						
Conte	nts					
		ve view of the process of ted example.	product developmen	t, including the corr	esponding specialist subjects ba-	
Intend	ed lear	ning outcomes				
					opment of products with a focus typing and product validation.	
Course	es (type, r	number of weekly contact hours,	language — if other than Ge	rman)		
V + Ü (no info	rmation on SWS (weekly	contact hours) and c	ourse language avai	lable)	
		Sessment (type, scope, langua vle for bonus)	age — if other than German,	examination offered — if n	ot every semester, information on whether	
writter	n exami	nation (90 minutes)				
Alloca	tion of _l	places				
Additi	onal inf	ormation				
Workle	oad					
Teachi	ing cycl	e				
Referr	ed to in	LPOI (examination regulation	is for teaching-degree progra	ammes)		
Modul	e appea	ars in				
	-	ree (1 major) Technology ree (1 major) Technology		-		

Modul	e title				Abbreviation		
Laboratory Course on Engineering (mechanical and electrical engineering) 99-IP-091-m01							
Modul	e coord	inator		Module offered by			
Deans of the Faculties of Electrical Engineering and Me- chanical Engineering at the University of Applied Sciences Würzburg-Schweinfurt							
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
6	(not) successfully completed						
Duration Module level Other prerequisites							
1 seme	1 semester undergraduate						
Conter	Its						
Engine	ering la	boratory and internship	experiments.				
Intend	ed lear	ning outcomes					
The sturing.	Idents	have practical experience	es in applying engine	ering methods in el	ectrical and mechanical enginee-		
Course	S (type, r	number of weekly contact hours,	language — if other than Ge	rman)			
P (no ii	nformat	ion on SWS (weekly cont	tact hours) and cours	e language availabl	le)		
		eessment (type, scope, langua le for bonus)	age — if other than German,	examination offered — if r	not every semester, information on whether		
		oort / fieldwork report / re cal course (approx. 15 to		ining / report on pra	actical course / project report / re-		
Allocat	ion of j	olaces					
Additio	onal inf	ormation					
Worklo	ad		-				
Teachi	ng cycl	e	-				
		-					
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	ummes)			
Modul	e appea	urs in					
Bachel	or' deg	ree (1 major) Technology	of Functional Materia	als (2009)			
Bachel	or' deg	ree (1 major) Technology	of Functional Materia	als (2010)			

Modul	e title				Abbreviation			
Labora	Laboratory course on Physical Technology of Material Synthesis 11-PPT-091-m01							
Modul	e coord	inator		Module offered by				
Manag	ing Dire	ector of the Institute of Ap	plied Physics	Faculty of Physics	and Astronomy			
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)				
5	(not) s	successfully completed						
Duratio	on	Module level	Other prerequisites					
1 seme	1 semester undergraduate							
Conter	nts							
Growth	n and co	pating procedures, metho	ds of characterisatio	n and exemplary sti	ructuring technologies.			
Intend	ed lear	ning outcomes						
	udents ynthesi		actical basics of mat	erial characterisatio	on and physical technology for ma-			
Course	es (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)				
P (no ii	nformat	ion on SWS (weekly cont	act hours) and cours	e language availabl	e)			
		Sessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if n	ot every semester, information on whether			
a) Preparing the experiment will be considered successfully completed if an oral test (duration: approx. 15 mi- nutes) prior to the experiment is passed. b) Performing and evaluating the experiment will be considered suc- cessfully completed if a Testat (exam) is passed. An experiment log (approx. 8 pages) is to be prepared. Each component of the assessment (a and b) can be repeated once in the respective semester. Only if both compon- ents of the assessment have been successfully completed in the same semester will the module component be considered successfully completed.								
Allocat	tion of _l	olaces						
	_							
Additio	onal inf	ormation						
Worklo	oad							
	_							
Teachi	ng cycl	e						
	_							
Referre	ed to in	LPO I (examination regulations	s for teaching-degree progra	immes)				
	e appea							
	-	ree (1 major) Technology ree (1 major) Technology		als (2009)				

Module	Module title Abbreviation							
Moder	Modern Analytical Methods (lecture and laboratory course) 08-MAM-091-m01							
Module	e coord	inator		Module offered by				
Dean o	f Studi	es Funktionswerkstoffe (I	unctional Materials)	Chair of Chemical T	echnology of Material Synthesis			
ECTS	Meth	od of grading	Only after succ. compl. of module(s)					
5	nume	rical grade						
Duratio	on	Module level	Other prerequisites					
1 seme	ster	undergraduate						
Conten	ts							
		nciples, gravimetric meth n, fluorescence, NMR etc.			opic methods (UV-VIS, IR, Ra-			
Intend	ed lear	ning outcomes						
Studen	ts have	e developed modern anal	ytics expertise.					
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)				
 This module comprises 2 module components. Information on courses will be listed separately for each module component. 08-MAM-1-091: V (no information on SWS (weekly contact hours) and course language available) 08-MAM-2-091: P (no information on SWS (weekly contact hours) and course language available) 								
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)								
	nless st	ated otherwise, successf			e components as specified be- successful completion of all indi-			
• 3 • w Assess • 2 • V	ECTS, vritten ment i ECTS, ortesta	n module component o8- Method of grading: nume examination (60 minutes n module component o8- Method of grading: (not) ate (pre-experiment exam speriment exams, approx	erical grade) MAM-2-091: Modern successfully complet 1s, approx. 15 minute	Analytics (practical ted	course) x. 5 pages each), Nachtestate			
Allocat	ion of	olaces						
Additional information								
Additio	onal Inf	ormation						
Additio		ormation						
Additio		ormation						
		ormation						
	ad							
 Worklo 	ad							
 Worklo Teachin	oad ng cycl		s for teaching-degree progra	mmes)				
 Worklo Teachin	oad ng cycl	e	s for teaching-degree progra	mmes)				
 Worklo Teachin	ng cycl ed to in	e LPO I (examination regulation	s for teaching-degree progra	mmes)				

Module	Module title Abbreviation						
Mathematics 2 for students of Technology of Functional Materials 10-M-TFU2-101-m01							
Module	e coord	linator		Module offere	ed by		
Dean of Studies Mathematik (Mathematics) Institute of Mathematics							
ECTS	Method of grading Only after succ. compl. of module(s)						
8	nume	rical grade					
Duratio	Duration Module level Other prerequisites						
1 semester undergraduate							
Conten	its						
		and systems of linear equ variables, differential eq			theory, differential and integral calcu-		
Intend	ed lear	ning outcomes					
als, an	d is ab	o problems in natural and le to interpret the results number of weekly contact hours,	·		in the technology of functional materi-		
	-	rmation on SWS (weekly			a available)		
		*			I — if not every semester, information on whether		
		ble for bonus)					
written	exami	nation (approx. 90 minut	es)				
Allocat	ion of	places					
Additio	onal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)			
Module	e appe	ars in					
Bachel	or' deg	ree (1 major) Technology	of Functional Materia	als (2010)			

Organic Chemistry for engineering students (lecture and laboratory course) Module coordinator Module offered lab course supervisor "Organisch-chemisches Praktikum für Studierende der Ingenieurwissenschaften" Institute of Organisch-chemisches Praktikum für Studierende der Ingenieurwissenschaften" ECTS Method of grading Only after succ. compl. of module(s) 12 numerical grade Duration Module level Other prerequisites 1 semester undergraduate By way of exception, additional prereassesments. Contents module provides students with an overview of the theoretical principles introduces the fundamental techniques of organic chemistry in a lab course. Intended learning outcomes Students have become familiar with the fundamental principles of organic c fundamental problems in chemistry and perform experiments to solve them. Courses (type, number of weekly contact hours, language – if other than German) This module comprises 3 module components. Information on courses will be component. • 08-10C-2-101: V + Ü (no information on SWS (weekly contact hours) an o 8-0C1-1-092: V + Ü (no information on SWS (weekly contact hours) and co o 8-0C1-1-092: V + Ü (no information on SWS (weekly contact hours) and co o 8-0C1-1-092: V + Ü (no information on SWS (weekly contact hours) and co o 8-0C1-1-092: V + Ü (no information on SWS (weekly contact hours) and co o 8-0C1-1-092: V + Ü (no information on SWS (weekly contact hours) and co o 8-0C1-1-092: V + Ü (no informati	by nic Chemistry quisites are listed in the section on of organic chemistry. In addition, it nemistry. They are able to identify e listed separately for each module d course language available) urse language available) d course language available)
lab course supervisor "Organisch-chemisches Praktikum für Studierende der Ingenieurwissenschaften" Institute of Organisch-chemisches Praktikum für Studierende der Ingenieurwissenschaften" ECTS Method of grading Only after succ. compl. of module(s) 12 numerical grade Duration Module level Other prerequisites 1 semester undergraduate By way of exception, additional prereassessments. Contents This module provides students with an overview of the theoretical principles introduces the fundamental techniques of organic chemistry in a lab course. Intended learning outcomes Students have become familiar with the fundamental principles of organic c fundamental problems in chemistry and perform experiments to solve them. Courses (type, number of weekly contact hours, language — if other than German) This module comprises 3 module components. Information on courses will b component. • 08-10C-2-101: V + Ü (no information on SWS (weekly contact hours) an o 8-10C-3-101: P (no information on SWS (weekly contact hours) an o 08-0C1-1-092: V + Ü (no information on SWS (weekly contact hours) an o 08-0C1-1-092: V + Ü (no information on SWS (weekly contact hours) ar Method of assessment (type, scope, language — if other than German, examination offered — module is creditable for bonus) Assessment in this module comprises the assessments in the individual mo low. Unless stated otherwise, successful completion of the module will required to the state otherwise, successful completion of the module will re	nic Chemistry quisites are listed in the section on of organic chemistry. In addition, it nemistry. They are able to identify e listed separately for each module d course language available) urse language available) d course language available)
für Studierende der Ingenieurwissenschaften" ECTS Method of grading Only after succ. compl. of module(s) 12 numerical grade Duration Module level Other prerequisites 1 semester undergraduate By way of exception, additional prereassessments. Contents By way of exception, additional prereassessments. Contents This module provides students with an overview of the theoretical principles introduces the fundamental techniques of organic chemistry in a lab course. Intended learning outcomes Students have become familiar with the fundamental principles of organic c fundamental problems in chemistry and perform experiments to solve them. Courses (type, number of weekly contact hours, language — if other than German) This module comprises 3 module components. Information on courses will b component. • 08-IOC-2-101: V + Ü (no information on SWS (weekly contact hours) an e 08-OC1-1-092: V + Ü (no information on SWS (weekly contact hours) and co o 08-OC1-1-092: V + Ü (no information on SWS (weekly contact hours) are module is creditable for bonus) Assessment in this module comprises the assessments in the individual mo low. Unless stated otherwise, successful completion of the module will required will required will required will required will required will required will requ	quisites are listed in the section on of organic chemistry. In addition, it nemistry. They are able to identify e listed separately for each module d course language available) urse language available) d course language available)
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 vidual assessments. Assessment in module component o8-IOC-2-101: Organic Chemistry - Laboratory course for students of engineering 5 ECTS, Method of grading: numerical grade a) 1 to 3 written examinations (1 written examination: 90 minutes; 2 writtes each; 3 written examinations: 60 minutes each) or b) oral examination 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 r Assessment in module component o8-IOC-3-101: Tutorial on the Organic Chemistry - Laboratory courses for students of the Organic Chemistry or c) oral examination in groups (groups of 2, approx. 30 r Assessment in module component o8-IOC-3-101: Tutorial on the Organic Chemistry - 2 ECTS, Method of grading: (not) successfully completed Vortestate (pre-experiment exams, approx. 15 minutes each), assessment testate (post-experiment exams, approx. 15 minutes each) Assessment in module component o8-OC1-1-092: Organic Chemistry 1 Organic 5 ECTS, Method of grading: numerical grade a) 1 to 3 written examinations (1 written examination: approx. 90 minu 90 minutes each; 3 written examinations: 60 minutes each) or b) oral e (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 20 minutes) or c) oral exa	tory course for students of enginee- eten examinations: 60 or 90 minu- on of one candidate each (approx. ninutes) emistry for students of engineering nt of practical performance, Nach- nic Chemistry 1 ees; 2 written examinations: 60 or kamination of one candidate each orox. 30 minutes) ul completion of exercises in the

Additional information

Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 62 (1) 2. Chemie "Organische und Bioorganische Chemie"

Module appears in

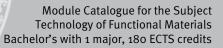
Bachelor' degree (1 major) Technology of Functional Materials (2010)

Module	Module title Abbreviation							
Molecul	Molecular Materials (lecture and laboratory course) 08-CT-101-m01							
Module	coord	inator		Module offered by				
Dean of	Dean of Studies Funktionswerkstoffe (Functional Materials) Chair of Chemical Technology of Material Synthesis							
ECTS Method of grading Only after succ. compl. of module(s)								
10	nume	rical grade						
Duration Module level Other prerequisites								
1 semes	i semester undergraduate							
Content	Contents							
This module discusses the theoretical and practical principles of molecular and soft materials.								
Intende	d learr	ning outcomes						
		e developed a knowledge e to research problems.	of the principles of n	nolecular and soft m	aterials and are able to apply			
Courses	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)				
compon	nent.	omprises 2 module comp 101: V + Ü (no informatio			sted separately for each module			
		101: P (no information or		-				
		e essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether			
 Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments. Assessment in module component o8-CT-1-101: Molecular Materials (Lecture) Molecular Materials (Lecture) 5 ECTS, Method of grading: numerical grade presentation (approx. 30 minutes) and a) 1 to 3 written examinations (1 written examination: 90 minutes; 2 written examinations: 60 or 90 minutes each; 3 written examinations: 60 minutes each) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes) Assessment in module component o8-CT-2-101: Principles of Inorganic Chemistry for Mathematics Majors 5 ECTS, Method of grading: (not) successfully completed Vortestate (pre-experiment exams, approx. 15 minutes each), logs (approx. 5 pages each), Nachtestate 								
(post-experiment exams, approx. 15 minutes)								
Allocati	on of p	olaces						
Additio	nal inf	ormation						
Workloa	ad							
Teachin	g cycl	9						
Referre	d to in	LPOI (examination regulations	s for teaching-degree progra	mmes)				
Module	appea	in						
Bachelo	or' deg	ree (1 major) Technology	of Functional Materia	lls (2010)				

Module	Module title Abbreviation						
Introdu	Introduction to the Physics of Functional Materials 11-TMS-101-m01						
Module	Module coordinator Module offered by						
Manag	ing Dir	ector of the Institute of Ap	oplied Physics	Faculty of Physics a	ind Astronomy		
ECTS	TS Method of grading Only after succ. compl. of module(s)						
5	nume	rical grade					
Duratio	•	Module level	Other prerequisites				
1 seme	1 semester undergraduate						
Conten	ts	<u>.</u>					
		nd practical principles of sand oxides. Principles of			ductor process technology, diel- ting procedures.		
Intend	ed lear	ning outcomes					
		have knowledge of the th terial synthesis.	eoretical and practic	al principles of phys	ical material properties and tech-		
Course	S (type, 1	number of weekly contact hours, I	anguage — if other than Gei	rman)			
V + Ü (I	no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)		
Metho	d of as	Sessment (type, scope, langua	ge — if other than German,	examination offered — if no	ot every semester, information on whether		
		le for bonus)					
		nation (approx. 120 minu	tes)				
Allocat	ion of	places					
Additio	nal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)			
Module							
Bachel	or' deg	ree (1 major) Technology	of Functional Materia	als (2010)			

Module	title				Abbreviation	
Technol	Technology of Composite Materials (lecture and laboratory course) 03-TV-101-m01					
Module	coord	inator		Module offered by		
	holder of the Chair of Functional Materials in Medicine and Faculty of Medicine Dentistry					
ECTS	TS Method of grading Only after succ. compl. of module(s)					
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	undergraduate				
Content	ts					
Theoret sandwig		-	knowledge of the fab	rication and evaluat	ion of composite respectively	
Intende	d learr	ning outcomes				
		e developed a knowledge ch materials.	of the theoretical an	d practical foundatio	ons of the fabrication and evalua-	
Courses	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	rman)		
compor • 02 • 02 Method module is Assessr	nent. 3-TV-1- 3-TV-2- I of ass creditab ment ir	091: V (no information or 101: P (no information or essment (type, scope, langua le for bonus) 1 this module comprises	n SWS (weekly contac n SWS (weekly contac ge — if other than German, c the assessments in t	ct hours) and course ct hours) and course examination offered — if no he individual moduly		
• 3 • W Assessi • 2	ment ir ECTS, ritten e ment ir ECTS,	ments. n module component o3- Method of grading: nume examination (60 minutes) n module component o3- Method of grading: (not) mination (approx. 15 min	erical grade) TV-2-101: Technology successfully complet	v of Composite Mate ted		
Allocati	ion of p	laces				
Additio	nal info	ormation				
Workloa	ad					
Teachin	ig cycl	9				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
Module	appea	rs in				
Bachelo	or' deg	ree (1 major) Technology	of Functional Materia	als (2010)		





Compulsory Electives

(5 ECTS credits)

i ng outcomes ossess a basic kno and programming	puter Science) Only after succ. con Other prerequisites Id web sites (HTML, XML, E owledge about the represe	
s Informatik (Comp d of grading cal grade Module level undergraduate of information an ing outcomes ossess a basic kno and programming	Only after succ. con Other prerequisites Id web sites (HTML, XML, E owledge about the represe	Institute of Computer Science npl. of module(s) BNF), databases, programming (Java).
d of grading cal grade Module level undergraduate of information an ing outcomes ossess a basic kno and programming	Only after succ. con Other prerequisites Id web sites (HTML, XML, E owledge about the represe	npl. of module(s)
cal grade Module level undergraduate of information an ing outcomes ossess a basic kno and programming	 Other prerequisites Id web sites (HTML, XML, E owledge about the represe	BNF), databases, programming (Java).
Module level undergraduate of information an ing outcomes ossess a basic kno and programming	d web sites (HTML, XML, E	BNF), databases, programming (Java).
undergraduate of information an i ng outcomes ossess a basic kno and programming	d web sites (HTML, XML, E	BNF), databases, programming (Java).
of information an i ng outcomes ossess a basic kno and programming	owledge about the represe	
i ng outcomes ossess a basic kno and programming	owledge about the represe	
i ng outcomes ossess a basic kno and programming	owledge about the represe	
ossess a basic kno and programming		entation of information and websites (HTML, XML, EE
ossess a basic kno and programming		entation of information and websites (HTML, XML, EE
mbor of wookly contact		
mber of weekly contact	hours, language — if other than Ge	rman)
nation on SWS (we	eekly contact hours) and co	ourse language available)
e ssment (type, scope, e for bonus)	, language — if other than German,	examination offered — if not every semester, information on whether
ation (50 minutes) minutes)	or oral examination (one o	candidate each: 20 minutes, groups of 2: 25 minute
aces		
rmation		
	ulations for teaching-degree progra	ammes)
POI (examination reg		
.POI (examination reg		
POI (examination reg		
's in	ology of Functional Materia	als (2009)
	01 (examination reg	OI (examination regulations for teaching-degree progr

Module	title				Abbreviation	
Data ba	Data bases 10-I-DB-072-m01					
Module	e coord	inator		Module offered by		
Dean of	f Studi	es Informatik (Computer S	Science)	Institute of Comput	er Science	
ECTS	CTS Method of grading Only after succ. compl. of module(s)					
5	5 numerical grade					
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts	0				
	-	ebra and complex SQL st gement.	atements; database	olanning and normal	l forms; xml data modelling; tran-	
Intende	ed lear	ning outcomes				
		oossess a knowledge abo g in XML.	out database modelli	ng and queries in SC	L, transactions as well as easy	
Course	S (type, r	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V + Ü (r	no infoi	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
module is written	creditab examii	le for bonus)			t every semester, information on whether ninutes, groups of 2: 20 minutes,	
Allocat						
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ıg cycl	e				
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)		
			<u> </u>			
Module	e appea	irs in				
Bachelo	or' deg	ree (1 major) Computer S	cience (2007)			
	-	ree (1 major) Mathematic				
	-	ree (1 major) Mathematic				
	-	ree (1 major) Technology		-		
	-	ree (1 major) Technology				
	-	ree (1 major) Business Int	•			
		ree (1 major) Business Int				
	-	ree (1 major) Business Int	-			
		ree (1 major) Computation				
Bachelo	or deg	ree (1 major) Technology	of Functional Materia	115 (2006)		

Module	e title				Abbreviation				
Basics	of Nan	ostructureTechnology			11-N1-072-m01				
Module	e coord	inator		Module offered by					
Managing Director of the Institute of Ap			oplied Physics	Faculty of Physics and Astronomy					
ECTS	Metho	od of grading	Only after succ. con	ıpl. of module(s)					
6	nume	rical grade							
Duration Module level		Other prerequisites							
1 semester		undergraduate							
Conten	Its								
Principles of producing, characterising and applying nanostructures.									
Intended learning outcomes									
The students have knowledge of the fundamental properties, technologies, characterising methods and functions of nanostructures.									
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)					
V + S (1	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)				
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	t every semester, information on whether				
written	exami	nation (approx. 90 minut	es)						
Allocat	ion of p	olaces							
Additio	onal inf	ormation							
Worklo	ad								
Teachi	ng cycl	e							
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)					
Module appears in									
Bachel Bachel Bachel Bachel Bachel	or' deg or' deg or' deg or' deg or's de	ree (1 major) Physics (200 ree (1 major) Technology ree (1 major) Technology ree (1 major) Nanostructu ree (1 major) Nanostructu gree (1 major, 1 minor) Ph ree (1 major) Technology	of Functional Materia of Functional Materia are Technology (2008 are Technology (2007 aysics (Minor, 2008)	ils (2010)))					

Module	e title		Abbreviation						
Ordinary Differential Equations 10-M-ODE-082-mo1									
Module	e coord	inator		Module offered by	Nodule offered by				
Dean of Studies Mathematik (Mathema		matics)	atics) Institute of Mathematics						
ECTS Method of grading		Only after succ. con	Only after succ. compl. of module(s)						
5 numerical grade									
Duration Module level		Other prerequisites	Other prerequisites						
1 semester		undergraduate	Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew.						
Contents									
Existence and uniqueness theorem; continuous dependence of solutions on initial values; systems of linear dif- ferential equations; matrix exponential series; linear differential equations of higher order.									
Intende	ed lear	ning outcomes							
The student is acquainted with the fundamental concepts and methods of the theory of ordinary differential equations. He/she is able to apply these methods to practical problems.									
Courses (type, number of weekly contact hours, language — if other than German)									
V + Ü (r	no info	rmation on SWS (week	y contact hours) and co	ourse language avail	able)				
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)									
written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: German, English if agreed upon with the examiner									
Allocat	ion of _l	olaces							
Additional information									
Worklo									
Teachi		0							
Teacini		e							
Referred to in LPO I (examination regulations for teaching-degree programmes)									
 Module appears in									
Bachelor' degree (1 major) Computer Science (2007)									
Bachelor' degree (1 major) Computer Science (2010)									
Bachelor' degree (1 major) Physics (2008) Bachelor' degree (1 major) Technology of Functional Materials (2009)									
Bachelor' degree (1 major) Technology of Functional Materials (2009)									
	with 1 ma	jor Technology of Functional	JMU Würzburg • gen	erated 26-Aug-2024 • exam.) Technologie der Funktionsw	-	page 35 / 62			

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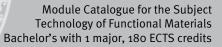
Bachelor' degree (1 major) Economathematics (2009) Bachelor' degree (1 major) Economathematics (2008) Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011) Master's degree (1 major) Technology of Functional Materials (2010) Master's degree (1 major) Technology of Functional Materials (2009) Master's degree (1 major) Functional Materials (2012) Bachelor's degree (1 major, 1 minor) Mathematics (Minor, 2008) Bachelor' degree (1 major) Technology of Functional Materials (2006)

Module	Module title Abbreviation					
Progra	mming	course for Chemistry Ma	ijors		08-PKC-092-m01	
Module	e coord	inator		Module offered by	lle offered by	
lecturer of lecture "Programmierkurs für Chemiker"			r Chemiker"	Institute of Physica	l and Theoretical Chemistry	
ECTS	ECTS Method of grading Only after succ.		Only after succ. con	npl. of module(s)		
5	(not)	successfully completed				
Duratio	Duration Module level Other prerequisites					
1 seme	ster	undergraduate				
Conten	Its					
		provides an introduction t d to problems in chemist		of a programming lar	nguage and discusses how they	
Intende	ed lear	ning outcomes				
	its are a		amentals of the prog	ramming language a	nd to apply them to problems in	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)		
ı) Ü + V	no info	mation on SWS (weekly	contact hours) and co	ourse language avail	able)	
		Sessment (type, scope, langua Ile for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
		nination: completion of p ime as specified at the be			on of algorithms used (length/ex-	
Allocat	ion of _l	olaces				
Additio	onal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	ammes)		
Module	e appea	ars in				
Bachel	or' deg	ree (1 major) Chemistry (2	2009)			
	-	ree (1 major) Technology				
Bachel	or' deg	ree (1 major) Technology	of Functional Materia	als (2010)		

Module title Abbreviation							
	Functional Biomaterials for students of Technology of Functional Materials. 03-TF-FBM-101-m01 Lectures, laboratory course 03-TF-FBM-101-m01						
Modul	Module coordinator Module offered by						
holder of the Chair of Functional Materials in Medicine and Faculty of Medicine Dentistry							
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Durati	on	Module level	Other prerequisites				
1 seme	ester	undergraduate					
Conter	nts						
		principles and specific ication and characteris		in natural sciences	s in the field of biomaterials with		
Intend	ed lear	ning outcomes					
Studer	nts have	e developed an advanc	ed knowledge in the fie	eld of biomaterials f	for use in implants.		
Course	es (type, r	number of weekly contact hour	s, language — if other than Ge	rman)			
V + P (no infor	mation on SWS (weekl	y contact hours) and co	ourse language avai	ilable)		
		s essment (type, scope, lang le for bonus)	guage — if other than German,	examination offered — if r	not every semester, information on whether		
			' report on practical trai pages) and written exa		actical course / project report / re- 60 minutes)		
Alloca	tion of _l	olaces	·				
Additi	onal inf	ormation					
Worklo	oad						
Teachi	ing cycl	e					
Referr	ed to in	LPO I (examination regulati	ons for teaching-degree progra	ammes)			
Modul	e appea	ars in					
Bache	lor' deg	ree (1 major) Technolog	gy of Functional Materia	als (2010)			

	Module title				Abbreviation		
Chemically and biologically inspired Nanotechnology for Materials Synthesis					08-NT-101-m01		
Module	e coord	inator		Module offered by	I		
holder thesis	ofthe	Chair of Chemical Tech	nology of Material Syn-	Chair of Chemical T	echnology of Materia	al Synthesis	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
5	numerical grade						
Duratio	on	Module level	Other prerequisites	Other prerequisites			
1 seme	ster	undergraduate					
Conten	Its	·					
of anal	ysis us	provides an introduction ed to characterise the g nd uses examples to ir	generated materials. It	also discusses the f	undamental principle		
Intende	ed lear	ning outcomes					
Studen	nts hav	e developed an advanc	ed knowledge of sol-ge	el chemistry and bior	nineralisation.		
Course	S (type, 1	number of weekly contact hour	s, language — if other than Ger	rman)			
compo • 0	nent. 08-NT-1	omprises 2 module con -101: V (no information -101: V (no information	on SWS (weekly contac	ct hours) and course	language available)		
		s essment (type, scope, lang ble for bonus)	uage — if other than German, o	examination offered — if no	ot every semester, informati	ion on whether	
vidual a Assess als Syn 2 0	assess sment i othesis 2 ECTS, oral exa	ated otherwise, succes ments. n module component o Method of grading: nu mination (approx. 15 m n module component o	8-NT-1-101: Chemically merical grade inutes)	and biologically ins	pired Nanotechnolog		
thesis		•		ineralisation to biol	osicully mopricu mul	erials Syn-	
• 3		Method of grading: nu	merical grade	ineralisation to biol		erials Syn-	
• 3 • 0	oral exa	mination (approx. 20 n	merical grade	ineralisation to biol		erials Syn-	
• 3	oral exa	mination (approx. 20 n	merical grade	ineralisation to biol		erials Syn-	
• 3 • 0 Allocat	oral exa	mination (approx. 20 n p laces	merical grade	ineralisation to biol		erials Syn-	
• 3 • 0 Allocat	oral exa	mination (approx. 20 n	merical grade	ineralisation to biol		erials Syn-	
• 3 • 0 Allocat Additio	ion of	mination (approx. 20 n p laces	merical grade	ineralisation to biol		erials Syn-	
• 3 • 0 Allocat	ion of	mination (approx. 20 n p laces	merical grade	Ineralisation to biol		erials Syn-	
• 3 • 0 Allocat Additio Worklo	oral exa	mination (approx. 20 n places formation	merical grade	ineralisation to biol		erials Syn-	
• 3 • 0 Allocat Additio	oral exa	mination (approx. 20 n places formation	merical grade			erials Syn-	
• 3 • 0 Allocat Additio Worklo Teachin 	oral exa ion of onal inf oad	mination (approx. 20 n places formation	merical grade ninutes)			erials Syn-	
• 3 • 0 Allocat Additio Worklo Teachin	oral exa ion of onal inf oad	mination (approx. 20 n places formation	merical grade ninutes)			erials Syn-	
 3 0 Allocat Additio Worklo Teachin Referre 	oral exa tion of pnal inf pad ng cycl	mination (approx. 20 n places formation e LPO I (examination regulati	merical grade ninutes)			erials Syn-	
 3 0 Allocat Additio Worklo Teachin Referre Module Bacheld 	oral exa ion of onal inf oad ng cycl ed to in e appea or' deg	mination (approx. 20 n places formation e LPO I (examination regulati	merical grade hinutes)	ummes)		rerials Syn-	





Master's degree (1 major) Chemistry (2010)

Module	Module title Abbreviation					
Bioche	mistry	for Engineering Majors			08-BC-TF-082-m01	
Module	e coord	inator		Module offered by	I	
holder of the Chair of Biochemistry Chair of Bio					try	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
3	3 numerical grade					
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts	~	• •			
Compri mistry.	sing le	ctures and exercises, thi	s module acquaints s	tudents with the fur	damental principles of bioche-	
Intend	ed lear	ning outcomes				
		e become familiar with th cal processes in cellular s		ples of biochemistry	. They are able to describe the	
Course	S (type, r	number of weekly contact hours,	language — if other than Gei	rman)		
1) Ü + V	no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)	
		Sessment (type, scope, langua ole for bonus)	age — if other than German,	examination offered — if no	ot every semester, information on whether	
written	exami	nation (60 minutes)				
Allocat	ion of _l	places				
Additio	onal inf	ormation				
	-					
Worklo	ad					
Teachi	ng cycl	e				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
Module	e appea	ars in				
	-	ree (1 major) Technology ree (1 major) Technology		-		

Module	e title				Abbreviation	
Introdu	uction t	o Functional Analysis			10-M-FAN-072-m01	
Module	e coord	inator		Module offered by		
Dean o	f Studi	es Mathematik (Mathem	natics)	Institute of Mathematics		
ECTS	Metho	od of grading	Only after succ. com	Only after succ. compl. of module(s)		
5		rical grade		1 ()		
Duratio		Module level	Other prerequisites			
1 semester undergraduate		Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew.				
Conten	its		-			
	-	s and Hilbert spaces, bo	 ounded operators, prir	ciples of functional	analysis.	
	•	ning outcomes	, , , , , , , , , , , , , , , , ,	<u> </u>		
broad a Course V + Ü (r Methoo	applica s (type, r no info d of ass	ble to apply methods fro bility of the theory to oth number of weekly contact hours, rmation on SWS (weekly sessment (type, scope, langu- ile for bonus)	her branches of mathe , language — if other than Ger r contact hours) and co	matics. ^{man)} purse language avail	able)	
by an o 2, appr	oral exa ox. 30	nation (approx. 90 minu mination of one candida minutes) ssessment: German, En	ate each (approx. 20 m	ninutes) or an oral ex		
Allocat						
Allocal		JIACES				
			_			
Additio	onal inf	ormation				
Worklo	ad					
			_			
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulatio	ns for teaching-degree progra	mmes)		
§ 73 (1)) 1. Mat	hematik Analysis				
Module	e appea	ars in				
Bachel Bachel Bachel	or' deg or' deg or' deg	ree (1 major) Mathemati ree (1 major) Mathemati ree (1 major) Technolog ree (1 major) Technolog ree (1 major) Economath	ics (2007) y of Functional Materia y of Functional Materia	-		
Bachelor's Materials (:		jor Technology of Functional		erated 26-Aug-2024 • exam. Technologie der Funktionsw	-	page 42 / 62

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Bachelor' degree (1 major) Economathematics (2008) Bachelor' degree (1 major) Mathematical Physics (2009) Bachelor' degree (1 major) Computational Mathematics (2009) Master's degree (1 major) Technology of Functional Materials (2010) Master's degree (1 major) Technology of Functional Materials (2009) Master's degree (1 major) Functional Materials (2012) Bachelor's degree (1 major, 1 minor) Mathematics (Minor, 2008) First state examination for the teaching degree Gymnasium Mathematics (2009) Bachelor' degree (1 major) Technology of Functional Materials (2009)

Module	e title				Abbreviation	
Numer	ical Ma	thematics 1			10-M-NM1-082-m01	L
Module	e coord	inator		Module offered by		
Dean o	of Studio	es Mathematik (Mathem	atics)	Institute of Mathematics		
ECTS	1	od of grading	Only after succ. con			
8		rical grade				
Duratio		Module level	Other prerequisites			
sessment. The lecturer will at the beginning of the cou sidered a declaration of wil dents have obtained the qu the course of the semester, sessment into effect. Stude ted to assessment in the cu		s must be met to qualify for admission to as- irer will inform students about the respective details the course. Registration for the course will be con- on of will to seek admission to assessment. If stu- d the qualification for admission to assessment over mester, the lecturer will put their registration for as- t. Students who meet all prerequisites will be admit- n the current or in the subsequent semester. For as- date, students will have to obtain the qualification for				
Conten	Its		1			
Solutio ons, in	on of system terpola	stems of linear equation tion with polynomials, s				s of equati-
	-	ning outcomes	<u> </u>			
		acquainted with the fur oblems and knows abou			erical mathematics, a	applies them
Course	S (type, r	umber of weekly contact hours,	language — if other than Ger	rman)		
V + Ü (ı	no infoi	mation on SWS (weekly	contact hours) and co	ourse language avail	able)	
		e essment (type, scope, langu le for bonus)	age — if other than German, o	examination offered — if no	ot every semester, informati	ion on whether
by an c 2, appr	oral exa rox. 30	nation (approx. 90 minu mination of one candida minutes) ssessment: German, En	ate each (approx. 20 n	ninutes) or an oral ex		•
	tion of p					
Allocal		Jaces				
	1. 6					
Additio	onal Inf	ormation				
Worklo	ad					
Teachi	ng cycl	9				
	-	LPOI (examination regulation		mmes)		
		hematik Angewandte M	athematik			
	e appea					
	-	ree (1 major) Computer S				
	-	ree (1 major) Mathemati				
	-	ree (1 major) Physics (20				
Bachel	or' deg	ree (1 major) Physics (20 ree (1 major) Physics (20	•			
Bachelor's Materials (:		or Technology of Functional		erated 26-Aug-2024 • exam. Technologie der Funktionsw	-	page 44 / 62

UNIVERSITÄT WÜRZBURG

Bachelor' degree (1 major) Physics (2008) Bachelor' degree (1 major) Technology of Functional Materials (2009) Bachelor' degree (1 major) Technology of Functional Materials (2010) Bachelor' degree (1 major) Nanostructure Technology (2010) Bachelor' degree (1 major) Economathematics (2009) Bachelor' degree (1 major) Economathematics (2008) Bachelor' degree (1 major) Mathematical Physics (2009) Bachelor' degree (1 major) Computational Mathematics (2009) Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) Technology of Functional Materials (2010) Master's degree (1 major) Technology of Functional Materials (2009) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) Functional Materials (2012) Bachelor's degree (1 major, 1 minor) Mathematics (Minor, 2008) First state examination for the teaching degree Gymnasium Mathematics (2009)

Module title					Abbreviation			
Numeri	cal Ma	thematics 2			10-M-NM2-082-mo	1		
Module	coord	inator		Module offered by				
Dean of	fStudie	es Mathematik (Mathe	matics)	tics) Institute of Mathematics				
ECTS	Metho	od of grading	Only after succ. com	Only after succ. compl. of module(s)				
5	nume	rical grade						
Duratio	n	Module level	Other prerequisites					
1 semester undergraduate		sessment. The lecture at the beginning of the sidered a declaration dents have obtained the course of the se sessment into effect ted to assessment in sessment at a later	Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew.					
Conten	ts							
		ods and applications f al equations, boundar	for eigenvalue problems y value problems.	s, linear programmin	g, initial value probl	ems for ordi-		
Intende	ed learı	ning outcomes						
about t	heir ad		tion between the different of the second s					
Course	S (type, n	umber of weekly contact hou	rs, language — if other than Ger	rman)				
V + Ü (r	no infor	mation on SWS (week	ly contact hours) and co	ourse language avail	able)			
		s essment (type, scope, lan le for bonus)	guage — if other than German, e	examination offered — if no	t every semester, informat	ion on whether		
by an o 2, appr	ral exa ox. 30	mination of one candio minutes)	utes); if announced by date each (approx. 20 n nglish if agreed upon w	ninutes) or an oral ex				
Allocat								
Additio	nal inf	ormation						
Worklo	ad							
Teachir	ng cycl	9						
Referred to in LPO I (examination regulations for teaching-degree programmes)								
	§ 73 (1) 5. Mathematik Angewandte Mathematik							
Module		r ee (1 major) Mathema	tics (2008)					
Bachelo Bachelo	or' deg or' deg	ree (1 major) Mathema ree (1 major) Physics (: ree (1 major) Physics (: ree (1 major) Physics (:	2010) 2009)					
Bachelor's Materials (2		or Technology of Functional		erated 26-Aug-2024 • exam. Technologie der Funktionsw	-	page 46 / 62		

UNIVERSITÄT WÜRZBURG

Bachelor' degree (1 major) Physics (2008) Bachelor' degree (1 major) Technology of Functional Materials (2009) Bachelor' degree (1 major) Technology of Functional Materials (2010) Bachelor' degree (1 major) Nanostructure Technology (2010) Bachelor' degree (1 major) Economathematics (2009) Bachelor' degree (1 major) Economathematics (2008) Bachelor' degree (1 major) Mathematical Physics (2009) Bachelor' degree (1 major) Computational Mathematics (2009) Bachelor' degree (1 major) Aerospace Computer Science (2009) Bachelor' degree (1 major) Aerospace Computer Science (2011) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) Technology of Functional Materials (2010) Master's degree (1 major) Technology of Functional Materials (2009) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) Functional Materials (2012) Bachelor's degree (1 major, 1 minor) Mathematics (Minor, 2008) First state examination for the teaching degree Gymnasium Mathematics (2009)

Module title Abbreviation						
Program	nming	course for students of N	Mathematics and othe	er subjects	10-M-PRG-082-m01	
Module	coord	inator		Module offered by	I	
		es Mathematik (Mathem	atics)	Institute of Mathematics		
ECTS		od of grading	F	c. compl. of module(s)		
		successfully completed				
3 Duratio		Module level	Other prerequisites			
						attau dau aa
1 seme		undergraduate			regular attendance (of unexcused absend	
Conten	ts					
Basics matics.	of a mo	odern programming lang	uage (e. g. C or Fortra	n) taking into accou	nt the particular need	ds in mathe-
Intende	ed learr	ning outcomes				
The stu in math		able to work independe s.	ently on small program	nming exercises and	standard programm	ing problems
Course	S (type, n	umber of weekly contact hours,	 language — if other than Ger	rman)		
		ion on SWS (weekly con			e)	
		essment (type, scope, langu	1			ion on whether
		le for bonus)			st every semester, monnat	
project	in the	form of programming ex	ercises (as specified a	at the beginning of t	he course)	
		ssessment: German, En			-	
Allocati	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachir		2				
reaction	is cycl					
	J 4 . 1					
		LPO I (examination regulation		immes)		
	-	hematik Angewandte M	athematik			
Module						
	-	ree (1 major) Mathemati				
	-	ree (1 major) Physics (20				
	-	ree (1 major) Physics (20	•			
	-	ree (1 major) Physics (20				
	-	ree (1 major) Physics (20		1. ()		
	-	ree (1 major) Technology		-		
	-	ree (1 major) Technology				
	-	ree (1 major) Nanostruct ree (1 major) Economath		J		
	-	ree (1 major) Economath	-			
	-	ree (1 major) Economati ree (1 major) Mathemati				
	-	ree (1 major) Kathemati		00)		
	-	ee (1 major) Physics (20		~ ~		
	-	ee (1 major) Technology		ls (2010)		
Bachelor's v Materials (2		or Technology of Functional		erated 26-Aug-2024 • exam. Technologie der Funktionsw	-	page 48 / 62

Julius-Maximilians-UNIVERSITÄT WÜRZBURG

Module Catalogue for the Subject Technology of Functional Materials Bachelor's with 1 major, 180 ECTS credits

Master's degree (1 major) Technology of Functional Materials (2009) Master's degree (1 major) Functional Materials (2012) Bachelor's degree (1 major, 1 minor) Mathematics (Minor, 2008) First state examination for the teaching degree Gymnasium Mathematics (2009)

Module	e title				Abbreviation	
Compu	terorie	nted Mathematics			10-M-COM-082-m01	
Module	e coord	inator		Module offered by		
Dean o	f Studie	es Mathematik (Mathem	atics)	Institute of Mathem	atics	
ECTS	1	od of grading	Only after succ. com			
3	·					
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate			regular attendance of ne incident of unexcu	
Conten	Its					
merica 10-M-A	l compi NL) and	o modern mathematical utation (e.g. Matlab) to s l 10-M-LNA). Computer-b and integral calculus; vi	supplement the basic based solution of prob	modules in analysis lems in linear algeb	and linear algebra ((10-M-ANA 0
Intende	ed learr	ning outcomes				
		arns the use of advance cation to solve mathema		cal software package	es, and is able to asse	ess their
Course	S (type, n	umber of weekly contact hours,	language — if other than Ger	man)		
		mation on SWS (weekly			able)	
module is	s creditab	le for bonus)				n on whether
Assess	ment o	form of programming exe ffered: once a year, sum ssessment: German, Eng	mer semester		ie course)	
Allocat			<u> </u>			
Additio	nalinf	ormation	-			
Auunnu						
Worklo	ad					
Teachi	ng cycl	9				
Referre	ed to in	LPO I (examination regulation	is for teaching-degree progra	mmes)		
		hematik Angewandte Ma				
	e appea	-				
		ree (1 major) Computer S	cience (2010)			
	-	ree (1 major) Computer S				
	-					
Bachelor' degree (1 major) Physics (2010) Bachelor' degree (1 major) Physics (2009)						
	-	ree (1 major) Physics (20	•			
	-	ree (1 major) Physics (20				
	-	ree (1 major) Technology		Ils (2009)		
	-	ree (1 major) Technology		-		
		ree (1 major) Nanostructi				
	-	ree (1 major) Economath				
Bachelor's	with 1 mai	or Technology of Functional	JMU Würzburg • gen	erated 26-Aug-2024 • exam.	reg. data record	page 50 / 62
	achelor's with 1 major Technology of Functional JMU Würzburg • generated 26-Aug-2024 • exam. reg. data record page 50 / 62 aterials (2010) Bachelor (180 ECTS) Technologie der Funktionswerkstoffe - 2010 page 50 / 62					

Julius-Maximilians-UNIVERSITÄT WÜRZBURG

Bachelor' degree (1 major) Economathematics (2008) Bachelor' degree (1 major) Mathematical Physics (2009) Bachelor' degree (1 major) Computational Mathematics (2009) Master's degree (1 major) Physics (2010) Master's degree (1 major) Technology of Functional Materials (2010) Master's degree (1 major) Technology of Functional Materials (2009) Master's degree (1 major) Functional Materials (2012) Bachelor's degree (1 major, 1 minor) Mathematics (Minor, 2008) First state examination for the teaching degree Gymnasium Mathematics (2009)

Module	e title				Abbreviation
Analys	is of Ge	eomaterials			09-AG-102-m01
Module	e coord	inator		Module offered by	
holder search	of the (Chair of Geodynamics and	d Geomaterials Re-	Institute of Geogra	bhy and Geology
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
nerals metry.	and roo As far a	cks, e.g. x-ray diffractome	try, x-ray fluorescenc rials/demonstration	e spectrometry, mic	and isotopic composition of mi- roprobe-analytics, mass spectro- next to the explanation of theore-
Intend	ed lear	ning outcomes			
		sess the basic knowledge position of minerals and r		al methods in order	to determine the chemical and
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Gei	rman)	
V + Ü (r	no info	rmation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		s essment (type, scope, langua ble for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
written	or oral	examination of one cand	lidate each or preser	ntation (30 minutes e	each)
Allocat	ion of _l	places			
Additio	nal inf	ormation			
Worklo	ad				
	-				
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulations	s for teaching-degree progra	ammes)	
Module					
Bachel	or' deg	ree (1 major) Technology	of Functional Materia	als (2010)	

Module title Abbreviation					Abbreviation
Econor	nic Geo	ology			09-WG-102-m01
Module	e coord	inator		Module offered by	I
	holder of the Professorship of Geodynamics and Geoma rials Research			Institute of Geogra	bhy and Geology
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
netic a: view or	spects 1 the av		neral deposits. For ch	iosen and current ex	of deposit types according to ge- amples, students will acquire a es.
Studen	its pos	sess the basic knowledge	of economic geolog	ical analysis of selec	ted mineral raw materials.
Course	S (type, 1	number of weekly contact hours, l	anguage — if other than Gei	rman)	
S (no ir	nforma	tion on SWS (weekly cont	act hours) and cours	e language available	e)
		sessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
written	or ora	examination of one cand	lidate each or preser	itation (30 minutes e	each)
Allocat	ion of	places			
Additio	nal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
Module					
Bachel	Bachelor' degree (1 major) Technology of Functional Materials (2010)				

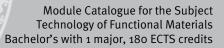
Modul	Module title Abbreviation					
Stratig	raphy a	and Earth History			09-SE-102-m01	
Modul	Module coordinator Module offered by					
	holder of the Professorship of Geodynamics and Geom rials Research			Institute of Geograp	bhy and Geology	
ECTS Method of grading Only after succ. compl. of module(s)						
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	undergraduate				
Conter	nts					
compo ons, th	sition a le devel	ind change of the resultin opment of life and the re	ng deposits and their lated possibility of a	evidence concerning relative ageing of st	ast 4,6 billion years, genesis, g former environmental conditi- ratigraphic deposits, the compo- on to the absolute age dating	
Intend	ed lear	ning outcomes				
Studer	nts pose	sess the required basics	of the Earth's history,	stratigraphic metho	ods and age dating of rocks	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Gei	rman)		
V + Ü (no info	mation on SWS (weekly	contact hours) and co	ourse language avail	able)	
		sessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
written	or oral	examination of one cand	lidate each or preser	itation (30 minutes e	each)	
Allocat	tion of p	olaces				
Additio	onal inf	ormation				
Worklo	bad					
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	immes)		
Modul	e appea	ars in				
Bachel	or' deg	ree (1 major) Technology	of Functional Materia	als (2010)		

Module	e title			Abbreviation			
Petrolo	gy				09-PT-102-m01		
Module coordinator				Module offered by			
holder of the Professorship of Geodyna rials Research			amics and Geomate-	Institute of Geography and Geology			
ECTS Method of grading Only af			Only after succ. com	pl. of module(s)			
5	numerical grade						
Duratio	on	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	ts						
ween th stantly, are con	The course provides an insight into the formation and change of crystalline, i.e. igneous and metamorphic rocks, which make up a significant part of the modern Earth's crust and Earth's surface. Further, the connection between the rock formation (petrogenesis) and the geodynamical processes of the planet Earth, which change constantly, will be made. This includes an introduction to modern methods in order to quantify information, which are contained in rocks, about pressure, temperature and point of time of the rock formation. Next to theoretical considerations, practical observations on thin sections of rocks under the polarisation microscope will be of greateries.						
Intende	ed learr	ning outcomes	,				
Students possess the basic knowledge of igneous and metamorphic Petrology.							
Courses (type, number of weekly contact hours, language — if other than German)							
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)		
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether		
written	or oral	examination of one cand	lidate each or presen	tation (30 minutes e	ach)		
Allocat	ion of p	olaces					
Additional information							
Workload							
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module	Module appears in						
Bachelor' degree (1 major) Technology of Functional Materials (2010)							

Module title Abbreviation						
Geoche	emistry	and Geohydrology			09-GW-102-m01	
Module coordinator				Module offered by		
holder of the Chair of Geodynamics and Geomaterials Research			d Geomaterials Re-	Institute of Geography and Geology		
ECTS	Method of grading Only after succ. compl. of module(s)					
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
ments o cesses ning th	or elem and th e wate	nent groups as well as the us, also on common hyd r contamination.	e respective transpor	t mechanisms. The n	rocks and rearrangement of ele- nain focus will be on aquatic pro- ter storage and problems concer-	
Intende	ed lear	ning outcomes				
					cesses, particularly in the Earth's ciences and hydrogeology.	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)		
V + Ü (r	no info	rmation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		Sessment (type, scope, langua ele for bonus)	ge — if other than German,	examination offered — if no	t every semester, information on whether	
written	or oral	examination of one cand	lidate each or preser	ntation (30 minutes e	each)	
Allocat	ion of _l	places				
Additio	nal inf	ormation				
Workload						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Bachelor' degree (1 major) Technology of Functional Materials (2010)						

Module title Abbreviation						
Rock Identification under the Microscope 09-GM-102-m01					09-GM-102-m01	
Module coordinator Module offered by						
holder search	ofthe	Chair of Geodynamics and	d Geomaterials Re-	Institute of Geography and Geology		
ECTS	Metho	od of grading	Only after succ. compl. of module(s)			
5 numerical grade						
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
transm	itted lig	ght microscope, students	learn the ropes of cr	ystal-optical princip	microscope. In order to use a les. On this basis, the most im- al features in the thin section.	
Intende	ed lear	ning outcomes				
Students dispose over the required knowledge concerning the identification of the most important rock-forming minerals under the polarisation microscope. This module provides students with crucial basics of advanced studies of Petrology and Crystalline Geology.						
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
V + Ü (r	no info	rmation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether	
written or oral examination of one candidate each (30 minutes each)						
Allocat	ion of _l	places				
Additio	onal inf	ormation				
Workload						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
	Module appears in					
Bachelor' degree (1 major) Technology of Functional Materials (2010)						





Thesis (12 ECTS credits)

Module title Abbreviation							
Bachelor's Thesis 08-BT-062-m01							
Module coordinator				Module offered by			
Dean of Studies Funktionswerkstoffe (Functional Materials			Functional Materials)	Chair of Chemical T	echnology of Material Synthesis		
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)			
12	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
		Registration for asse supervisor.	Registration for assessment on a continuous basis as agreed upon with supervisor.				
Conten	ts						
		ives students the opport scientific methods they l			problem within a given time frame		
Intende	ed lear	ning outcomes					
		able to conduct research to present the results of t			the principles of good scientific		
Courses	S (type, r	umber of weekly contact hours, l	anguage — if other than Ger	man)			
no cour	rses as	signed					
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether		
written Langua		ssessment: German or E	nglish				
Allocati	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
Bachelor' degree (1 major) Technology of Functional Materials (2009) Bachelor' degree (1 major) Technology of Functional Materials (2010)							
Bachelor' degree (1 major) Technology of Functional Materials (2010) Bachelor' degree (1 major) Technology of Functional Materials (2006)							



Subject-specific Key Skills

(10 ECTS credits)

Module title					Abbreviation	
Materials Science 1 (Basic Introduction)					08-FS1-101-m01	
Module	e coord	inator		Module offered by		
Dean of Studies Funktionswerkstoffe (Functional Materials)			Functional Materials)	Chair of Chemical T	echnology of Material Synthesis	
ECTS	S Method of grading Only after succ. compl. of module(s)					
5	nume	rical grade				
Duration Module level Other prerequisites						
1 seme	ster	undergraduate				
Conten	its					
		iscusses the fundamenta rties of materials.	al relations between o	chemical bonding, th	ne structure, the microstructure	
Intende	ed learı	ning outcomes				
	tructure				al bonding, the structure, the to apply them to research pro-	
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	man)		
ı) Ü + V	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
written	examiı	nation (90 minutes)				
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Bachelor' degree (1 major) Technology of Functional Materials (2010)						
Bachel	or' deg	ree (1 major) Nanostructu ee (1 major) Chemistry (2	re Technology (2010)			
master	3 ucgi	ce (i major) chemistry (2	010)			

Module title Abbreviation							
Materials Science 2 (The Major Material Groups)08-FS2-101-m01							
Module coordinator				Module offered by			
Dean of Studies Funktionswerkstoffe (Functional Materia				Chair of Chemical T	echnology of Material Synthesis		
ECTS	ECTS Method of grading Only after succ. co			npl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	Its						
This m	odule d	leals with the fabrication	and properties of the	e main material grou	ps.		
Intend	ed lear	ning outcomes					
		e developed a knowledge knowledge to research pr		d properties of the r	nain material groups and are able		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)			
V + Ü (I	no infoi	rmation on SWS (weekly o	contact hours) and co	ourse language avail	able)		
		Sessment (type, scope, langua Ile for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether		
written	exami	nation (approx. 90 minut	es)				
Allocat	ion of p	olaces					
Additio	onal inf	ormation					
Worklo	Workload						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
Bachelor' degree (1 major) Technology of Functional Materials (2010)							
	Bachelor' degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) Chemistry (2010)						