

Module Catalogue

for the Subject

Chemistry

as a Master's with 1 major with the degree "Master of Science" (120 ECTS credits)

Examination regulations version: 2013 Responsible: Faculty of Chemistry and Pharmacy



Contents

The subject is divided into	8
Content and Objectives of the Programme	10
Abbreviations used, Conventions, Notes, In accordance with	11
Compulsory Electives	12
Compulsory Electives Focuses	13
Inorganic Chemistry	-9 14
Compulsory Courses	15
Advanced Inorganic Chemistry	16
Inorganic Chemistry practical course for advanced	17
Compulsory Electives	18
Bioinorganic Chemistry	19
Solid state chemistry and inorganic materials	20
Advanced organometallic chemistry and its application in homogeneous catalysis	21
Organic Chemistry	22
Compulsory Courses	23
Advanced NMR- and Mass Spectrometry	24
Modern Synthetic Methods	25
Advanced Research Project	26
Compulsory Electives Modern Aspects of Natural Product Chemistry and Richards Chemistry	27
Modern Aspects of Natural Product Chemistry and Biological Chemistry Organic Functional Materials	28 29
Organo- and Biocatalysis	30
Supramolecular Chemistry (Basics)	31
Bioorganic Chemistry	32
Computational Chemistry	33
Physical Chemistry	34
Compulsory Courses	35
Laser Spectroscopy	36
Advanced Physical Chemistry (Lab)	37
Compulsory Electives	38
Ultrafast spectroscopy and quantum-control	39
Chemical Dynamics	40
Nanoscale Materials Physical chemistry of supramolecular assemblies	41 42
Computational Chemistry	42
Theoretical Chemistry (Basics)	44
Physical Chemistry (Advanced Lab)	45
Biochemistry	46
Compulsory Courses	47
Molecular Biology Lab	48
Molecular Biology	50
Compulsory Electives	51
Biochemistry Lab	52
Bioinorganic Chemistry	53
Modern Aspects of Natural Product Chemistry and Biological Chemistry	54
Organo- and Biocatalysis Clinical and Analytical Chemistry	55 56
Clinical and Analytical Chemistry Clinical and Analytical Chemistry (practical course)	57
Principles of Biochemistry	58
Practical course Molecular Machines for advanced students	59
Master's with 1 major Chemistry (2013) JMU Würzburg ● generated 26-Aug-2024 ● exam.	page 2 / 293



Practical course Protein Degradation in Eukaryotes for advanced students	60
Practical course RNA Biochemistry for advanced students	61
Practical course Structural Biology for advanced students	62
Principles of drug design	63
Functional Materials	64
Compulsory Courses	65
Organic Functional Materials	66
Lab Course Materials Science	67
Project Work	68
Material Science 1 (basic introduction)	69
Compulsory Electives	70
Solid state chemistry and inorganic materials Supramolecular Chemistry (Basics)	71
Nanoscale Materials	72 73
Polymers II	73 74
Chemically and bio-inspired Nanotechnology for Material Synthesis	75
Polymer Chemistry	77
Material Science 2 (the material groups)	79
Molecular Materials	80
Homogeneous Catalysis	81
Compulsory Courses	82
Advanced organometallic chemistry and its application in homogeneous catalysis	83
Organo- and Biocatalysis	84
Practical course Homogeneous catalysis in Inorganic Chemistry	85
Practical course Homogeneous catalysis in Organic Chemistry	86 0-
Compulsory Electives	87 88
Chemical Dynamics Advanced transition metal chemistry	89 89
Polymer Chemistry	90
Modern Synthetic Methods	92
Computational Chemistry	93
Medicinal Chemistry	94
Compulsory Courses	95
Practical course medicinal chemistry	96
Principles of drug design	97
Pharmaceutical/Medicinal Chemistry	98
Supramolecular Chemistry	99
Compulsory Courses	100
Supramolecular Chemistry (Basics)	101
Supramolecular Chemistry (Practical Course)	102
Compulsory Electives	103
Bioinorganic Chemistry	104
Organic Functional Materials	105
Bioorganic Chemistry Nanoscale Materials	106
Physical chemistry of supramolecular assemblies	107 108
Computational Chemistry	109
Principles of drug design	110
Theoretical Chemistry	111
Compulsory Courses	112
Programming in Theoretical Chemistry	113
Theoretical Chemistry (Basics)	114
Compulsory Electives	115
	-)



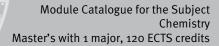
Computational Chemistry	116
Principles of drug design	117
Theoretical Chemistry - Project course wave-packet dynamics	118
Theoretical Chemistry - Project coursewave function based methods	119
Theoretical Chemistry - Project course Computational Photochemistry	120
Additional qualifications	121
Additional qualifications Compulsory Electives Focuses	122
Biochemistry Lab	123
Ultrafast spectroscopy and quantum-control	124
Bioinorganic Chemistry	125
Solid state chemistry and inorganic materials	126
Advanced organometallic chemistry and its application in homogeneous catalysis	127
Advanced NMR- and Mass Spectrometry	128
Modern Aspects of Natural Product Chemistry and Biological Chemistry	129
Organic Functional Materials	130
Organo- and Biocatalysis	131
Supramolecular Chemistry (Basics)	132
Bioorganic Chemistry	133
Chemical Dynamics Nanoscale Materials	134
	135
Physical chemistry of supramolecular assemblies Clinical and Analytical Chemistry	136
Clinical and Analytical Chemistry (practical course)	137 138
Lab Course Materials Science	=
Project Work	139 140
Advanced transition metal chemistry	141
Practical course medicinal chemistry	142
Supramolecular Chemistry (Practical Course)	143
Programming in Theoretical Chemistry	144
Molecular Biology Lab	145
Polymers II	147
Chemically and bio-inspired Nanotechnology for Material Synthesis	148
Polymer Chemistry	150
Material Science 1 (basic introduction)	152
Material Science 2 (the material groups)	153
Principles of Biochemistry	154
Advanced Inorganic Chemistry	155
Inorganic Chemistry practical course for advanced	156
Modern Synthetic Methods	157
Advanced Research Project	158
Computational Chemistry	159
Laser Spectroscopy	160
Advanced Physical Chemistry (Lab)	161
Theoretical Chemistry (Basics)	162
Physical Chemistry (Advanced Lab)	163
Molecular Biology	164
Practical course Molecular Machines for advanced students	165
Practical course Protein Degradation in Eukaryotes for advanced students	166
Practical course RNA Biochemistry for advanced students	167
Practical course Structural Biology for advanced students	168
Principles of drug design	169
Molecular Materials Practical course Homogoneous catalysis in Inorganic Chemistry	170
Practical course Homogeneous catalysis in Inorganic Chemistry	171
Practical course Homogeneous catalysis in Organic Chemistry Pharmaceutical/Medicinal Chemistry	172
Theoretical Chemistry - Project course wave-packet dynamics	173
Theoretical Chemistry - Project course wave-packet dynamics Theoretical Chemistry - Project coursewave function based methods	174 175
ctor's with a major Chemistry (2012)	175



	course Computational Photochemistry	176
Other additional qualification	ITIONS	177
Toxicology and legal studies		178
Tutoring 1 (practical course)		180 181
Tutoring 2 (practical course) Foreign Studies (short)		182
Foreign Studies (Short) Foreign Studies (long)		183
Chemistry-related courses outsi	de of the Natural Sciences	184
Chemistry-related courses withi		185
Compulsory Courses (double		186
Toxicology and legal studies	c degree)	187
Advanced chemical practical course	Δ	189
Compulsory Electives (doub		
Inorganic Chemistry	ie degree)	190 191
Compulsory Courses		_
•		192
Advanced Inorganic Chemistry Inorganic Chemistry practical cou	urca for advanced	193
	iise ioi auvanceu	194
Compulsory Electives		195
Bioinorganic Chemistry		196
Solid state chemistry and inorga		197
Advanced NMR- and Mass Spect	try and its application in homogeneous catalysis	198
Computational Chemistry	rometry	199 200
Organic Chemistry		200
Compulsory Courses		202
Advanced NMR- and Mass Spect	rometry	202
Modern Synthetic Methods	rometry	203
Advanced Research Project		205
Compulsory Electives		206
	ct Chemistry and Biological Chemistry	200
Organic Functional Materials	ct chemistry and biological chemistry	207
Organo- and Biocatalysis		200
Supramolecular Chemistry (Basic	:s)	210
Bioorganic Chemistry	-,	211
Clinical and Analytical Chemistry	(practical course)	212
Computational Chemistry		213
Physical Chemistry		214
Compulsory Courses		215
Chemical Dynamics		215
Laser Spectroscopy		217
Advanced Physical Chemistry (La	b)	218
Physical Chemistry (Advanced La	•	219
Compulsory Electives		220
Ultrafast spectroscopy and quan	tum-control	221
Nanoscale Materials	tum control	222
Physical chemistry of supramole	cular assemblies	223
Lab Course Materials Science		224
Programming in Theoretical Cher	nistry	225
Material Science 1 (basic introdu	ction)	226
Computational Chemistry		227
Theoretical Chemistry (Basics)		228
Theoretical Chemistry - Project co	·	229
The state of the s	pursewave function based methods	230
	ourse Computational Photochemistry	231
Master's with 1 major Chemistry (2013)	JMU Würzburg ● generated 26-Aug-2024 ● exam. reg. data record Master (120 ECTS) Chemie - 2013	page 5 / 293



Biochemistry		232
Compulsory Courses		233
Molecular Biology Lab		234
Molecular Biology		236
Compulsory Electives		237
Specialist Lab Course		238
Practical course Molecular Mad		239
=	lation in Eukaryotes for advanced students	240
Practical course RNA Biochemi		241
Practical course Structural Biol	ogy for advanced students	242
Other Courses		243
Biochemistry Lab Bioinorganic Chemistry		244
= ,	duct Chemistry and Biological Chemistry	245 246
Organo- and Biocatalysis	duct elicinistry and biological elicinistry	247
Clinical and Analytical Chemis	try	248
Clinical and Analytical Chemis		249
Principles of Biochemistry		250
Principles of drug design		251
Functional Materials		252
Compulsory Courses		253
Organic Functional Materials		254
Lab Course Materials Science		255
Project Work	uction	256
Material Science 1 (basic introd	uction)	257
Compulsory Electives Solid state chemistry and inorga	anic materials	258
Supramolecular Chemistry (Bas		259 260
Nanoscale Materials		261
	notechnology for Material Synthesis	262
Material Science 2 (the materia	groups)	264
Computational Chemistry		265
Molecular Materials		266
Medicinal Chemistry		267
Compulsory Courses		268
Pharmaceutical/Medicinal Chen	nistry	269
Compulsory Electives		270
Bioinorganic Chemistry		271
•	uct Chemistry and Biological Chemistry	272
Clinical and Analytical Chemistr	•	273
Clinical and Analytical Chemistr Practical course medicinal chen		274
Modern Synthetic Methods	пзиу	275 276
Molecular Biology		277
Practical course Structural Biolo	gy for advanced students	278
Principles of drug design	-,	279
Theoretical Chemistry		280
Compulsory Courses		281
Programming in Theoretical Che	mistry	282
Theoretical Chemistry (Basics)	•	283
Compulsory Electives		284
Computational Chemistry		285
Principles of drug design		286
Master's with 1 major Chemistry (2013)	JMU Würzburg • generated 26-Aug-2024 • exam. reg. data record Master (120 ECTS) Chemie - 2013	page 6 / 293





Theoretical Chemistry - Project course wave-packet dynamics	287
Theoretical Chemistry - Project coursewave function based methods	288
Theoretical Chemistry - Project course Computational Photochemistry	289
Courses at partner university abroad	290
Courses at the partner university	291
Thesis	292
Master-Thesis	293



The subject is divided into

section / sub-section	ECTS credits	starting page
Compulsory Electives	90	12
Compulsory Electives Focuses	75	13
Inorganic Chemistry	25	14
Compulsory Courses	20	15
Compulsory Electives	5	18
Organic Chemistry	25	22
Compulsory Courses	15	23
Compulsory Electives	10	27
Physical Chemistry	25	34
Compulsory Courses	10	35
Compulsory Electives	15	38
Biochemistry	25	46
Compulsory Courses	15	47
Compulsory Electives	10	51
Functional Materials	25	64
Compulsory Courses	20	65
Compulsory Electives	5	70
Homogeneous Catalysis	25	81
Compulsory Courses	20	82
Compulsory Electives	5	87
Medicinal Chemistry	25	94
Compulsory Courses	25	95
Supramolecular Chemistry	25	99
Compulsory Courses	10	100
Compulsory Electives	15	103
Theoretical Chemistry	25	111
Compulsory Courses	10	112
Compulsory Electives	15	115
Additional qualifications	15	121
Additional qualifications Compulsory Electives Focuses	5	122
Other additional qualifications	10	177
Compulsory Courses (double degree)	5	186
Compulsory Electives (double degree)	55	190
Inorganic Chemistry		191
Compulsory Courses	20	192
Compulsory Electives		195
Organic Chemistry		201
Compulsory Courses	15	202
Compulsory Electives		206
Physical Chemistry		214
Compulsory Courses	20	215
Compulsory Electives		220

Master's with 1 major Chemistry (2013)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 8 / 293
	reg. data record Master (120 ECTS) Chemie - 2013	



Biochemistry		232
Compulsory Courses	15	233
Compulsory Electives		237
Specialist Lab Course	10	238
Other Courses		243
Functional Materials		252
Compulsory Courses	20	253
Compulsory Electives		258
Medicinal Chemistry		267
Compulsory Courses	10	268
Compulsory Electives		270
Theoretical Chemistry		280
Compulsory Courses	10	281
Compulsory Electives		284
Courses at partner university abroad	30	290
Thesis	30	292



Content and Objectives of the Programme

The Master's program in Chemistry is offered by the Faculty of Chemistry and Pharmacy of the JMU as a fundamentally-oriented course with the degree of "Master of Science" (M.Sc.), in the context of a consecutive Bachelor's and Master's degree program.

The Master's course prepares students for scientific as well as doctoral work in chemistry and the eventual award of the degree Dr. rer. nat. The aim of the training is to provide students with in-depth knowledge of scientific work in the research and application of chemistry and the associated basic concepts. Through the education and training of analytical thinking, students should acquire the ability to independently apply the basic knowledge obtained earlier in their Bachelor studies and to transfer it to, and later familiarize themselves with, a wide variety of new tasks.

Through the thesis, students should show that they are able to deal with an experimental or theoretical task in a thematically-limited extent using known methods and from a scientific point of view. The Master's examination intends to determine whether the candidate or the candidate has an overview of the relationships in chemistry, and has the ability to apply the learned scientific methods. It allows the acquisition of an internationally comparable degree in the field of chemistry and provides a professional qualification to prepare for future work in research and development.

Abbreviations used

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

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:

ASP02009

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

29-Jul-2013 (2013-83)

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.



Compulsory Electives

(90 ECTS credits)



Compulsory Electives Focuses

(75 ECTS credits)

Students must choose three focuses with 25 ECTS credits each.



Inorganic Chemistry

(25 ECTS credits)



Compulsory Courses

(20 ECTS credits)



					T		
Module title					Abbreviation		
Advand	Advanced Inorganic Chemistry 08-ACM1-132-mo1						
Module	e coord	inator		Module offered by			
Manag	ing Dir	ector of the Institute of In	organic Chemistry	Institute of Inorgan	ic Chemistry		
ECTS	Meth	od of grading	Only after succ. con	pl. of module(s)			
10	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
2 seme	ester	graduate					
Conten	its						
specia	l comp		elements (MGEs), bo		metal chemistry. It focuses on MGEs and MGE compounds, the		
Intend	ed lear	ning outcomes					
the che	emical				roup elements. They can describe s chemical and physical aspects		
		number of weekly contact hours, l					
S + S (1	no info	rmation on SWS (weekly o	contact hours) and co	urse language avail	able)		
		sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether		
90 min (group:	a) 1 to 2 written examinations (1 written examination: approx. 120 minutes; 2 written examinations: approx. 90 minutes each) or b) oral examination of one candidate each (30 minutes) or c) oral examination in groups (groups of 2, 45 minutes) Language of assessment: German or English						
Allocat	ion of	places					
Additio	Additional information						
Workload							
Teachi	Teaching cycle						
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)			

Module appears in

Master's degree (1 major) Chemistry (2013)



Module title					Abbreviation	
Inorganic Chemistry practical course for advanced					08-ACPM-132-m01	
Modul	e coord	linator		Module offered by		
focus point coordinator "Inorganic Chemistry"		mistry"	Institute of Inorganic Chemistry			
ECTS Method of grading		Only after succ. cor	npl. of module(s)			
10	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites	;		
1 semester graduate						
Conter	its					

Intended learning outcomes

Students are able to use advanced synthesis and analytical methods in inorganic chemistry in the lab and to interpret their findings. They are able to write a lab report documenting their findings and deliver a presentation.

tral analysis and crystallography. Students will be expected to conduct their work in the lab independently, write

Courses (type, number of weekly contact hours, language — if other than German)

a lab report documenting their findings and deliver a presentation.

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)

practical work with lab report (approx. 20 pages) and talk (approx. 15 minutes) Language of assessment: German or English

Allocation of places

--

Additional information

Additional information on module duration: block placement with a duration of a minimum of 40 working days.

Workload

--

Teaching cycle

--

 $\textbf{Referred to in LPO I} \ \ (\text{examination regulations for teaching-degree programmes})$

--

Module appears in

Master's degree (1 major) Chemistry (2013)

Master's degree (1 major) Chemistry (2014)



Compulsory Electives

(5 ECTS credits)



Module title					Abbreviation
Bioinorganic Chemistry					08-ACM2-102-m01
Modul	e coord	linator		Module offered by	
and M	edizinis	minar "Anorganische Asp schen Chemie" (Inorganio edicinal Chemistry)		Institute of Inorgan	ic Chemistry
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	ester	graduate			
Conter	nts				
Studer	nts are	ning outcomes able to describe the prind us enzymes and describe			explain the structure and effects medicine.
Course	es (type,	number of weekly contact hours,	language — if other than Ge	rman)	
S (no i	nforma	tion on SWS (weekly con	tact hours) and cours	e language availabl	e)
		sessment (type, scope, langua ole for bonus)	age — if other than German,	examination offered — if no	ot every semester, information on whether
oral ex thods the cui	aminat of asse rrent se	ion in groups (groups of	2, 30 minutes). Shou dinator will choose th of the course.	ld there be the optio	candidate each (20 minutes) or c on to choose between several me ed for the module component in
Alloca	tion of	places			
Additio	onal inf	ormation			
Workle	nad				

Workload

--

Teaching cycle

--

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

--

Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



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

Module title					Abbreviation	
Solid state chemistry and inorganic materials					08-ACM3-102-m01	
Modul	Module coordinator			Module offered by		
lecturer of seminar "Festkörperchemie and Anorganische Materialien" (Solid State Chemistry and Inorganic Materials)				Institute of Inorgan	ic Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Durati	on	Module level	Other prerequisites			
1 seme	ester	graduate				
Conte	nts					
		provides an introduction nthesis methods and se			structure, chemical and physical	
Intend	ed lear	ning outcomes				
					xplain methods for solid-state the corresponding solids.	
Course	es (type, ı	number of weekly contact hours,	language — if other than Ge	rman)		
S (no i	nforma	tion on SWS (weekly con	tact hours) and cours	e language available	e)	
		sessment (type, scope, langualle for bonus)	age — if other than German,	examination offered — if no	ot every semester, information on whether	
oral ex thods the cu	aminat of asse rrent se	ion in groups (groups of	2, 30 minutes). Shou rdinator will choose the course.	ld there be the optio	candidate each (20 minutes) or c) n to choose between several me- d for the module component in	
	tion of					
Additio	onal inf	ormation				
Workle	oad					
Teachi	ing cycl	e				
Referr	ed to in	LPO I (examination regulation	ns for teaching-degree progra	ımmes)		
		_				
Modul	Module appears in					
Maste	Master's degree (1 major) Chemistry (2013)					



Modul	e title			Abbreviation			
Advanced organometallic chemistry and its application in homogeneous cata-					08-HKM2-102-m01		
lysis							
Modul	e coord	inator	Module offered by				
		seminar "Spezielle Meta		Institute of Inorgan	ic Chemistry		
		wendung in der Homoger					
ECTS	1	od of grading	Only after succ. com	pl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ester	graduate					
Conter	nts						
This m	odule e	xamines elementary orga	anic compounds of tra	ansition metals with	homogeneous catalytic applica-		
Intend	ed lear	ning outcomes					
					entary organic compounds. They neous catalysis reactions.		
Course	es (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)			
S (no i	nforma	tion on SWS (weekly cont	act hours) and cours	e language available	2)		
		sessment (type, scope, langua le for bonus)	ge $-$ if other than German, ϵ	examination offered — if no	t every semester, information on whether		
oral ex thods of the cur	aminat of asse rrent se	ion in groups (groups of 2	2, 30 minutes). Shoul dinator will choose th of the course.	d there be the option	andidate each (20 minutes) or c) n to choose between several me- d for the module component in		
	tion of		. =				
Additio	onal inf	ormation					
Worklo	oad						
			•				
Teachi	Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Modul	e appea	ars in					
		ee (1 major) Chemistry (2	013)				
1	ورثاء الماسية	(') ()	`				

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



Organic Chemistry

(25 ECTS credits)



Compulsory Courses

(15 ECTS credits)



Module title					Abbreviation		
Advanced NMR- and Mass Spectrometry					08-OCM-NMRMS-102-m01		
Module coordinator				Module offered by	, l		
lab coı	ırse su	pervisor		Institute of Organic	Chemistry		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duration	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conter	nts		•				
sights	into the		f the two measuring to	echniques and inclu	pectrometry. It offers deeper indes exercises that give students ometer.		
Intend	ed lear	ning outcomes					
		able to discuss NMR and to experiment with both			n degree of expertise in the field. spectra.		
Course	S (type, i	number of weekly contact hours,	language — if other than Ger	rman)			
P (no i	nforma	tion on SWS (weekly con	tact hours) and cours	e language availabl	e)		
		sessment (type, scope, langua ble for bonus)	age — if other than German,	examination offered — if n	ot every semester, information on whether		
oral ex	- aminat	en examinations (60 or 90 ion in groups (groups of a assessment: German or E	2, 30 minutes)	examination of one	candidate each (20 minutes) or c)		
	tion of		- -				
Additio	onal inf	ormation					
Worklo	ad						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Modul	e appea	ars in					

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2010)



Module title					Abbreviation	
Modern	n Synth	etic Methods			08-OCM-SYNT-132-m01	
Module	Module coordinator			Module offered by		
lecture	r of the	seminar		Institute of Organic	Chemistry	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate	ses in the respective	e classes (usually 70 ompleted) as well as	successful completion of exerci- % of exercises 10 to 15 hours regular attendance of exercises	
Conten	ts					
		iscusses modern stereos emistry and catalysis.	selective synthesis m	ethods. It focuses or	n selected total syntheses, orga-	
Intende	ed learr	ning outcomes				
They ca	n expla mistry.	ain total syntheses. They	can describe aspects	s of organometallic c	stereochemically analyse them. hemistry and catalysis in synthe-	
		number of weekly contact hours, l			-L1-V	
Method	d of ass	mation on SWS (weekly of sessment (type, scope, langual le for bonus)			able) of every semester, information on whether	
60 min	utes ea (group		n of one candidate ears)		tten examinations: approx. utes) or c) oral examination in	
Allocati	ion of p	olaces				
Additio	nal info	ormation	,			
	·					
Worklo	ad					
Teachir	ng cycl	e				
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)		
Module						
Master'	Master's degree (1 major) Chemistry (2013)					



Modul	Module title Abbreviation					
Advan	Advanced Research Project 08-OCM-AKP1-122-mo1					
Module coordinator				Module offered by	ļ.	
head o	f the re	search group offering the	e module	Institute of Organic	Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	graduate				
Conter	ıts		,			
		ives students the opport f Organic Chemistry and			the research groups based at ytical methods.	
Intend	ed learı	ning outcomes				
		able to describe and use well as to describe theor		s and analytical met	hods typically used by the rese-	
Course	es (type, r	umber of weekly contact hours, l	anguage — if other than Ger	rman)		
P (no i	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)	
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
		5 minutes) and log (appr ssessment: German or E				
Alloca	tion of p	olaces				
Additio	onal inf	ormation				
Worklo	oad					
Teachi	ng cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Modul	Module appears in					
	Master's degree (1 major) Chemistry (2013)					
Master	Master's degree (1 major) Chemistry (2014)					



Compulsory Electives

(10 ECTS credits)



Module title					Abbreviation
Modern Aspects of Natural Product Chemistry and Biological Chemistry					08-0CM-NAT-102-m01
Module coordinator Module offer			Module offered	by	
lecture	er of the s	seminar		nstitute of Orga	anic Chemistry
ECTS	Metho	d of grading	Only after succ. comp	ol. of module(s)	
5	numeri	cal grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ester	graduate			
Conter	nts		,		
This m	odule di	scusses advanced	topics in natural product ch	emistry and bid	ological chemistry.
Intend	ed learn	ing outcomes			
Studer	nts are al	ole to discuss adva	inced topics in natural prod	uct chemistry a	nd biological chemistry.
Course	es (type, nu	mber of weekly contact h	nours, language — if other than Germ	an)	
S (no i	nformati	on on SWS (weekly	contact hours) and course	language availa	able)
	d of asse s creditable		language — if other than German, ex	amination offered —	if not every semester, information on whether
oral ex thods the cui	amination of assess rrent sen	on in groups (group	os of 2, 30 minutes). Should coordinator will choose the ning of the course.	there be the op	ne candidate each (20 minutes) or contion to choose between several meused for the module component in
Alloca	tion of pl	laces			
Chemistry Master's: no restrictions. Biochemistry Master's: 20 places. Places will be allocated by lot.					
Additional information					
Worklo	oad				

Teaching cycle

$\textbf{Referred to in LPO I} \ \ (\text{exam} \text{ination regulations for teaching-degree programmes})$

Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Module title				A	Abbreviation
Organic Functional Materials				C	08-OCM-FM-102-m01
Module coordinator				Module offered by	
lecture	er of the	seminar "Organisch	e Funktionsmaterialien"	Institute of Organic Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	Duration Module level		Other prerequisites	Other prerequisites	
1 semester graduate					
Contents					

Contents

The module deals with specific topics in organic functional materials. The focus is on fundamental (photo)physical effects in organic molecular and polymeric semiconductors as well as their application in (opto)electronic components such as field effect transistors, organic light-emitting diodes, or organic solar cells as well as in nonlinear optics.

Intended learning outcomes

The students are able to explain fundamental (photo)physical processes in organic semiconductors. He/She can explain the synthesis of these semiconductor materials as well as their application in (opto)electronic components such as field effect transistors, organic light-emitting diodes or in organic photovoltaics as well as in nonlinear optics.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course.

Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

Module appears in

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Functional Materials (2012)



Module title					Abbreviation	
Organo- and Biocatalysis					08-HKM1-102-m01	
Module coordinator				Module offered by		
lecture	lecturer of the seminar "Organo- and Biokatalyse"			Institute of Organic Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	Duration Module level		Other prerequisites			
1 semester graduate						

Contents

This module provides students with deeper insights into topics in organic compounds and enzymes in catalytic processes. Organocatalysis: enantioselective implementation, principles, green chemistry, substance classes and application areas. Biocatalysis: effects of enzymes in view of different aspects, especially regarding organic synthesis.

Intended learning outcomes

Students are able to categorise organocatalysts and explain their effects and areas of application. They can describe the structure and applications of enzymes in organic synthesis. They are able to mechanistically describe and analyse the effects of enzymes.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course.

Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Module title					Abbreviation
Supramolecular Chemistry (Basics)					08-SCM1-102-m01
Module coordinator				Module offered by	
lecture	r of lec	ture "Organischen Chemi	e"	Faculty of Chemistry and Pharmacy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semester graduate					
Contents					
This module introduces students to the fundamental principles of supramolecular chemistry. It focuses on inter-					

This module introduces students to the fundamental principles of supramolecular chemistry. It focuses on interactions between molecules, molecular recognition by receptors, complexes, supramolecular polymers, coordination polymers and networks, liquid crystals, self-assembly in aqueous media, synthetic ion channels and modern applications of supramolecular chemistry.

Intended learning outcomes

Students are able to explain interactions between molecules demonstrating a high degree of expertise in the field as well as to describe the formation, structure and polymers of coordination compounds. They are able to describe the self-assembly of polymers in aqueous media as well as to identify the characteristics of synthetic ion channels. They can name modern applications of supramolecular chemistry.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

written examination (approx. 90 minutes) or oral examination of one candidate each (approx. 20 minutes) Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Chemistry (2014)

Master's degree (1 major) Functional Materials (2012)



Module	e title	'			Abbreviation
Bioorganic Chemistry					08-SCM3-102-m01
Module	e coord	inator		Module offered by	
1	lecturer of lecture "Bioorganische Chemie" (Bioorganic Chemistry)			Institute of Organic Chemistry	
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	1 semester graduate				
Contents					
This mo	odule c	liscusses topics at the ir	terface of organic che	emistry, biology and	medicine. It focuses on molecu-

Intended learning outcomes

ins and carbohydrates.

Students are able to describe molecular interactions and detection mechanisms of bioorganic chemistry. They can explain the molecular diversity of biological systems. They can characterise the fabrication of agents. They can describe modern aspects of DNA, RNA, proteins and carbohydrates.

lar interactions and recognition, molecular diversity, active agent development, new aspects of DNA, RNA, prote-

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course.

Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Module	Module title Abbreviation					
Comput	Computational Chemistry				08-TCM2-132-m01	
Module	Module coordinator			Module offered by		
lecture	r of lect	ture "Computational Che	mistry"	Institute of Physica	l and Theoretical Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	graduate	ses in the respective to be successfully co	Admission prerequisite to assessment: successful completion of exercises in the respective classes (usually 70% of exercises 10 to 15 hours to be successfully completed) as well as regular attendance of exercises (a maximum of 2 incidents of absence).		
Conten	ts					
This mo	dule ir	ntroduces students to the	e fundamental princip	oles of computationa	al chemistry.	
Intende	ed learı	ning outcomes				
		able to explain the theore emistry.	etical principles of co	mputational chemist	try and to apply methods in com-	
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	rman)		
S + Ü (r	o infor	mation on SWS (weekly	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	ot every semester, information on whether	
		nation (approx. 90 minut ssessment: German or E				
Allocati	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
<u></u>						
Module						
Master'	Master's degree (1 major) Chemistry (2013)					



Physical Chemistry

(25 ECTS credits)



Compulsory Courses

(10 ECTS credits)



Module	Module title Abbreviation					
Laser S	Spectro	oscopy			08-PCM1a-132-m01	
Module	Module coordinator			Module offered by	I.	
lecture copy)	r of se	minar "Laserspektroskopi	e" (Laser Spectros-	Institute of Physica	l and Theoretical Chemistry	
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	graduate	-			
Conten	its					
		ntroduces students to the spectroscopy.	e fundamental princip	oles of laser spectros	scopy. It discusses absorption	
Intend	ed lear	ning outcomes				
		able to explain the compo ology. They are able to de			as well as the optical principles mission spectroscopy.	
Course	S (type,	number of weekly contact hours, l	anguage — if other than Ger	man)		
S + Ü (ı	no info	rmation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		sessment (type, scope, langua	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
		nation (90 minutes) or or assessment: German or Er		inutes)		
Allocat	ion of	places				
Additio	nal inf	formation				
Worklo	ad					
Teachi	ng cyc	le				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	Module appears in					
	Master's degree (1 major) Chemistry (2013)					
Master	Master's degree (1 major) Chemistry (2014)					



Module title			Abbreviation
Advanced Physical Chemistry (Lab)			08-PCM1b-132-m01
Module coordinator		Module offered by	
ecturer of seminar "Laserspektroskop copy)	ie" (Laser Spectros-	Institute of Physica	l and Theoretical Chemistry
ECTS Method of grading	Only after succ. con	ıpl. of module(s)	
(not) successfully completed			
Duration Module level	Other prerequisites		
ı semester graduate			
Contents	_,		
This module gives students the opport boratory. After a safety briefing, the st be expected to take tests and write lat	udents autonomously	conduct experiment	
Intended learning outcomes			
Students have developed a high level They are able to analyse the resulting			thods in physical chemistry.
Courses (type, number of weekly contact hours,	language — if other than Ger	rman)	
P (no information on SWS (weekly con	tact hours) and cours	e language available	e)
Method of assessment (type, scope, langua module is creditable for bonus)	age — if other than German,	examination offered — if no	t every semester, information on whether
Vortestate (pre-experiment exams) and prox. 15 pages) Language of assessment: German or E	·	xperiment exams) (a	pprox. 15 minutes) and log (ap-
Allocation of places			
.			
Additional information			
Additional information on module dur	ation: block placemer	nt with a duration of	a minimum of 20 working days.
Workload			
			
Teaching cycle			
Teaching cycle			

Master's degree (1 major) Chemistry (2013)



Compulsory Electives

(15 ECTS credits)



Module title Abbreviation						
Ultrafast spectroscopy and quantum-control					08-PCM4-132-m01	
Modul	e coord	linator		Module offered by		
lecture Quante		e seminar "Ultrakurzzeitsp rolle"	oektroskopie and	Institute of Physica	l and Theoretical Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade	08-PCM1a, 08-PCM1	.b		
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conter	its	,				
		discusses advanced topic time-resolved laser spect			control. It focuses on ultrashort	
Intend	ed lear	ning outcomes				
plain tl princip	les and	ory of time-resolved laser d applications of quantun	spectroscopy and na n control.	me experimental me	naracterise them. They can exethods. They can describe the	
	-	number of weekly contact hours, l				
		rmation on SWS (weekly				
		sessment (type, scope, langua ble for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
nutes)		mination (90 minutes) or assessment: German or E	•	of one candidate ead	ch (20 minutes) or c) talk (30 mi-	
Allocat			<u> </u>			
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ng cycl	le				
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
Modul	e appe	ars in				
Master	's degr	ee (1 major) Chemistry (2	013)			



Module title					Abbreviation		
Chemical Dynamics					08-PCM2-102-m01		
Module	e coord	inator		Module offered by			
lecture mics)	r of sen	ninar "Chemische Dyna	amik" (Chemical Dyna-	Institute of Physica	ll and Theoretical Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	its		•				
					ical kinetics and reaction dyna- cribing chemical reactions.		
Intend	ed learı	ning outcomes					
			ed topics in chemical k on of chemical reaction		dynamics. They can describe me-		
Course	S (type, r	number of weekly contact hour	s, language — if other than Ge	man)			
S + Ü (ı	no infor	rmation on SWS (weekl	y contact hours) and co	ourse language avail	able)		
		sessment (type, scope, lang	guage — if other than German,	examination offered — if no	ot every semester, information on whether		
		nation (90 minutes) or ssessment: German or		e candidate each (20	o minutes) or talk (30 minutes)		
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referre	d to in	LPO I (examination regulati	ons for teaching-degree progra	immes)			
Module	e appea	ars in					
	_	ee (1 major) Chemistry	_				
Master	Master's degree (1 major) Chemistry (2010)						

Master's degree (1 major) Chemistry (2014) Master's degree (1 major) Mathematics (2012)

Master's degree (1 major) Computational Mathematics (2012)



Module title					Abbreviation
Nanoscale Materials					08-PCM3-102-m01
Module coordinator				Module offered by	
lecturer of the seminar "Nanoskalige Materialien"			Naterialien"	Institute of Physical and Theoretical Chemistry	
ECTS	Meth	Method of grading Only after su		npl. of module(s)	
5	5 numerical grade				
Duration Module level		Other prerequisites			
1 seme	1 semester graduate				
Conten	Contents				

This module discusses advanced topics in nanoscale materials. It focuses on the structure, properties, fabrication, modern characterisation methods and application areas of nanoscale materials.

Intended learning outcomes

Students are able to characterise nanoscale materials. They are able to name analytical methods and application areas of nanoscale materials.

Courses (type, number of weekly contact hours, language — if other than German)

S + Ü (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)

written examination (90 minutes) or oral examination of one candidate each (20 minutes) or talk (30 minutes) Language of assessment: German or English

Allocation of places

Additional information

Workload

Teaching cycle

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

Module appears in

Bachelor' degree (1 major) Nanostructure Technology (2010)

Bachelor' degree (1 major) Nanostructure Technology (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Chemistry (2014)

Master's degree (1 major) Mathematics (2012)

Master's degree (1 major) Computational Mathematics (2012)

Master's degree (1 major) Functional Materials (2012)



Module	title				Abbreviation
Physical chemistry of supramolecular assemblies					08-PCM5-102-m01
Module	coord	inator		Module offered b	y
lecture: kularer			ne Chemie Supramole-	Institute of Physic	cal and Theoretical Chemistry
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5		rical grade			
Duratio		Module level	Other prerequisites		
1 seme:	 ster	graduate			
Conten		0			
cal pro	perties		eractions between mole as key applications of s		the formation and physical-chemi mistry.
Studen in the f	ts are a	able to explain the bas	ormation and physical-c		strating a high degree of expertise of aggregates. They can name mo
Course	S (type, r	number of weekly contact hou	ırs, language — if other than Ge	rman)	
S + Ü (r	no infor	mation on SWS (week	cly contact hours) and co	ourse language ava	nilable)
		sessment (type, scope, lar le for bonus)	guage — if other than German,	examination offered — if	not every semester, information on whether
minute	s)	nation (90 minutes) a ssessment: German o		of one candidate ea	ach (20 minutes) and/or talk (30
Allocat					
	•				
Additio	nal inf	ormation			
Worklo	ad				
Teachir	ng cvcl	e			
	3 3,30				
Referre	d to in	LPO I (examination regula	tions for teaching-degree progra	ummes)	
			101 10001111/5 405100 110510		
		•			
Modula	annes	rs in			
Module Master			(2013)		
Master'	's degr	ee (1 major) Chemistry			
Master' Master'	's degr		(2010)		

Master's degree (1 major) Technology of Functional Materials (2009) Master's degree (1 major) Computational Mathematics (2012)

Master's degree (1 major) Functional Materials (2012)



Module	Module title Abbreviation						
Computational Chemistry 08-TCM2-132-m01							
Module	coord	inator		Module offered by			
lecture	r of lect	ture "Computational Che	mistry"	Institute of Physica	l and Theoretical Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 semester graduate Admission prerequisite to assessment: successful complet ses in the respective classes (usually 70% of exercises 10 to be successfully completed) as well as regular attendance (a maximum of 2 incidents of absence).				% of exercises 10 to 15 hours			
Conten	ts						
This mo	dule ir	ntroduces students to the	e fundamental princip	oles of computationa	al chemistry.		
Intende	ed learı	ning outcomes					
		able to explain the theore emistry.	etical principles of co	mputational chemist	try and to apply methods in com-		
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	rman)			
S + Ü (r	o infor	mation on SWS (weekly	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	ot every semester, information on whether		
		nation (approx. 90 minut ssessment: German or E					
Allocati	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teaching cycle							
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)			
<u></u>							
Module							
Master'	Master's degree (1 major) Chemistry (2013)						



Module	Module title Abbreviation						
Theoretical Chemistry (Basics) 08-					08-TCM1-132-m01		
Module	coord	inator		Module offered by	,		
lecture	r of lect	ture "Theoretische Chemi	ie"	Institute of Physica	l and Theoretical Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 semes	ster	graduate	ses in the respective	e classes (usually 70 ompleted) as well as	successful completion of exerci- % of exercises 10 to 15 hours s regular attendance of exercises		
Conten	ts						
This mo	dule ir	ntroduces students to the	e fundamental princip	oles of theoretical ch	emistry.		
Intende	ed learı	ning outcomes					
		able to describe the math amical approaches of the		al principles underly	ing the quantum chemical and		
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	rman)			
S + Ü (r	o infor	mation on SWS (weekly	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	ot every semester, information on whether		
		nation (approx. 90 minut ssessment: German or E					
Allocati	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teachir	Teaching cycle						
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)			
<u></u>							
Module							
Master'	Master's degree (1 major) Chemistry (2013)						



Module	Module title Abbreviation					
Physical Chemistry (Advanced Lab) 08-PCM6-132-mo1					08-PCM6-132-m01	
Module	coord	inator		Module offered by		
lecture	rs Phys	ikalische Chemie (Physic	cal Chemistry)	Institute of Physica	l and Theoretical Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	(not)	successfully completed	08-PCM1			
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
		ives students the opport f Physical Chemistry and			f the research groups based at lytical methods.	
Intende	ed lear	ning outcomes				
		•			relevant physical chemistry resequestions in physical chemistry.	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
P (no in	format	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, o	examination offered — if no	ot every semester, information on whether	
•		(approx. 20 minutes) ssessment: German or E	nglish			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Additio	nal inf	ormation on module dura	ition: block placemer	nt with a duration of	a minimum of 20 working days.	
Worklo	ad					
Teachir	ng cycl	e				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
Module	appea	ars in				

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2014)



Biochemistry

(25 ECTS credits)



Compulsory Courses

(15 ECTS credits)



Module title					Abbreviation
Molecular Biology Lab					08-BC-MOLP-111-m01
Module coordinator				Module offered by	
holder of the Chair of Biochemistry Chair of E			Chair of Biochemis	f Biochemistry	
ECTS	Method of grading Only after succ. co			npl. of module(s)	
10	numerical grade 08-BC (module con		ponent o8-BC-1 only	<i>(</i>)	
Durati	Duration Module level		Other prerequisites	Other prerequisites	
1 seme	ester	undergraduate			
C 4		·			

Contents

This module equips students with practical skills in the areas of recombinant engineering and characterisation of macromolecular complexes, modern biomolecular techniques, in vivo analysis of biochemical processes, and modern imaging techniques.

Intended learning outcomes

Students have developed a knowledge of molecular biology and are able to apply it to practical experiments.

Courses (type, number of weekly contact hours, language — if other than German)

Ü (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)

a) written examination (approx. 60 to 90 minutes) or b) log (approx. 20 pages) or c) oral examination of one candidate each (approx. 20 minutes) or d) oral examination in groups of up to 3 candidates (groups of 2: approx. 30 minutes, groups of 3: approx. 40 minutes) or d) presentation (approx. 30 minutes). Students will be informed about the method and length of the assessment prior to the course.

Assessment offered: once a year, winter semester Language of assessment: German or English

Allocation of places

Biochemie (Biochemistry) Bachelor's: 24 places. Chemie (Chemistry) Master's: 6 places. Selection process Biochemie (Biochemistry) Bachelor's: Should the number of applications exceed the number of available places, places will be allocated according to the following quotas: Quota 1 (two thirds of places): current average grade of successfully completed modules; among applicants with the same average grade, places will be allocated by lot. Quota 2 (one third of places) number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available. Selection process Chemie (Chemistry) Master's: Should the number of applications exceed the number of available places, places will be allocated according to the following quotas: Quota 1 (two thirds of places): grade of module o8-BC; among applicants with the same grade, places will be allocated by lot. Quota 2 (one third of places) number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.

Additional information -Workload -Teaching cycle -Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Bachelor' degree (1 major) Biochemistry (2011)

Master's with 1 major Chemistry (2013)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 48 / 293
	reg. data record Master (120 ECTS) Chemie - 2013	



Bachelor' degree (1 major) Biochemistry (2013) Master's degree (1 major) Chemistry (2013)



Modul	e title				Abbreviation
Molecular Biology					o8-BC-MOLM-132-mo1
Module coordinator Module offer			Module offered by		
holder	of the	Chair of Biochemistry		Chair of Biochemis	stry
ECTS	Meth	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			
Conte	nts	,			
	ising a bioche		this module discusse	s advanced topics i	n molecular physiology and func-
Intend	ed lear	ning outcomes			
Studer	nts have	e developed a sound kno	owledge of molecular	biology.	
Course	es (type, i	number of weekly contact hours,	language — if other than Ger	rman)	
V + Ü (no info	rmation on SWS (weekly	contact hours) and co	ourse language avai	lable)
		sessment (type, scope, langu	age — if other than German,	examination offered — if n	ot every semester, information on whether
didate 30 mir about	each (a nutes, g the me	approx. 20 minutes) or d	oral examination in ginutes) or d) presentassessment prior to the	groups of up to 3 car ation (approx. 30 min	or c) oral examination of one canndidates (groups of 2: approx. nutes). Students will be informed
Alloca	tion of	places			
Additio	onal inf	ormation			
Workle	oad				
	1				
Teachi	ng cycl	le			
Referre	ed to in	LPO I (examination regulation	ns for teaching-degree progra	ımmes)	
			- 5 . 6		
Modul	e appe	ars in			



Compulsory Electives

(10 ECTS credits)



Module title					Abbreviation	
Biochemistry Lab					08-BCP-092-m01	
Module coordinator				Module offered by		
holder	holder of the Chair of Biochemistry			Chair of Biochemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	(not)	successfully completed	o8-BC	o8-BC		
Duratio	Duration Module level		Other prerequisites			
1 seme	ester	undergraduate				

Contents

Practical exercises give students the opportunity to learn the fundamental principles of conducting biochemical experiments.

Intended learning outcomes

Students have become proficient in essential methods in biochemistry.

Courses (type, number of weekly contact hours, language — if other than German)

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)

pre/post-experiment examination talks (Vortestate and Nachtestate, approx. 15 minutes each), practical work (log, approx. 5 to 10 pages)

Assessment offered: once a year, summer semester

Allocation of places

Number of places: 24. Should the number of applications exceed the number of available places, places will be allocated in a standardised procedure among all applicants irrespective of their subjects according to the following quotas: Quota 1 (80% of places): grade achieved in module 08-BC; among applicants with the same grade, places will be allocated by lot. Quota 2 (20% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.

Additional information

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Workload

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Teaching cycle

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 $\textbf{Referred to in LPO I} \ \ (\text{examination regulations for teaching-degree programmes})$

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Module appears in

Bachelor' degree (1 major) Chemistry (2010)

Bachelor' degree (1 major) Chemistry (2009)

Master's degree (1 major) Chemistry (2013)



Module title Abbreviation						
Bioinorganic Chemistry 08-ACM2-					08-ACM2-102-m01	
Modul	e coord	inator		Module offered by		
lecturer of seminar "Anorganische Aspe and Medizinischen Chemie" (Inorganic mistry and Medicinal Chemistry)				Institute of Inorgan	ic Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites	i		
1 seme	ster	graduate				
Conten	its		,			
	ds of BI				chemistry (BIC). It discusses the ns of BIC in the fields of diagnosis	
Intend	ed learı	ning outcomes				
			orinciples of, and method cribe applications of BIC i		xplain the structure and effects medicine.	
Course	S (type, n	umber of weekly contact ho	ours, language — if other than Ge	rman)		
S (no i	nformat	ion on SWS (weekly	contact hours) and cours	e language availabl	e)	
		sessment (type, scope, la le for bonus)	anguage — if other than German,	examination offered — if no	ot every semester, information on whether	
a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course. Language of assessment: German or English						
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Workload						
						
Teaching cycle						
Teachi	iig cycu	е				
Teachi 	iig cycu	<u>e</u>				

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Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Module	Module title Abbreviation						
Moder	Modern Aspects of Natural Product Chemistry and Biological Chemistry 08-0CM-NAT-102-m01						
Module coordinator Module				Module offered	by		
lecture	r of the	seminar		Institute of Orga	anic Chemistry		
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	graduate					
Conten	its						
This m	odule d	liscusses advanced t	opics in natural product	chemistry and bi	ological chemistry.		
Intend	ed lear	ning outcomes					
Studen	its are	able to discuss advar	nced topics in natural pro	duct chemistry a	nd biological chemistry.		
Course	S (type, i	number of weekly contact ho	ours, language — if other than Ge	rman)			
S (no ir	nforma	tion on SWS (weekly	contact hours) and cours	e language avail	able)		
		sessment (type, scope, la	anguage — if other than German,	examination offered —	if not every semester, information on whether		
oral ext thods of the cur	aminat of asse rent se	ion in groups (groups	s of 2, 30 minutes). Shou coordinator will choose thing of the course.	ld there be the o _l	ne candidate each (20 minutes) or c) otion to choose between several me- used for the module component in		
Allocat	ion of	places					
Chemis	stry Ma	ster's: no restrictions	s. Biochemistry Master's:	20 places. Place	s will be allocated by lot.		
Additio	nal inf	ormation					
Workload							
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
 Module	e appe	ars in					

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2010) Master's degree (1 major) FOKUS Pharmacy (2012)



Module title					Abbreviation
Organo- and Biocatalysis					08-HKM1-102-m01
Module coordinator				Module offered by	
lecture	r of the	seminar "Organo- and	Biokatalyse"	Institute of Organic Chemistry	
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)	
5	nume	rical grade			
Duration Module level		Other prerequisites			
1 seme	1 semester graduate -				
Combants					

Contents

This module provides students with deeper insights into topics in organic compounds and enzymes in catalytic processes. Organocatalysis: enantioselective implementation, principles, green chemistry, substance classes and application areas. Biocatalysis: effects of enzymes in view of different aspects, especially regarding organic synthesis.

Intended learning outcomes

Students are able to categorise organocatalysts and explain their effects and areas of application. They can describe the structure and applications of enzymes in organic synthesis. They are able to mechanistically describe and analyse the effects of enzymes.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course.

Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Module title Abbreviation							
Clinica	ıl and A	nalytical Chemistry			08-PH-KAC-092-m01		
Modul	Module coordinator Mo				L		
		ture "Klinisch-analytische Chemistry)	e Chemie" (Clinical	Institute of Pharma	cy and Food Chemistry		
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					
Conte	nts						
This m	odule d	iscusses advanced topic	s in clinical analytica	ıl chemistry.			
Intend	ed lear	ning outcomes					
Studer	nts have	e developed an advanced	knowledge of molec	ular biology.			
Course	es (type, r	number of weekly contact hours, l	anguage — if other than Ge	man)			
V (no i	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,	examination offered — if no	ot every semester, information on whether		
		le for bonus)					
writter	exami	nation (120 minutes)					
Alloca	tion of p	olaces					
Additio	onal inf	ormation					
Workle	oad						
Teachi	Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
Master's degree (1 major) Biochemistry (2012)							
	Master's degree (1 major) Chemistry (2013)						
	_	ee (1 major) Chemistry (2					
Maste	Master's degree (1 major) Chemistry (2014)						



Module	Module title Abbreviation					
Clinica	Clinical and Analytical Chemistry (practical course) 08-PH-KACP-092-m01					
Module coordinator Module offered by						
	lecturer of lecture "Klinisch-analytische Chemie" (Clinical and Analytical Chemistry)			Institute of Pharma	cy and Food Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	(not)	successfully completed				
Duratio	n	Module level	Other prerequisites	i		
1 seme	ster	undergraduate				
Conten	its					
This mo		overs practical topics in	clinical chemistry and	d clinical diagnostics	s as well as the related analytical	
Intende	ed lear	ning outcomes				
Studen ments.	its have	e developed a knowledge	of clinical analytical	chemistry and are a	ble to apply it to practical experi-	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)		
P (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	e)	
		sessment (type, scope, langua ble for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
examin	ation t	alks (Testate, approx. 15	minutes each), log (a	pprox. 5 to 10 pages	5)	
Allocat	ion of	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Biochemistry (2012)						
Master's degree (1 major) Chemistry (2013)						
	_	ee (1 major) Chemistry (2	-			
Master	Master's degree (1 major) Chemistry (2014)					



Module title				Abbreviation	
Principles of Biochemistry					08-BC-132-m01
Module coordinator				Module offered by	
holder	holder of the Chair of Biochemistry			Chair of Biochemistry	
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)	
6	nume	rical grade			
Duration Module level		Other prerequisites	Other prerequisites		
1 seme	ester	undergraduate			
Conto	Contonts				

Contents

Comprising lectures and exercises, this module acquaints students with the fundamental principles of biochemistry.

Intended learning outcomes

Students have become familiar with the fundamental principles of biochemistry. They are able to describe the key biochemical processes in cellular systems.

Courses (type, number of weekly contact hours, language — if other than German)

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- 08-BC-1-132: V + Ü (no information on SWS (weekly contact hours) and course language available)
- o8-BC-2-132: V + Ü (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)

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-BC-1-132: Principles of Biochemistry 1 Principles of Biochemistry 1

- 3 ECTS, Method of grading: numerical grade
- written examination (approx. 60 to 90 minutes)

Assessment in module component o8-BC-2-132: Principles of Biochemistry 2 Principles of Biochemistry 2

- 3 ECTS, Method of grading: numerical grade
- written examination (approx. 60 to 90 minutes)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Bachelor' degree (1 major) Biochemistry (2013)

Bachelor' degree (1 major) Physics (2010)



Modul	Module title Abbreviation					
Practical course Molecular Machines for advanced students					o8-BC-VPMM-132-mo1	
Modul	e coord	inator		Module offered by	<u> </u>	
holder	of the (Chair of Biochemistry		Chair of Biochemis	try	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	·	
10	nume	rical grade	o8-BC, o8-BCP			
Duratio	on	Module level	Other prerequisites			
1 seme	ester	graduate				
Conter	ıts					
lar bio	logy an		mutagenesis, protein	expression and pur	d methods and topics in molecu- ification, RNA-protein and prote- nplexes.	
Intend	ed lear	ning outcomes				
Studer work.	nts are a	able to explore a specific	research topic and d	eliver an oral presen	ntation on the results of their	
Course	es (type, r	number of weekly contact hours,	anguage — if other than Ger	rman)		
P (no i	nformat	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, o	examination offered — if no	ot every semester, information on whether	
		o pages) and talk (appro ssessment: German or E				
Alloca	tion of p	olaces				
Additional information						
Additional information on module duration: block placement with a duration of a minimum of 40 working days.						
Workload						
Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					

Module appears in



Modul	e title	,	Abbreviation				
Practio	al cou	rse Protein Degradation i	08-BC-VPPD-132-m01				
Module coordinator Module offered by							
holder	of the	Chair of Biochemistry		Chair of Biochemis	try		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
10	nume	erical grade	o8-BC, o8-BCP				
Duratio	on	Module level	Other prerequisites				
1 seme	ester	graduate					
Conter	nts						
This m	-	gives students the opport	unity to explore a res	earch topic in the fie	eld of protein degradation in eu-		
Intend	ed lear	ning outcomes					
Studer work.	nts are	able to explore a specific	research topic and d	eliver an oral presen	ntation on the results of their		
Course	es (type,	number of weekly contact hours, I	anguage — if other than Ger	rman)			
P (no i	nforma	tion on SWS (weekly cont	act hours) and cours	e language available	e)		
		sessment (type, scope, langua	ge — if other than German,	examination offered — if no	ot every semester, information on whether		
		o pages) and talk (approassessment: German or E					
Alloca	tion of	places					
Additio	onal inf	formation					
Additio	onal inf	ormation on module dura	tion: block placemer	nt with a duration of	a minimum of 40 working days.		
Worklo	Workload						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Modul	Module appears in						
Maste	Master's degree (1 major) Chemistry (2013)						



Module title Abbreviation						
Practical course RNA Biochemistry for advanced students 08-BC-VPRB-132-mo1						
Module coordinator Module offered					-	
holder	of the (Chair of Biochemistr	у	Chair of Biochemis	try	
ECTS	Metho	od of grading	Only after succ. con	Only after succ. compl. of module(s)		
10	nume	rical grade	o8-BC, o8-BCP			
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ıts		,			
mes as on, in v	moleo itro tra		gulatory mechanisms of e		eld of RNA biochemistry. Ribososynthesis. Gradient centrifugati-	
work. T	hey are th the h	able to familiarise	themselves with different	mechanisms of gene	ntation on the results of their eral and specific translation conappropriate and understandable	
			nours, language — if other than Ge			
P (no ir	nformat	ion on SWS (weekly	contact hours) and cours	e language available	e)	
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)						
log (approx. 20 pages) and talk (approx. 15 minutes) Language of assessment: German or English						
Allocation of places						
Additional information						
Additional information on module duration: block placement with a duration of a minimum of 40 working days.						
Worklo	ad					

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Teaching cycle

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 $\textbf{Referred to in LPO I} \ \ (\text{examination regulations for teaching-degree programmes})$

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Module appears in



Module title			Abbreviation		
Practical cou	rse Structural Biolog		08-BC-VPSB-132-m01		
Module coordinator Module offer				L	
holder of the	Chair of Biochemistry	J	Chair of Biochemis	try	
ECTS Meth	od of grading	Only after succ. con	npl. of module(s)		
10 num	erical grade	o8-BC, o8-BCP			
Duration	Module level	Other prerequisites			
1 semester	graduate				
Contents					
	ntal principles and te			tallisation. It teaches students sation as well as crystallographic	
Intended lea	rning outcomes				
				constructs for crystallisation. Il as data collection and proces-	
Courses (type,	number of weekly contact h	ours, language — if other than Ger	rman)		
P (no informa	ation on SWS (weekly	contact hours) and cours	e language available	e)	
Method of as		anguage — if other than German, o	examination offered — if no	ot every semester, information on whether	
log (approx. 20 pages) and talk (approx. 15 minutes) Language of assessment: German or English					
• . , ,	assessment: German				
• . , ,					
Language of					
Language of	places				
Language of Allocation of Additional in	places	or English	nt with a duration of	a minimum of 40 working days.	
Language of Allocation of Additional in	places	or English	nt with a duration of	a minimum of 40 working days.	
Language of Allocation of Additional in Additional in	places	or English	nt with a duration of	a minimum of 40 working days.	

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

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Module appears in



Module	Module title Abbreviation						
Princip	les of c	drug design		o8-MCM3-132-mo1			
Module	Module coordinator			Module offered by			
lecture mistry)		mazeutische Chemie (Ph	armaceutical Che-	Institute of Pharma	cy and Food Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	its						
cophor QSAR. gies, b	e mode Predict ioisoste	els, docking, virtual scree	ening, simulation met	hods, de novo desig	re-based drug design, pharma- rn. Ligand-based drug design. ase examples, prodrug strate-		
	-	ter the theoretical and ex	vnorimental methods	and acports of drug	docian		
		number of weekly contact hours,		· ·	uesigii.		
		rmation on SWS (weekly			ahle)		
Metho	d of ass	sessment (type, scope, langua			ot every semester, information on whether		
presen	tation v	le for bonus) with discussion (approx. ssessment: German or E					
Allocat	ion of p	olaces					
	1						
Additio	nal inf	ormation					
Worklo	Workload						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
	Module appears in						
	_	ee (1 major) Chemistry (2					
Master	Master's degree (1 major) Chemistry (2014)						

Functional Materials

(25 ECTS credits)



Compulsory Courses

(20 ECTS credits)



Modul	e title			A	Abbreviation
Organi	ic Funct	ional Materials		С	08-OCM-FM-102-m01
Modul	e coord	inator		Module offered by	
lecture	lecturer of the seminar "Organische Funktionsmaterialien"			Institute of Organic Chemistry	
ECTS	Meth	Method of grading Only after succ. co		ıpl. of module(s)	
5	nume	rical grade			
Duration Module level		Other prerequisites	Other prerequisites		
1 seme	1 semester graduate				
Contents					

Contents

The module deals with specific topics in organic functional materials. The focus is on fundamental (photo)physical effects in organic molecular and polymeric semiconductors as well as their application in (opto)electronic components such as field effect transistors, organic light-emitting diodes, or organic solar cells as well as in nonlinear optics.

Intended learning outcomes

The students are able to explain fundamental (photo)physical processes in organic semiconductors. He/She can explain the synthesis of these semiconductor materials as well as their application in (opto)electronic components such as field effect transistors, organic light-emitting diodes or in organic photovoltaics as well as in nonlinear optics.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course.

Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Functional Materials (2012)



Modul	Module title Abbreviation					
Lab Course Materials Science 08-FMM-MP-10					08-FMM-MP-102-m01	
Modul	Module coordinator Module offered by					
				Chair of Chemical T	Chair of Chemical Technology of Material Synthesis	
ECTS	Meth	od of grading	Only after succ. compl. of module(s)			
5	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	nts					
Ten se	lected e	experiments in materials	science.			
Intend	ed lear	ning outcomes				
Studer	nts have	e developed an advanced	proficiency in the pe	erformance of experi	ments in materials science.	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
P (no ii	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	2)	
		sessment (type, scope, langua ole for bonus)	ge — if other than German, o	examination offered — if no	t every semester, information on whether	
cal per	Vortestate (pre-experiment exams) and Nachtestate (post-experiment exams) (15 minutes), assessment of practical performance, log (5 to 10 pages) Language of assessment: German or English					
	Allocation of places					
Additio	onal inf	ormation				
Worklo	oad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
	Master's degree (1 major) Chemistry (2013)					
	_	ee (1 major) Chemistry (2				
Master	Master's degree (1 major) Chemistry (2014)					



Module	Module title Abbreviation						
Project	Work				08-FMM-PA-102-m01		
Module	e coord	inator		Module offered by			
head of the research group offering the m			e module	Chair of Chemical Technology of Material Synthesis			
ECTS				npl. of module(s)			
5	(not)	successfully completed					
Duration Module level Other prerequisites							
1 seme	ster	graduate					
Conten	its						
		ives students the opport findings.	unity to explore a res	earch topic under th	e guidance of a supervisor and to		
Intend	ed learı	ning outcomes					
Studer	its have	e developed an advanced	proficiency in the pe	erformance of experi	ments in materials science.		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)			
P (no ir	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	9)		
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	t every semester, information on whether		
		.5 minutes) and log (appr ssessment: German or E					
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teachi	Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
Master	Master's degree (1 major) Chemistry (2013)						
	Master's degree (1 major) Chemistry (2010)						
Master	Master's degree (1 major) Chemistry (2014)						



Module title Abbreviation						
Material Science 1 (basic introduction) 08-FS1-122-m01						
Module coordinator Module offered by						
Dean o	f Studi	es Funktionswerkstoffe	(Functional Materials)	Chair of Chemical 1	Technology of Material Synthesis	
ECTS						
5	nume	rical grade				
Duratio	Duration Module level Other prerequisites					
1 seme	ster	graduate				
Conten	its					
		discusses the fundamer erties of materials.	ntal relations between	chemical bonding, t	he structure, the microstructure	
Intend	ed lear	ning outcomes				
Students have become familiar with the fundamental relations between chemical bonding, the structure, the microstructure and the properties of materials. They have developed the ability to apply them to research problems. Courses (type, number of weekly contact hours, language — if other than German)						
					labla)	
Metho	V + Ü (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)					
or 90 n each (a	a) 1 to 3 written examinations (1 written examination: approx. 90 minutes; 2 written examinations: approx. 60 or 90 minutes each; 3 written examinations: approx. 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) Language of assessment: German or English					
Allocat	ion of	places				
Additio	nal inf	ormation				
Worklo	Workload					
Teachi	Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)						

Module appears in

Bachelor' degree (1 major) Nanostructure Technology (2012)

Bachelor' degree (1 major) Functional Materials (2012)



Compulsory Electives

(5 ECTS credits)



Module title Abbreviation						
Solid s	state ch	emistry and inorganic m	aterials		08-ACM3-102-m01	
Modul	e coord	inator		Module offered by		
lecturer of seminar "Festkörperchemie and Anorganische Materialien" (Solid State Chemistry and Inorganic Materials)				Institute of Inorganic Chemistry		
ECTS	TS Method of grading Only after succ. compl. of module(s)					
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	graduate				
Conter	nts					
		provides an introduction to the name of th			structure, chemical and physical	
Intend	ed lear	ning outcomes				
Students are able to describe the structure and properties of solids. They can explain methods for solid-state synthesis. They can describe important aspects of selected materials regarding the corresponding solids.						
Course	es (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)		
S (no i	nforma	tion on SWS (weekly cont	tact hours) and cours	e language availabl	e)	
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)						
a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course. Language of assessment: German or English						
Alloca	tion of _I	places				
Additio	onal inf	ormation				
Workload						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Modul	e appea	ars in				
Master	Master's degree (1 major) Chemistry (2013)					



Module title					Abbreviation
Supran	nolecu	lar Chemistry (Basics)			08-SCM1-102-m01
Module	e coord	linator		Module offered by	
lecturer of lecture "Organischen Chemie"			ie"	Faculty of Chemistry and Pharmacy	
ECTS	Method of grading Only after suc		Only after succ. con	ompl. of module(s)	
5	numerical grade				
Duration Module level			Other prerequisites		
1 semester graduate					
Contents					
This module introduces students to the fundamental principles of supramolecular chemistry. It focuses on interactions between molecules, molecular recognition by receptors, complexes, supramolecular polymers, coordination polymers and networks, liquid crystals, self-assembly in aqueous media, synthetic ion channels and mo-					

Intended learning outcomes

dern applications of supramolecular chemistry.

Students are able to explain interactions between molecules demonstrating a high degree of expertise in the field as well as to describe the formation, structure and polymers of coordination compounds. They are able to describe the self-assembly of polymers in aqueous media as well as to identify the characteristics of synthetic ion channels. They can name modern applications of supramolecular chemistry.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

written examination (approx. 90 minutes) or oral examination of one candidate each (approx. 20 minutes) Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Chemistry (2014)

Master's degree (1 major) Functional Materials (2012)



Module title					Abbreviation
Nanoscale Materials					08-PCM3-102-m01
Module coordinator				Module offered by	
lecture	lecturer of the seminar "Nanoskalige Materialie			Institute of Physical and Theoretical Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	Duration Module level		Other prerequisites		
1 semester graduate					
Conten	Contents				

This module discusses advanced topics in nanoscale materials. It focuses on the structure, properties, fabrication, modern characterisation methods and application areas of nanoscale materials.

Intended learning outcomes

Students are able to characterise nanoscale materials. They are able to name analytical methods and application areas of nanoscale materials.

Courses (type, number of weekly contact hours, language — if other than German)

S + Ü (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)

written examination (90 minutes) or oral examination of one candidate each (20 minutes) or talk (30 minutes) Language of assessment: German or English

Allocation of places

Additional information

Workload

Teaching cycle

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

Module appears in

Bachelor' degree (1 major) Nanostructure Technology (2010)

Bachelor' degree (1 major) Nanostructure Technology (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Chemistry (2014)

Master's degree (1 major) Mathematics (2012)

Master's degree (1 major) Computational Mathematics (2012)



Module title Abbreviation					Abbreviation	
Polymers II					03-PM2-122-m01	
Module	coord	inator		Module offered by		
holder Dentist		Chair of Functional Mater	ials in Medicine and	Faculty of Medicine		
ECTS	ŕ	od of grading	Only after succ. com	ipl. of module(s)		
5		rical grade		•		
Duratio		Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
group a graphie	analysi: es, poly				meation chromatography, end- block-copolymers, polymer topo-	
		uire an advanced knowled	dge of polymer synth	esis modification ar	nd characterisation	
		number of weekly contact hours, l			ia characterisation.	
		rmation on SWS (weekly			ahle)	
module is a) writt (30 mir	en exanutes)	le for bonus)	utes) or b) oral exam		date each (20 minutes) or c) talk	
Allocat	1		15(13)1			
Additio	nal inf	ormation				
		<u></u>				
Worklo	ad					
Teachi	ng cvcl	е				
	<u> </u>					
	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in						
Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2014) Master's degree (1 major) Technology of Functional Materials (2010)						



Module title Abbre				Abbreviation		
Chemically and bio-inspired Nanotechnology for Material S				Synthesis	08-NT-122-m01	
Module coordinator				Module offered by		
holder of the Chair of Chemical Technology of Material Synthesis			ology of Material Syn-	Chair of Chemical Technology of Material Synthesis		
ECTS	Meth	od of grading	Only after succ. con	mpl. of module(s)		
5	nume	rical grade				
Duration Module level Ot		Other prerequisites				
1 semester graduate						
Conten	Contents					

This module provides an introduction to the synthesis methods of sol-gel chemistry and discusses the methods of analysis used to characterise the generated materials. It also discusses the fundamental principles of biomineralisation and uses examples to introduce students to bio-inspired material synthesis.

Intended learning outcomes

Students have developed an advanced knowledge of sol-gel chemistry and biomineralisation.

Courses (type, number of weekly contact hours, language — if other than German)

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- 08-NT-1-122: V (no information on SWS (weekly contact hours) and course language available)
- 08-NT-2-122: V (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)

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-NT-1-122: Sol-Gel Chemistry 1: Fundamentals

- 2 ECTS, Method of grading: numerical grade
- a) written examination (approx. 45 minutes) 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-NT-2-122: From Biomineralisation to biologically inspired Materials Synthesis

- 3 ECTS, Method of grading: numerical grade
- a) written examination (approx. 45 minutes) or b) oral examination of one candidate each (approx. 20

minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes) Allocation of places **Additional information** Workload **Teaching cycle Referred to in LPO I** (examination regulations for teaching-degree programmes)

Module appears in

Bachelor' degree (1 major) Nanostructure Technology (2012)

Master's with 1 major Chemistry (2013)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 75 / 293
	reg. data record Master (120 ECTS) Chemie - 2013	



Bachelor' degree (1 major) Functional Materials (2012)

Master's degree (1 major) Chemistry (2013)

Master's degree (1 major) Technology of Functional Materials (2010)

Master's degree (1 major) Technology of Functional Materials (2009)



Module title					Abbreviation
Polymer Chemistry					03-FU-PM1-122-m01
Module coordinator				Module offered by	
holder of the Chair of Functional Materials in Medicine and Dentistry			rials in Medicine and	Faculty of Medicine	
ECTS	Meth	od of grading	Only after succ. con	mpl. of module(s)	
5	nume	rical grade			
Duratio	Duration Module level		Other prerequisites		
1 semester undergraduate					
Conten	Contents				

Basic methods of polymerisation: free radical polymerisations, polyadditions, ionic polymerisations, controlled radical polymerisations; characterisation of polymers and polymer analytics: gel permeation chromatography, endgroup analysis, mass spectrometry, rheology.

Intended learning outcomes

The students are familiar with the fundamentals of polymer chemistry and the related methods for their characterisation.

Courses (type, number of weekly contact hours, language — if other than German)

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- o3-FU-PM1-1-122: V (no information on SWS (weekly contact hours) and course language available)
- 03-FU-PM1-2-122: 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)

Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

Assessment in module component 03-FU-PM1-1-122: Polymer Chemistry (Lecture)

- 3 ECTS, Method of grading: numerical grade
- a) 1 to 3 written examinations (1 written examination: approx. 90 minutes; 2 written examinations: approx. 60 or 90 minutes each; 3 written examinations: approx. 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)
- Language of assessment: German, English if agreed upon with the examiner

Assessment in module component 03-FU-PM1-2-122: Polymer Chemistry (Practical course)

- 2 ECTS, Method of grading: (not) successfully completed
- Vortestate (pre-experiment exams, approx. 15 minutes each) and logs (approx. 5 pages each)
- Assessment offered: once a year, summer semester

• Language of assessment: German, English if agreed upon with the examiner Allocation of places **Additional information** Workload **Teaching cycle Referred to in LPO I** (examination regulations for teaching-degree programmes)



Module appears in

Bachelor' degree (1 major) Functional Materials (2012) Master's degree (1 major) Chemistry (2013)



Modul	Module title Abbreviation						
Material Science 2 (the material groups)					08-FS2-122-m01		
Modul	e coord	inator		Module offered by	I.		
Dean c	f Studi	es Funktionswerkstoffe	(Functional Materials)	Chair of Chemical T	echnology of Material Synthesis		
ECTS	Metho	od of grading	Only after succ. con	ipl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ester	graduate					
Conter	nts						
This m	odule d	leals with the fabrication	and properties of the	main material grou	ps.		
Intend	ed lear	ning outcomes					
		e developed a knowledg knowledge to research p		d properties of the r	nain material groups and are able		
Course	es (type, r	number of weekly contact hours,	language — if other than Ger	man)			
V + Ü (no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)		
		sessment (type, scope, langu ble for bonus)	age — if other than German, o	examination offered — if no	ot every semester, information on whether		
or 90 n each (a	ninutes approx.		ations: approx. 60 mir	utes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)		
Allocat	tion of p	places					
Additio	onal inf	ormation					
Worklo	oad						
	_		_				
Teachi	ng cycl	e					
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in							
Bachel	Bachelor' degree (1 major) Nanostructure Technology (2012)						
Bachel	Bachelor' degree (1 major) Functional Materials (2012)						

Master's degree (1 major) Chemistry (2013)



Module	Module title Abbreviation					
Molecu	Molecular Materials 08-FMM-CT-132-mo1					
Module	e coord	inator		Module offered by		
Dean o	f Studie	es Funktionswerkstoffe (I	unctional Materials)	Chair of Chemical T	echnology of Material Synthesis	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate	ses in the respective	e classes (usually 70 ompleted) as well as	successful completion of exerci- % of exercises 10 to 15 hours regular attendance of exercises	
Conten	ts		•			
This mo	odule d	iscusses the theoretical	principles of molecul	ar and soft materials	5.	
Intende	ed learı	ning outcomes				
		e developed a knowledge e to research problems.	of the principles of r	nolecular and soft m	aterials and are able to apply	
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V + Ü (r	no infor	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	t every semester, information on whether	
prox. 9	o minu		ns: approx. 60 minut	es each) or b) oral e	ons (1 written examination: ap- xamination of one candidate . 30 minutes total)	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	ars in				
Master	Master's degree (1 major) Chemistry (2013)					



Homogeneous Catalysis



Compulsory Courses



Module	e title		Abbreviation				
Advanced organometallic chemistry and its application in homogeneous cata-					08-HKM2-102-m01		
lysis	ysis						
Modul	e coord	inator		Module offered by			
		seminar "Spezielle Meta		Institute of Inorgan	ic Chemistry		
_		wendung in der Homoger					
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ıts						
This mo	odule e	xamines elementary orga	anic compounds of tr	ansition metals with	homogeneous catalytic applica-		
Intend	ed lear	ning outcomes					
					entary organic compounds. They neous catalysis reactions.		
Course	!S (type, r	number of weekly contact hours,	language — if other than Ger	man)	·		
S (no i	nformat	tion on SWS (weekly cont	tact hours) and cours	e language available	e)		
		sessment (type, scope, langua le for bonus)	ige — if other than German, o	examination offered — if no	t every semester, information on whether		
oral ex thods of the cur	aminat of asses rent se	ion in groups (groups of :	2, 30 minutes). Shoul dinator will choose th of the course.	d there be the optio	andidate each (20 minutes) or c) n to choose between several me- d for the module component in		
Allocat	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							
	Master's degree (1 major) Chemistry (2013)						
	Mactaria dagrae (a major) Chamistry (2010)						

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



Module title					Abbreviation
Organo- and Biocatalysis					08-HKM1-102-m01
Module coordinator				Module offered by	
lecturer of the seminar "Organo- and Biokataly			nd Biokatalyse"	Institute of Organic Chemistry	
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)	
5	nume	rical grade			
Duration Module level		Other prerequisite	Other prerequisites		
1 semester graduate					
Combando					

Contents

This module provides students with deeper insights into topics in organic compounds and enzymes in catalytic processes. Organocatalysis: enantioselective implementation, principles, green chemistry, substance classes and application areas. Biocatalysis: effects of enzymes in view of different aspects, especially regarding organic synthesis.

Intended learning outcomes

Students are able to categorise organocatalysts and explain their effects and areas of application. They can describe the structure and applications of enzymes in organic synthesis. They are able to mechanistically describe and analyse the effects of enzymes.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course.

Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

--

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

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Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



	THE STATE OF THE S						
Module	Module title Abbreviation						
Practic	al cour	se Homogeneous catalys	sis in Inorganic Chem	istry	08-HKM3AC-132-m01		
Module	e coord	inator		Module offered by			
		seminar "Spezielle Meta wendung in der Homoger		Institute of Inorgan	ic Chemistry		
ECTS		od of grading	Only after succ. com	ıpl. of module(s)			
5		successfully completed					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ıts						
thods i	n homo /stallog	ogeneous catalysis. The f	ocus will be on cataly expected to conduct t	st synthesis and ch	synthesis and analytical me- aracterisation, spectral analysis independently, write a lab report		
Intend	ed lear	ning outcomes					
					eneous catalysis in the lab and to dings and deliver a presentation.		
Course	S (type, r	number of weekly contact hours,	anguage — if other than Ger	man)			
P (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	<u>e)</u>		
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether		
		with lab report (approx. ssessment: German or E		pprox. 15 minutes)			
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Additio	nal inf	ormation on module dura	ation: block placemer	it with a duration of	a minimum of 20 working days.		
Worklo	ad						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
 M = d :-1	Module appears in						
module	Module appears in						

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2014)



Module title					Abbreviation	
Practic	al cour	se Homogeneous catalys	sis in Organic Chemis	try	08-HKM3OC-132-m01	
Module	e coord	inator		Module offered by		
	_	seminar "Spezielle Meta	ıllorganische Chemie		Chemistry	
_		wendung in der Homoger	nkatalyse"			
ECTS		od of grading	Only after succ. com	pl. of module(s)		
5	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
thods i	n homo stallog	ogeneous catalysis. The f	ocus will be on cataly expected to conduct t	st synthesis and ch	synthesis and analytical me- aracterisation, spectral analysis independently, write a lab report	
Intend	ed lear	ning outcomes				
					eneous catalysis in the lab and to dings and deliver a presentation.	
Course	S (type, r	number of weekly contact hours,	anguage — if other than Ger	man)		
P (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	<u>e)</u>	
		sessment (type, scope, langua ble for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether	
		with lab report (approx. ssessment: German or E		pprox. 15 minutes)		
Allocat	ion of	places				
Additio	nal inf	ormation				
Additio	nal inf	ormation on module dura	ation: block placemer	nt with a duration of	a minimum of 20 working days.	
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	Module appears in					
11						

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2014)



Compulsory Electives



Modul	Module title Abbreviation					
	cal Dyn	amics			08-PCM2-102-m01	
Modul	e coord	inator		Module offered by		
	_	ninar "Chemische Dynam	ik" (Chemical Dyna-		l and Theoretical Chemistry	
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	graduate				
Conte	nts					
					ical kinetics and reaction dyna- cribing chemical reactions.	
Intend	ed lear	ning outcomes				
		able to discuss advanced dels for the investigation			dynamics. They can describe me-	
Course	es (type, r	number of weekly contact hours,	anguage — if other than Ge	rman)		
S + Ü (no info	rmation 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	
		nation (90 minutes) or or ssessment: German or E		e candidate each (20	o minutes) or talk (30 minutes)	
Alloca	tion of p	olaces				
Additi	onal inf	ormation				
Workle	oad					
Teaching cycle						
Referr	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Modul	Module appears in					

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2010) Master's degree (1 major) Chemistry (2014) Master's degree (1 major) Mathematics (2012)

Master's degree (1 major) Computational Mathematics (2012)



Module title					Abbreviation		
Advanc	ed trar	nsition metal chemistry			08-HKM4-102-m01		
Module	coord	inator		Module offered by			
lecture	r of the	seminar "Spezielle Über	gangsmetallchemie"	Institute of Inorgan	ic Chemistry		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
nation	chemis				of transition metals and coordi- discusses recent developments		
Intende	ed learı	ning outcomes					
		able to explain transition field. They can explain th		•	nonstrating a high degree of exchemistry.		
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	man)			
S (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	2)		
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether		
oral exa thods of the cur	aminati of asses rent se	ion in groups (groups of 2	2, 30 minutes). Shoul dinator will choose th of the course.	d there be the optio	andidate each (20 minutes) or c) n to choose between several med for the module component in		
Allocat	ion of p	olaces					
Additional information							
Workload							
							
Teaching cycle							
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						

Module appears in

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2010)



Module	e title			Abbreviation	
Polyme	er Chen	nistry			03-FU-PM1-122-m01
Module	e coord	inator		Module offered by	
	holder of the Chair of Functional Materials in Medicine an Dentistry			Faculty of Medicine	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duration Module level		Other prerequisites			
1 seme	1 semester undergraduate				
Contents					

Basic methods of polymerisation: free radical polymerisations, polyadditions, ionic polymerisations, controlled radical polymerisations; characterisation of polymers and polymer analytics: gel permeation chromatography, endgroup analysis, mass spectrometry, rheology.

Intended learning outcomes

The students are familiar with the fundamentals of polymer chemistry and the related methods for their characterisation.

Courses (type, number of weekly contact hours, language - if other than German)

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- o3-FU-PM1-1-122: V (no information on SWS (weekly contact hours) and course language available)
- 03-FU-PM1-2-122: 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)

Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

Assessment in module component 03-FU-PM1-1-122: Polymer Chemistry (Lecture)

- 3 ECTS, Method of grading: numerical grade
- a) 1 to 3 written examinations (1 written examination: approx. 90 minutes; 2 written examinations: approx. 60 or 90 minutes each; 3 written examinations: approx. 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)
- Language of assessment: German, English if agreed upon with the examiner

Assessment in module component 03-FU-PM1-2-122: Polymer Chemistry (Practical course)

- 2 ECTS, Method of grading: (not) successfully completed
- Vortestate (pre-experiment exams, approx. 15 minutes each) and logs (approx. 5 pages each)
- Assessment offered: once a year, summer semester

• Language of assessment: German, English if agreed upon with the examiner Allocation of places **Additional information** Workload **Teaching cycle Referred to in LPO I** (examination regulations for teaching-degree programmes)

Master's with 1 major Chemistry (2013)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 90 / 293
	reg. data record Master (120 ECTS) Chemie - 2013	



Module appears in

Bachelor' degree (1 major) Functional Materials (2012) Master's degree (1 major) Chemistry (2013)



Module	title				Abbreviation		
Modern	Synth	etic Methods			08-0CM-SYNT-132-m01		
Module	coord	inator		Module offered by			
lecturer	r of the	seminar		Institute of Organic	Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 semes	ster	graduate	ses in the respective	e classes (usually 70 ompleted) as well as	successful completion of exerci- % of exercises 10 to 15 hours s regular attendance of exercises		
Conten	ts						
		iscusses modern stereosemistry and catalysis.	selective synthesis m	ethods. It focuses or	n selected total syntheses, orga-		
Intende	ed learı	ning outcomes					
sis chei	mistry. s (type, n	number of weekly contact hours, l	anguage — if other than Ger	rman)	themistry and catalysis in synthe-		
S + Ü (n	o infor	mation on SWS (weekly	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	ot every semester, information on whether		
60 mini groups	utes ea (group		n of one candidate e es)		tten examinations: approx. utes) or c) oral examination in		
Allocati	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teachir	Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
	Module appears in						
Master'	Master's degree (1 major) Chemistry (2013)						



Module	Module title Abbreviation						
Comput	tationa	l Chemistry		08-TCM2-132-m01			
Module	coord	inator		Module offered by			
lecture	r of lect	ture "Computational Che	mistry"	Institute of Physica	l and Theoretical Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 semes	ster	graduate	ses in the respective	e classes (usually 70 ompleted) as well as	successful completion of exerci- % of exercises 10 to 15 hours regular attendance of exercises		
Conten	ts						
This mo	dule ir	ntroduces students to the	e fundamental princip	oles of computationa	al chemistry.		
Intende	ed learı	ning outcomes					
		able to explain the theore emistry.	etical principles of co	mputational chemist	try and to apply methods in com-		
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	rman)			
S + Ü (r	o infor	mation on SWS (weekly	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	ot every semester, information on whether		
		nation (approx. 90 minut ssessment: German or E					
Allocati	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teaching cycle							
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
	Module appears in						
Master'	Master's degree (1 major) Chemistry (2013)						



Medicinal Chemistry



Compulsory Courses



Module	title	,			Abbreviation		
Practical course medicinal chemistry					08-MCM1-102-m01		
Module	e coord	inator		Module offered by			
lecture mistry)	rs Phar	mazeutische Chemie (Ph	armaceutical Che-	Institute of Pharma	cy and Food Chemistry		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
10	(not)	successfully completed					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
Selecte	d meth	nods and topics in medic	inal chemistry (synth	esis, testing, analysi	is, theory, pharmacokinetics).		
Intende	ed lear	ning outcomes					
Studen	ts have	e developed a knowledge	of medicinal chemis	stry and are able to a	pply it to practical experiments.		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)			
P (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	2)		
wodule is Vortest of prac	creditab ate (pr tical pe	ole for bonus) e-experiment exams) and erformance, written repor	I Nachtestate (post-e t (approx. 30 to 50 pa	xperiment exams) (a	approx. 20 minutes), assessment		
Allocat		ssessment: German or E	ilgiisii				
Allocal	ן וט ווטון	Diaces					
Δdditio	nal inf	ormation					
	mat min	omation					
Worklo							
	- uu						
Teachi	ng cycl	<u> </u>					
	3 0,00						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	Module appears in						
Master Master Master	Master's degree (1 major) Chemistry (2013) Waster's degree (1 major) Chemistry (2010) Waster's degree (1 major) Chemistry (2014) Waster's degree (1 major) FOKUS Pharmacy (2012)						



Module	e title	_			Abbreviation		
Principles of drug design					08-MCM3-132-m01		
Module	e coord	inator		Module offered by			
lecture mistry)		mazeutische Chemie (Ph	armaceutical Che-	Institute of Pharma	cy and Food Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	its						
cophor QSAR. gies, b	e mode Predict ioisoste	els, docking, virtual scree	ening, simulation met	hods, de novo desig	re-based drug design, pharma- rn. Ligand-based drug design. ase examples, prodrug strate-		
	-	ter the theoretical and ex	vnorimental methods	and acports of drug	docian		
		number of weekly contact hours,		· ·	uesigii.		
		rmation on SWS (weekly			ahle)		
Metho	d of ass	sessment (type, scope, langua			ot every semester, information on whether		
presen	tation v	le for bonus) with discussion (approx. ssessment: German or E					
Allocat	ion of p	olaces					
	1						
Additio	nal inf	ormation					
Worklo	ad						
			_				
Teachi	Teaching cycle						
							
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
							
	Module appears in						
	Master's degree (1 major) Chemistry (2013)						
Master	Master's degree (1 major) Chemistry (2014)						



Module	e title				Abbreviation	
Pharmaceutical/Medicinal Chemistry					08-MCM2-132-m01	
Module	e coord	inator		Module offered by		
lecture mistry)		mazeutische Chemie (Ph	armaceutical Che-	Institute of Pharma	cy and Food Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade	-			
Duratio	on	Module level	Other prerequisites	i		
3 seme	ster	graduate	-			
Conten	its					
structu in the r drug de	re-activ nodule evelopr	vity relationships; molecu ; drug analysis; drug synt ment: discussion of speci	ılar effect mechanisn thesis; biotransforma	ns; pharmacological	gies for active agent discovery; principles of the drugs discussed tics of individual drugs; history of	
		ning outcomes				
		e developed a knowledge		·		
		number of weekly contact hours, l				
V + V +	V (no i	nformation on SWS (weel	kly contact hours) an	d course language a	vailable)	
		sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
-		ations of one candidate e Issessment: German or Er		utes each)		
Allocat	ion of	places				
Additio	nal inf	ormation				
-						
Worklo	ad					
-						
Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	Module appears in					
Master	Master's degree (1 major) Chemistry (2013)					



Supramolecular Chemistry



Compulsory Courses

(10 ECTS credits)



Module title					Abbreviation		
Supramolecular Chemistry (Basics)					08-SCM1-102-m01		
Modul	e coord	linator		Module offered by			
lecture	er of lec	ture "Organischen Che	emie"	Faculty of Chemistry and Pharmacy			
ECTS	Meth	od of grading	Only after succ. co	Only after succ. compl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisite	s			
1 seme	ester	graduate					
Contents							
			•	•	ılar chemistry. It focuses on inter pramolecular polymers, coordi-		

actions between molecules, molecular recognition by receptors, complexes, supramolecular polymers, coordination polymers and networks, liquid crystals, self-assembly in aqueous media, synthetic ion channels and modern applications of supramolecular chemistry.

Intended learning outcomes

Students are able to explain interactions between molecules demonstrating a high degree of expertise in the field as well as to describe the formation, structure and polymers of coordination compounds. They are able to describe the self-assembly of polymers in aqueous media as well as to identify the characteristics of synthetic ion channels. They can name modern applications of supramolecular chemistry.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

written examination (approx. 90 minutes) or oral examination of one candidate each (approx. 20 minutes) Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Chemistry (2014)



Module	e title				Abbreviation		
Supramolecular Chemistry (Practical Course)					08-SCM2-102-m01		
Module	e coord	inator		Module offered by			
		ture "Supramolekularen (kalische Chemie)"	Chemie (Organische	Faculty of Chemistr	y and Pharmacy		
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)			
5	(not)	successfully completed					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate	-				
Conten	its						
mistry.	They w		nost-guest complexe		ents in supramolecular che- d nanoparticles and use advan-		
Intend	ed lear	ning outcomes					
Studer	its are a				roscopic methods to analyse and hem microscopically.		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)			
P (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	2)		
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	t every semester, information on whether		
		, logs (approx. 5 pages e ssessment: German or E					
Allocat	ion of	olaces	, -				
Additio	nal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	Module appears in						
Master Master	Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2010) Master's degree (1 major) Chemistry (2014)						



Compulsory Electives

(15 ECTS credits)

No less than one of the two modules o8-SCM3 or o8-PCM5 must be completed in the focus.



Module title					Abbreviation	
Bioinorganic Chemistry					08-ACM2-102-m01	
Module	coord	inator		Module offered by	I.	
and Me	dizinis		Aspekte der Biochemie ganic Aspects of Bioche-	Institute of Inorgan	ic Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites	•		
1 seme	ster	graduate				
Conten	ts		`			
	ds of BI				chemistry (BIC). It discusses the ns of BIC in the fields of diagnosis	
Intende	ed lear	ning outcomes				
			principles of, and methoc cribe applications of BIC i		xplain the structure and effects medicine.	
Course	S (type, r	number of weekly contact h	ours, language — if other than Ge	rman)		
S (no ir	format	tion on SWS (weekly	contact hours) and cours	e language available	e)	
		sessment (type, scope, le for bonus)	language — if other than German,	examination offered — if no	ot every semester, information on whether	
a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course. Language of assessment: German or English						
Allocation of places						
Additional information						
Additio	nat inf	ormation				
Additio	nat ini	ormation				

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Modul	e title				Abbreviation
Organi	ic Funct	ional Materials			08-0CM-FM-102-m01
Module coordinator				Module offered by	
lecture	r of the	seminar "Organische F	unktionsmaterialien"	Institute of Organic Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duration Module level Other		Other prerequisites			
1 seme	1 semester graduate				
Contents					

Contents

The module deals with specific topics in organic functional materials. The focus is on fundamental (photo)physical effects in organic molecular and polymeric semiconductors as well as their application in (opto)electronic components such as field effect transistors, organic light-emitting diodes, or organic solar cells as well as in non-linear optics.

Intended learning outcomes

The students are able to explain fundamental (photo)physical processes in organic semiconductors. He/She can explain the synthesis of these semiconductor materials as well as their application in (opto)electronic components such as field effect transistors, organic light-emitting diodes or in organic photovoltaics as well as in nonlinear optics.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course.

Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Chemistry (2013)

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



Module	e title				Abbreviation	
Bioorg	anic Ch	nemistry			08-SCM3-102-m01	
Module	e coord	linator		Module offered by		
lecturer of lecture "Bioorganische Chemie" (Bioorganic Chemistry)				Institute of Organic Chemistry		
ECTS	Meth	Method of grading Only after succ. c		npl. of module(s)		
5	nume	merical grade				
Duration Module level		Module level	Other prerequisites			
1 semester		graduate				
Contents						

This module discusses topics at the interface of organic chemistry, biology and medicine. It focuses on molecular interactions and recognition, molecular diversity, active agent development, new aspects of DNA, RNA, proteins and carbohydrates.

Intended learning outcomes

Students are able to describe molecular interactions and detection mechanisms of bioorganic chemistry. They can explain the molecular diversity of biological systems. They can characterise the fabrication of agents. They can describe modern aspects of DNA, RNA, proteins and carbohydrates.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course.

Language of assessment: German or English

Allocation of places

Additional information

Workload

Teaching cycle

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

Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Module	e title		Abbreviation				
Nanos	cale Ma	iterials			08-PCM3-102-m01		
Module	e coord	inator		Module offered by			
lecture	r of the	seminar "Nanoskalige	Materialien"	Institute of Physical and Theoretical Chemistry			
ECTS	Meth	od of grading Only after succ.		mpl. of module(s)			
5	nume	erical grade					
Duration Module level		Module level	Other prerequisites				
1 semester		graduate					
Contents							

This module discusses advanced topics in nanoscale materials. It focuses on the structure, properties, fabrication, modern characterisation methods and application areas of nanoscale materials.

Intended learning outcomes

Students are able to characterise nanoscale materials. They are able to name analytical methods and application areas of nanoscale materials.

Courses (type, number of weekly contact hours, language — if other than German)

S + Ü (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)

written examination (90 minutes) or oral examination of one candidate each (20 minutes) or talk (30 minutes) Language of assessment: German or English

Allocation of places

Additional information

Workload

Teaching cycle

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

Module appears in

Bachelor' degree (1 major) Nanostructure Technology (2010)

Bachelor' degree (1 major) Nanostructure Technology (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Chemistry (2014)

Master's degree (1 major) Mathematics (2012)

Master's degree (1 major) Computational Mathematics (2012)



Module	title			Abbreviation			
Physica	al chen	nistry of supramolecular	assemblies		08-PCM5-102-m01		
Module	coord	inator		Module offered by			
lecturei kularer		seminar "Physikalische uren"	Chemie Supramole-	Institute of Physical and Theoretical Chemistry			
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duration Module level Other prerequ			Other prerequisites	equisites			
1 semester		graduate					
Conten	ts						
This module examines the basic interactions between molecules. It discusses the formation and physical-chemical properties of aggregates as well as key applications of supramolecular chemistry.							
		ning outcomes	,	<u></u>			
in the field. They can describe the formation and physical-chemical properties of aggregates. They can name modern applications of supramolecular chemistry. Courses (type, number of weekly contact hours, language — if other than German)							
		rmation on SWS (weekly			labla)		
module is written	creditab exami	le for bonus)	,		ot every semester, information on whether ch (20 minutes) and/or talk (30		
minute: Langua	•	ssessment: German or E	nglish				
Allocati	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teachir	ıg cycl	e					
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2010) Master's degree (1 major) Mathematics (2012)							

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) Computational Mathematics (2012)



Module title Abbreviation							
Compu	Computational Chemistry 08-TCM2-132-mo1						
Module	Module coordinator Module offered by						
lecture	r of lec	ture "Computational Che	mistry"	Institute of Physica	l and Theoretical Chemistry		
ECTS	Meth	od of grading	Only after succ. con	pl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	1 semester graduate Admission prerequisite to assessment: successful completion of e ses in the respective classes (usually 70% of exercises 10 to 15 h to be successfully completed) as well as regular attendance of exe (a maximum of 2 incidents of absence).			% of exercises 10 to 15 hours			
Conten	its						
This m	odule i	ntroduces students to the	e fundamental princip	oles of computation	al chemistry.		
Intend	ed lear	ning outcomes					
		able to explain the theore	etical principles of co	mputational chemis	try and to apply methods in com-		
Course	S (type, r	number of weekly contact hours,	anguage — if other than Ger	rman)			
S + Ü (ı	no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)		
		sessment (type, scope, langua ble for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether		
		nation (approx. 90 minut ssessment: German or E					
Allocat	ion of	places	,				
Additio	nal inf	ormation					
Worklo	ad						
Teaching cycle							
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in							
Master's degree (1 major) Chemistry (2013)							



Module	Module title Abbreviation					
Princip	Principles of drug design 08-MCM3-132-mo1					
Module	coord	inator		Module offered by		
lecture mistry)	rs Phar	mazeutische Chemie (Ph	armaceutical Che-	Institute of Pharma	cy and Food Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
turally cophor QSAR. gies, bi	occurri e mode Predict oisoste	ng substances. Theoreticels, docking, virtual scree ions of pharmacokinetice erism, SAR.	al methods: molecul ning, simulation met	ar modelling, structu hods, de novo desig	ITS, combinatorial chemistry, na- ire-based drug design, pharma- in. Ligand-based drug design. ase examples, prodrug strate-	
Intende	ed lear	ning outcomes				
Studen	ts mas	ter the theoretical and ex	perimental methods	and aspects of drug	design.	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)		
S + 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, o	examination offered — if no	t every semester, information on whether	
		with discussion (approx. ssessment: German or E				
Allocat	ion of p	olaces				
-						
Additio	nal inf	ormation				
Worklo	ad					
-						
Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	Module appears in					
	Master's degree (1 major) Chemistry (2013)					
Master	Master's degree (1 major) Chemistry (2014)					

Theoretical Chemistry

(25 ECTS credits)



Compulsory Courses

(10 ECTS credits)



Module	Module title Abbreviation							
Progra	Programming in Theoretical Chemistry 08-TCM3-102-m01							
Module	e coord	linator		Module offered by				
lecture mie"	r of lec	ture "Programmieren ir	Theoretischer Che-	Institute of Physica	al and Theoretical Chemistry			
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)				
5	nume	erical grade						
Duratio	on	Module level	Other prerequisites	i				
1 seme	ster	graduate						
Conten	ıts	, -						
		orovides an introductio ation areas.	n to the fundamentals	of programming in t	heoretical chemistry and discus-			
Intend	ed lear	ning outcomes						
		able to explain and use		ng languages typica	lly used in theoretical chemistry			
Course	S (type,	number of weekly contact hou	s, language — if other than Ge	rman)				
S + Ü (ı	no info	rmation on SWS (week	ly contact hours) and c	ourse language avai	lable)			
		sessment (type, scope, langular for bonus)	guage — if other than German,	examination offered — if n	ot every semester, information on whether			
		nd discussion of appro assessment: German o		ises as well as talk	(approx. 45 minutes)			
Allocat	tion of	places						
Additio	onal inf	formation						
Worklo	oad							
Teachi	ng cyc	le						
Referre	ed to in	LPO I (examination regulat	ions for teaching-degree progra	ammes)				
	Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module	Module appears in							
		ree (1 major) Chemistry	(2013)					
	Master's degree (1 major) Chemistry (2010)							
	_	ree (1 major) Chemistry						
Master	Master's degree (1 major) Mathematics (2012)							

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

Master's degree (1 major) Computational Mathematics (2012)



Module	Module title Abbreviation						
Theore	Theoretical Chemistry (Basics) 08-TCM1-132-m01						
Module	coord	inator		Module offered by	,		
lecture	r of lect	ture "Theoretische Chemi	ie"	Institute of Physica	l and Theoretical Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 semes	ster	graduate	ses in the respective	e classes (usually 70 ompleted) as well as	successful completion of exerci- % of exercises 10 to 15 hours s regular attendance of exercises		
Conten	ts						
This mo	dule ir	ntroduces students to the	e fundamental princip	oles of theoretical ch	emistry.		
Intende	ed learı	ning outcomes					
		able to describe the math amical approaches of the		al principles underly	ing the quantum chemical and		
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	rman)			
S + Ü (r	o infor	mation on SWS (weekly	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	ot every semester, information on whether		
		nation (approx. 90 minut ssessment: German or E					
Allocati	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teaching cycle							
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
<u></u>							
	Module appears in						
Master'	Master's degree (1 major) Chemistry (2013)						

Compulsory Electives

(15 ECTS credits)

Two of the three modules o8-TCAP1, o8-TCAP2 and o8-TCAP3 must be taken.



Modul	Module title Abbreviation						
Compu	Computational Chemistry 08-TCM2-132-mo1						
Modul	Module coordinator Module offered by						
lecture	r of lec	ture "Computational Che	mistry"	Institute of Physica	l and Theoretical Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ester	graduate	ses in the respective	e classes (usually 70 ompleted) as well as	successful completion of exerci- % of exercises 10 to 15 hours s regular attendance of exercises		
Conter	its						
This m	odule ii	ntroduces students to the	e fundamental princip	oles of computationa	al chemistry.		
Intend	ed lear	ning outcomes					
		able to explain the theore emistry.	etical principles of co	mputational chemist	try and to apply methods in com-		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)			
S + Ü (no info	rmation on SWS (weekly	contact hours) and co	urse language avail	able)		
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether		
		nation (approx. 90 minut ssessment: German or E					
Allocat	tion of p	olaces					
Additio	onal inf	ormation					
Worklo	ad						
Teaching cycle							
-							
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in							
Master's degree (1 major) Chemistry (2013)							



Module	Module title Abbreviation						
Princip	les of c	drug design			08-MCM3-132-m01		
Module	e coord	inator		Module offered by			
lecture mistry)		mazeutische Chemie (Ph	armaceutical Che-	Institute of Pharma	cy and Food Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	its						
cophor QSAR. gies, b	e mode Predict ioisoste	els, docking, virtual scree	ening, simulation met	hods, de novo desig	re-based drug design, pharma- rn. Ligand-based drug design. ase examples, prodrug strate-		
	-	ter the theoretical and ex	vnorimental methods	and acports of drug	docian		
		number of weekly contact hours,		· ·	uesigii.		
		rmation on SWS (weekly			ahle)		
Metho	d of ass	sessment (type, scope, langua			ot every semester, information on whether		
presen	tation v	le for bonus) with discussion (approx. ssessment: German or E					
Allocat	ion of p	olaces					
	1						
Additio	nal inf	ormation					
Worklo	ad						
			_				
Teachi	Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
	Module appears in						
	Master's degree (1 major) Chemistry (2013)						
Master	Master's degree (1 major) Chemistry (2014)						



Modul	Module title Abbreviation							
	heoretical Chemistry - Project course wave-packet dynamics 08-TCAP1-132-mo1							
Modul	e coord	inator		Module offered by				
head o	of the re	search group offering the	e module	Institute of Physica	l and Theoretical Chemistry			
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)				
5	(not)	successfully completed						
Durati	on	Module level	Other prerequisites					
1 seme	ester	graduate						
Conte	nts							
the Ins	stitute o				f the research groups based at sed in the discipline. The focus			
Intend	ed lear	ning outcomes						
		e learned some of the me ics. They are able to expl			stry and, in particular, in wave f wave packet dynamics.			
Course	es (type, r	number of weekly contact hours, I	anguage — if other than Ger	rman)				
P (no i	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	e)			
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether			
		approx. 30 minutes) ssessment: German or E	nglish					
Alloca	tion of p	olaces						
Additio	onal inf	ormation						
Additio	onal inf	ormation on module dura	ition: 4 weeks.					
Workload								
Teachi	Teaching cycle							
Referr	Referred to in LPO I (examination regulations for teaching-degree programmes)							

Master's degree (1 major) Chemistry (2013)

Master's degree (1 major) Chemistry (2014)



Module	Module title Abbreviation						
Theore	Theoretical Chemistry - Project coursewave function based methods 08-TCAP2-132-mo1						
Module	coord	inator		Module offered by			
head o	f the re	search group offering the	e module	Institute of Physica	al and Theoretical Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	(not) s	successfully completed					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
the Ins	titute o				f the research groups based at used in the discipline. The focus		
Intende	ed learı	ning outcomes					
					stry and, in particular, in wave of wave function methods.		
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	rman)			
P (no ir	format	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, o	examination offered — if n	ot every semester, information on whether		
		approx. 30 minutes) ssessment: German or E	nglish				
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Additio	nal info	ormation on module dura	ition: 4 weeks.				
Workload							
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2014)



	· · · · · · · · · · · · · · · · · ·							
	Module title Abbreviation							
Theore	Theoretical Chemistry - Project course Computational Photochemistry 08-TCAP3-132-mo1							
Modul	e coord	inator		Module offered by				
head o	f the re	search group offering the	e module	Institute of Physica	l and Theoretical Chemistry			
ECTS	Meth	od of grading	Only after succ. com	npl. of module(s)				
5	(not)	successfully completed						
Duratio	on	Module level	Other prerequisites					
1 seme	ester	graduate						
Conter	nts							
the Ins	titute o				f the research groups based at sed in the discipline. The focus			
Intend	ed lear	ning outcomes						
					stry and, in particular, in theoreti- of theoretical photochemistry.			
Course	es (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)				
P (no i	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	2)			
		sessment (type, scope, langua ele for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether			
		(approx. 30 minutes) ssessment: German or E	nglish					
Allocat	tion of	olaces						
Additio	onal inf	ormation						
Additio	nal inf	ormation on module dura	ition: 4 weeks.					
Worklo	oad							
Teaching cycle								
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)							

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2014)



Additional qualifications

(15 ECTS credits)



Additional qualifications Compulsory Electives Focuses

(5 ECTS credits)

Module from the Focuses (Schwerpunkte) area of mandatory electives that has not been used as part of a focus subject (5 ECTS credits).



Module	e title		Abbreviation		
Biochemistry Lab					08-BCP-092-m01
Module coordinator				Module offered by	
holder	of the (Chair of Biochemistry		Chair of Biochemistry	
ECTS	Metho	od of grading	Only after succ. con	ıpl. of module(s)	
5	(not)	successfully completed	o8-BC		
Duration Module level		Other prerequisites			
1 seme	1 semester undergraduate				

Contents

Practical exercises give students the opportunity to learn the fundamental principles of conducting biochemical experiments.

Intended learning outcomes

Students have become proficient in essential methods in biochemistry.

Courses (type, number of weekly contact hours, language — if other than German)

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)

pre/post-experiment examination talks (Vortestate and Nachtestate, approx. 15 minutes each), practical work (log, approx. 5 to 10 pages)

Assessment offered: once a year, summer semester

Allocation of places

Number of places: 24. Should the number of applications exceed the number of available places, places will be allocated in a standardised procedure among all applicants irrespective of their subjects according to the following quotas: Quota 1 (80% of places): grade achieved in module 08-BC; among applicants with the same grade, places will be allocated by lot. Quota 2 (20% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.

Additional information

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Workload

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Teaching cycle

--

 $\textbf{Referred to in LPO I} \ \ (\text{examination regulations for teaching-degree programmes})$

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Module appears in

Bachelor' degree (1 major) Chemistry (2010)

Bachelor' degree (1 major) Chemistry (2009)

Master's degree (1 major) Chemistry (2013)

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



numerical grade 08-PCM1a, 08-PCM1b Duration Module level Other prerequisites 1 semester graduate Contents This module discusses advanced topics in ultrafast spectroscopy and quantum control. It focuses on ultrashort laser pulses, time-resolved laser spectroscopy and coherent control. Intended learning outcomes Students are able to describe the generation of ultrashort laser pulses and to characterise them. They can explain the theory of time-resolved laser spectroscopy and name experimental methods. They can describe the principles and applications of quantum control. Courses (type, number of weekly contact hours, language – if other than German) S + Ü (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) a) written examination (90 minutes) or b) oral examination of one candidate each (20 minutes) or c) talk (30 minutes) or c) talk (30 minutes)	Module	Module title Abbreviation						
Institute of Physical and Theoretical Chemistry Quantenkontrolle" ECTS Method of grading Only after succ. compl. of module(s) 5 numerical grade 08-PCM1a, 08-PCM1b Duration Module level Other prerequisites 1 semester graduate Contents This module discusses advanced topics in ultrafast spectroscopy and quantum control. It focuses on ultrashort laser pulses, time-resolved laser spectroscopy and coherent control. Intended learning outcomes Students are able to describe the generation of ultrashort laser pulses and to characterise them. They can explain the theory of time-resolved laser spectroscopy and name experimental methods. They can describe the principles and applications of quantum control. Courses (type, number of weekly contact hours, language – if other than German) S + Ü (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) a) written examination (go minutes) or b) oral examination of one candidate each (20 minutes) or c) talk (30 minutes) Language of assessment: German or English Allocation of places Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes)	Ultrafa	st spec	troscopy and quantum-c	ontrol		08-PCM4-132-m01		
Quantemental results of grading	Module	Module coordinator Module offered by						
numerical grade 08-PCM1a, 08-PCM1b Duration Module level Other prerequisites 1 semester graduate Contents This module discusses advanced topics in ultrafast spectroscopy and quantum control. It focuses on ultrashort laser pulses, time-resolved laser spectroscopy and coherent control. Intended learning outcomes Students are able to describe the generation of ultrashort laser pulses and to characterise them. They can explain the theory of time-resolved laser spectroscopy and name experimental methods. They can describe the principles and applications of quantum control. Courses (type, number of weekly contact hours, language — if other than German) S + Ü (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) a) written examination (90 minutes) or b) oral examination of one candidate each (20 minutes) or c) talk (30 minutes) Language of assessment: German or English Allocation of places Additional information Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes)	1			oektroskopie and	Institute of Physica	l and Theoretical Chemistry		
Duration Module level graduate Contents This module discusses advanced topics in ultrafast spectroscopy and quantum control. It focuses on ultrashort laser pulses, time-resolved laser spectroscopy and coherent control. Intended learning outcomes Students are able to describe the generation of ultrashort laser pulses and to characterise them. They can explain the theory of time-resolved laser spectroscopy and name experimental methods. They can describe the principles and applications of quantum control. Courses (type, number of weekly contact hours, language – if other than German) S + Ü (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) a) written examination (90 minutes) or b) oral examination of one candidate each (20 minutes) or c) talk (30 minutes) Language of assessment: German or English Allocation of places Additional information Workload Teaching cycle Referred to in LPO 1 (examination regulations for teaching-degree programmes)	ECTS	Meth	od of grading	Only after succ. con	pl. of module(s)			
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laser pulses, time-resolved laser spectroscopy and coherent control. Intended learning outcomes Students are able to describe the generation of ultrashort laser pulses and to characterise them. They can explain the theory of time-resolved laser spectroscopy and name experimental methods. They can describe the principles and applications of quantum control. Courses (type, number of weekly contact hours, language – if other than German) S + Ü (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) a) written examination (90 minutes) or b) oral examination of one candidate each (20 minutes) or c) talk (30 minutes) Language of assessment: German or English Allocation of places	Conten	ts						
Students are able to describe the generation of ultrashort laser pulses and to characterise them. They can explain the theory of time-resolved laser spectroscopy and name experimental methods. They can describe the principles and applications of quantum control. Courses (type, number of weekly contact hours, language — if other than German) S + Ü (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) a) written examination (90 minutes) or b) oral examination of one candidate each (20 minutes) or c) talk (30 minutes) Language of assessment: German or English Allocation of places Additional information Workload Teaching cycle Referred to in LPO 1 (examination regulations for teaching-degree programmes)						control. It focuses on ultrashort		
plain the theory of time-resolved laser spectroscopy and name experimental methods. They can describe the principles and applications of quantum control. Courses (type, number of weekly contact hours, language — if other than German) S + Ü (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) a) written examination (90 minutes) or b) oral examination of one candidate each (20 minutes) or c) talk (30 minutes) Language of assessment: German or English Allocation of places Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes)	Intende	ed lear	ning outcomes					
S + Ü (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) a) written examination (90 minutes) or b) oral examination of one candidate each (20 minutes) or c) talk (30 minutes) Language of assessment: German or English Allocation of places Additional information Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes)	plain th	ne theo	ry of time-resolved laser	spectroscopy and na				
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus) a) written examination (90 minutes) or b) oral examination of one candidate each (20 minutes) or c) talk (30 minutes) Language of assessment: German or English Allocation of places Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes)	Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)			
a) written examination (90 minutes) or b) oral examination of one candidate each (20 minutes) or c) talk (30 minutes) Language of assessment: German or English Allocation of places Additional information Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes)	S + Ü (r	no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)		
nutes) Language of assessment: German or English Allocation of places Additional information Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes)				ge — if other than German, o	examination offered — if no	t every semester, information on whether		
Allocation of places Additional information Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes)	nutes)		•		of one candidate eac	ch (20 minutes) or c) talk (30 mi-		
Additional information Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes)								
Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes)								
Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes)	Additio	nal inf	ormation					
Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes)								
Referred to in LPO I (examination regulations for teaching-degree programmes)	Worklo	ad						
Referred to in LPO I (examination regulations for teaching-degree programmes)								
Referred to in LPO I (examination regulations for teaching-degree programmes)	Teaching cycle							
	Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in								
	Module	Module appears in						
Master's degree (1 major) Chemistry (2013)								



Module	e title			Abbreviation			
Bioino	rganic (Chemistry		08-ACM2-102-m01			
Module	e coord	inator		Module offered by	Į.		
lecturer of seminar "Anorganische Aspekte der Biochemie and Medizinischen Chemie" (Inorganic Aspects of Bioche- mistry and Medicinal Chemistry)				Institute of Inorgan	ic Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts		•				
	ds of BI				chemistry (BIC). It discusses the ns of BIC in the fields of diagnosis		
Intend	ed lear	ning outcomes					
		able to describe the princ us enzymes and describe			explain the structure and effects medicine.		
Course	S (type, r	number of weekly contact hours,	anguage — if other than Ger	rman)			
S (no ir	nformat	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		
oral ex thods of the cur	aminat of asse rent se	ion in groups (groups of :	2, 30 minutes). Should dinator will choose the course.	d there be the optio	candidate each (20 minutes) or c) in to choose between several med d for the module component in		
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Workload							
Teachi	ng cycl	e					

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)

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



Module title					Abbreviation	
Solid state chemistry and inorganic materials					08-ACM3-102-m01	
Modul	e coord	inator		Module offered by		
		ninar "Festkörperchemie Solid State Chemistry an	_	Institute of Inorgan	ic Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites	i		
1 seme	ester	graduate				
Conter	nts					
		provides an introduction to the name of th		-	structure, chemical and physical	
Intend	ed lear	ning outcomes				
					plain methods for solid-state the corresponding solids.	
Course	S (type, i	number of weekly contact hours,	language — if other than Ge	rman)		
S (no i	nforma	tion on SWS (weekly con	tact hours) and cours	e language available	e)	
		sessment (type, scope, langua ole for bonus)	age — if other than German,	examination offered — if no	ot every semester, information on whether	
oral ex thods of the cur	aminat of asse rrent se	ion in groups (groups of	2, 30 minutes). Shou dinator will choose th of the course.	ld there be the optio	andidate each (20 minutes) or c) n to choose between several med d for the module component in	
Allocat	tion of	places				
Additio	onal inf	ormation				
Worklo	oad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master	Master's degree (1 major) Chemistry (2013)					

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



Modul	le title		Abbreviation				
Advan lysis	ced org	anometallic chemistry	nomogeneous cata-	08-HKM2-102-m01			
Module coordinator Module offered by							
		e seminar "Spezielle Me wendung in der Homogo			ic Chemistry		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Durati	on	Module level	Other prerequisites				
1 seme	ester	graduate					
Conte	nts						
This m	odule e	examines elementary or	ganic compounds of tr	ansition metals with	homogeneous catalytic applica-		
Intend	led lear	ning outcomes					
					nentary organic compounds. They neous catalysis reactions.		
Course	es (type,	number of weekly contact hours	s, language — if other than Ge	rman)			
S (no i	nforma	tion on SWS (weekly co	ntact hours) and cours	e language available	e)		
		sessment (type, scope, lang ble for bonus)	uage — if other than German,	examination offered — if no	ot every semester, information on whether		
oral ex thods the cu	kaminat of asse rrent se	ion in groups (groups o	f 2, 30 minutes). Shou ordinator will choose the g of the course.	ld there be the optio	andidate each (20 minutes) or c) n to choose between several med for the module component in		
Alloca	tion of	places					
Additi	onal inf	ormation	,				
Workle	oad						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Modul	le appe	ars in					
Maste	Master's degree (1 major) Chemistry (2013)						
Macta	Master's dagree (4 major) Chemistry (2040)						

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



Module title					Abbreviation		
Advanced NMR- and Mass Spectrometry 08-OCM-NMRMS-102-mo					08-OCM-NMRMS-102-m01		
Module coordinator Module offered by							
lab coı	ırse su	pervisor		Institute of Organic	Chemistry		
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	ester	graduate					
Conter	nts						
sights	into the		the two measuring to	echniques and inclu	pectrometry. It offers deeper indes exercises that give students ometer.		
Intend	ed lear	ning outcomes					
		able to discuss NMR and to experiment with both			n degree of expertise in the field. spectra.		
Course	S (type, i	number of weekly contact hours,	language — if other than Ger	rman)			
P (no i	nforma	tion on SWS (weekly con	tact hours) and cours	e language availabl	e)		
		sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if n	ot every semester, information on whether		
oral ex	aminat	en examinations (60 or 90 ion in groups (groups of assessment: German or E	2, 30 minutes)	examination of one o	candidate each (20 minutes) or c)		
Allocat	tion of	places					
Additio	onal inf	ormation					
Worklo	oad						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Modul	Module appears in						
	and the same of th						

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2010)



Module	e title				Abbreviation	
Moder	Modern Aspects of Natural Product Chemistry and Biological Chemistry 08-OCM-NAT-102-mo1					
Module coordinator Module offered by						
lecture	r of the	seminar		Institute of Organic	Chemistry	
ECTS	Metho	od of grading	Only after succ. com	_	,	
5		rical grade		•		
Duratio		Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	its					
This m	odule c	liscusses advanced topic	s in natural product o	themistry and biolog	gical chemistry.	
Intend	ed lear	ning outcomes		·	<u> </u>	
Studer	its are a	able to discuss advanced	topics in natural pro	duct chemistry and	biological chemistry.	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	·	
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, e	examination offered — if no	ot every semester, information on whether	
oral ex thods of the cur	aminat of asse rent se	ion in groups (groups of a	2, 30 minutes). Shoul dinator will choose th of the course.	d there be the optio	candidate each (20 minutes) or c) in to choose between several me- id for the module component in	
Allocat	ion of p	olaces				
Chemis	stry Ma	ster's: no restrictions. Bid	ochemistry Master's:	20 places. Places w	ill be allocated by lot.	
Additio	nal inf	ormation				
Workload						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Module title				Abbreviation	
Organic Functional Materials				08-OCM-FM-102-m01	
Module coordinator Module offered by					
lecturer of the seminar "Organische Funktionsmaterialien"			he Funktionsmaterialien"	Institute of Organic Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	Duration Module level Otl		Other prerequisites	Other prerequisites	
1 semester graduate					
Contents					

Contents

The module deals with specific topics in organic functional materials. The focus is on fundamental (photo)physical effects in organic molecular and polymeric semiconductors as well as their application in (opto)electronic components such as field effect transistors, organic light-emitting diodes, or organic solar cells as well as in nonlinear optics.

Intended learning outcomes

The students are able to explain fundamental (photo)physical processes in organic semiconductors. He/She can explain the synthesis of these semiconductor materials as well as their application in (opto)electronic components such as field effect transistors, organic light-emitting diodes or in organic photovoltaics as well as in nonlinear optics.

Courses (type, number of weekly contact hours, language — if other than German)

S (no information on SWS (weekly contact hours) and course language available)

 $\textbf{Method of assessment} \ (\textbf{type}, \textbf{scope}, \textbf{language} - \textbf{if other than German, examination offered} - \textbf{if not every semester, information on whether} \ (\textbf{type}, \textbf{scope}, \textbf{language} - \textbf{if other than German, examination offered} - \textbf{if not every semester, information on whether} \ (\textbf{type}, \textbf{scope}, \textbf{language}) \ (\textbf{type}, \textbf{language}) \$ module is creditable for bonus)

a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course.

Language of assessment: German or English

Allocation of places

Additional information

Workload

Teaching cycle

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

Module appears in

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Functional Materials (2012)



Module title					Abbreviation
Organo- and Biocatalysis					08-HKM1-102-m01
Module coordinator				Module offered by	
lecture	lecturer of the seminar "Organo- and Biokatalyse"			Institute of Organic Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	Duration Module level		Other prerequisites		
1 seme	ster	graduate			

Contents

This module provides students with deeper insights into topics in organic compounds and enzymes in catalytic processes. Organocatalysis: enantioselective implementation, principles, green chemistry, substance classes and application areas. Biocatalysis: effects of enzymes in view of different aspects, especially regarding organic synthesis.

Intended learning outcomes

Students are able to categorise organocatalysts and explain their effects and areas of application. They can describe the structure and applications of enzymes in organic synthesis. They are able to mechanistically describe and analyse the effects of enzymes.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course.

Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Module title					Abbreviation
Supramolecular Chemistry (Basics)					08-SCM1-102-m01
Module coordinator				Module offered by	
lecturer of lecture "Organischen Chemie"			ie"	Faculty of Chemistry and Pharmacy	
ECTS	Meth	od of grading	Only after succ. con	mpl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semester graduate					
Contents					
This module introduces students to the fundamental principles of supramolecular chemistry. It focuses on inter-					

This module introduces students to the fundamental principles of supramolecular chemistry. It focuses on interactions between molecules, molecular recognition by receptors, complexes, supramolecular polymers, coordination polymers and networks, liquid crystals, self-assembly in aqueous media, synthetic ion channels and modern applications of supramolecular chemistry.

Intended learning outcomes

Students are able to explain interactions between molecules demonstrating a high degree of expertise in the field as well as to describe the formation, structure and polymers of coordination compounds. They are able to describe the self-assembly of polymers in aqueous media as well as to identify the characteristics of synthetic ion channels. They can name modern applications of supramolecular chemistry.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

written examination (approx. 90 minutes) or oral examination of one candidate each (approx. 20 minutes) Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Chemistry (2014)

Master's degree (1 major) Functional Materials (2012)



Module title					Abbreviation
Bioorg	anic Ch	emistry			08-SCM3-102-m01
Modul	Module coordinator			Module offered by	
	lecturer of lecture "Bioorganische Chemie" (Bioorga Chemistry)			Institute of Organic	Chemistry
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	Duration Module level		Other prerequisites		
1 seme	1 semester graduate				
Conter	Contents				

ins and carbohydrates. Intended learning outcomes

Students are able to describe molecular interactions and detection mechanisms of bioorganic chemistry. They can explain the molecular diversity of biological systems. They can characterise the fabrication of agents. They can describe modern aspects of DNA, RNA, proteins and carbohydrates.

This module discusses topics at the interface of organic chemistry, biology and medicine. It focuses on molecular interactions and recognition, molecular diversity, active agent development, new aspects of DNA, RNA, prote-

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course.

Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Module title					Abbreviation	
Chemi	cal Dyn	amics			08-PCM2-102-m01	
Modul	e coord	inator		Module offered by		
lecture mics)	er of ser	ninar "Chemische Dynam	ik" (Chemical Dyna-	Institute of Physica	al and Theoretical Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duration	on	Module level	Other prerequisites			
1 seme	ester	graduate				
Conter	nts					
					nical kinetics and reaction dyna- ceribing chemical reactions.	
Intend	ed lear	ning outcomes				
		able to discuss advanced dels for the investigation			dynamics. They can describe me	
Course	es (type, r	number of weekly contact hours,	anguage — if other than Ge	man)		
S + Ü (no info	mation on SWS (weekly	contact hours) and co	ourse language avai	lable)	
		sessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if n	ot every semester, information on whether	
		nation (90 minutes) or or ssessment: German or E		e candidate each (20	o minutes) or talk (30 minutes)	
Alloca	tion of p	olaces				
Additio	onal inf	ormation				
Worklo	oad					
	-					
Teachi	ng cycl	е				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Modul	e appea	nrs in				
Master's degree (1 major) Chemistry (2013)						
	Master's degree (1 major) Chemistry (2010)					
Maste	aster's degree (1 major) Chemistry (2014)					

Master's degree (1 major) Mathematics (2012)

Master's degree (1 major) Computational Mathematics (2012)



Modul	e title				Abbreviation	
Nanos	cale Ma	aterials			08-PCM3-102-m01	
Module coordinator				Module offered by		
lecture	lecturer of the seminar "Nanoskalige Materialien"			Institute of Physica	Institute of Physical and Theoretical Chemistry	
ECTS	Meth	od of grading	Only after succ. o	compl. of module(s)		
5	nume	rical grade				
Duratio	Duration Module level		Other prerequisi	Other prerequisites		
1 semester graduate -						
Conter	Contents					

This module discusses advanced topics in nanoscale materials. It focuses on the structure, properties, fabrication, modern characterisation methods and application areas of nanoscale materials.

Intended learning outcomes

Students are able to characterise nanoscale materials. They are able to name analytical methods and application areas of nanoscale materials.

Courses (type, number of weekly contact hours, language — if other than German)

S + Ü (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)

written examination (90 minutes) or oral examination of one candidate each (20 minutes) or talk (30 minutes) Language of assessment: German or English

Allocation of places

Additional information

Workload

Teaching cycle

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

Module appears in

Bachelor' degree (1 major) Nanostructure Technology (2010)

Bachelor' degree (1 major) Nanostructure Technology (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Chemistry (2014)

Master's degree (1 major) Mathematics (2012)

Master's degree (1 major) Computational Mathematics (2012)

Master's degree (1 major) Functional Materials (2012)



Module title					Abbreviation	
Physical chemistry of supramolecular assemblies			assemblies		08-PCM5-102-m01	
Module	coord	inator		Module offered by		
lecture kularer		seminar "Physikalische uren"	Chemie Supramole-	Institute of Physica	ll and Theoretical Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
		xamines the basic intera of aggregates as well as			he formation and physical-chemi- nistry.	
		ning outcomes		•	·	
in the f	ield. Th		nation and physical-c		trating a high degree of expertise of aggregates. They can name mo-	
Course	S (type, r	number of weekly contact hours,	language — if other than Ge	rman)		
S + Ü (r	o info	rmation on SWS (weekly	contact hours) and co	ourse language avail	lable)	
		sessment (type, scope, langua le for bonus)	age — if other than German,	examination offered — if no	ot every semester, information on whether	
minute	s)	nation (90 minutes) and, ssessment: German or E		of one candidate ead	ch (20 minutes) and/or talk (30	
Allocat						
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ng cycl	P				
	-5 cycl	-				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
(examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Chemistry (2013)						
		ee (1 major) Chemistry (2 ee (1 major) Chemistry (2				
		ee (1 major) Mathematic				
Master	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) Computational Mathematics (2012)

Master's degree (1 major) Functional Materials (2012)



Modul	Module title Abbreviation					
Clinica	ıl and A	nalytical Chemistry			08-PH-KAC-092-m01	
Modul	Module coordinator Module offered by					
		ture "Klinisch-analytische Chemistry)	e Chemie" (Clinical	Institute of Pharma	cy and Food Chemistry	
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				
Conte	nts					
This m	odule d	iscusses advanced topic	s in clinical analytica	l chemistry.		
Intend	ed lear	ning outcomes				
Studer	nts have	e developed an advanced	knowledge of molec	ular biology.		
Course	es (type, r	number of weekly contact hours, l	anguage — if other than Ge	man)		
V (no i	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,	examination offered — if no	ot every semester, information on whether	
		le for bonus)				
writter	exami	nation (120 minutes)				
Alloca	tion of p	olaces				
Additio	onal inf	ormation				
Workle	oad					
Teachi	ing cycl	e				
Referr	ed to in	LPO I (examination regulation:	s for teaching-degree progra	ımmes)		
Module appears in						
Master's degree (1 major) Biochemistry (2012)						
Master's degree (1 major) Chemistry (2013)						
	_	ee (1 major) Chemistry (2				
Maste	Master's degree (1 major) Chemistry (2014)					



Module	Module title Abbreviation					
Clinica	Clinical and Analytical Chemistry (practical course) 08-PH-KACP-092-m01					
Module	e coord	linator		Module offered by	L	
lecturer of lecture "Klinisch-analytische Chemie" (Clinical and Analytical Chemistry)			e Chemie" (Clinical	Institute of Pharmacy and Food Chemistry		
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)		
5	(not)	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
This mo		covers practical topics in	clinical chemistry and	d clinical diagnostics	s as well as the related analytical	
Intende	ed lear	ning outcomes				
Studen ments.		e developed a knowledge	e of clinical analytical	chemistry and are a	ble to apply it to practical experi-	
Course	S (type,	number of weekly contact hours, I	language — if other than Ge	rman)		
P (no ir	nforma	tion on SWS (weekly cont	tact hours) and cours	e language available	2)	
		sessment (type, scope, langua	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
examin	ation t	alks (Testate, approx. 15	minutes each), log (a	approx. 5 to 10 pages	5)	
Allocat	ion of	places				
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ng cycl	le				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Biochemistry (2012)						
Master	Master's degree (1 major) Chemistry (2013)					
	_	ree (1 major) Chemistry (2	•			
Master	Master's degree (1 major) Chemistry (2014)					



Modul	Module title Abbreviation					
Lab Co	Lab Course Materials Science 08-FMM-MP-102-m01					
Modul	Module coordinator Module offered by					
	rs spec Materi	ialisation subject Funktio	onsmaterialien (Fun-	 		
ECTS	Meth	od of grading	Only after succ. con	ipl. of module(s)		
5	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	nts					
Ten se	lected e	experiments in materials	science.			
Intend	ed lear	ning outcomes				
Studer	nts have	e developed an advanced	proficiency in the pe	erformance of experi	ments in materials science.	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
P (no ii	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	2)	
		sessment (type, scope, langua ole for bonus)	ge — if other than German, o	examination offered — if no	t every semester, information on whether	
cal per	forman	e-experiment exams) and ce, log (5 to 10 pages) essessment: German or El	•	xperiment exams) (1	5 minutes), assessment of practi-	
	tion of _I					
Additio	onal inf	ormation				
Worklo	oad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Modul	Module appears in					
	Master's degree (1 major) Chemistry (2013)					
	_	ee (1 major) Chemistry (2				
Master	Master's degree (1 major) Chemistry (2014)					



Modul	Module title Abbreviation						
Projec	Project Work 08-FMM-PA-102-m01						
Modul	e coord	inator		Module offered by			
head o	f the re	search group offering the	e module	Chair of Chemical T	echnology of Material Synthesis		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	(not)	successfully completed					
Duratio	on	Module level	Other prerequisites				
1 seme	ester	graduate					
Conter	nts						
		ives students the opport findings.	unity to explore a res	earch topic under th	e guidance of a supervisor and to		
Intend	ed lear	ning outcomes					
Studer	nts have	e developed an advanced	proficiency in the pe	erformance of experi	ments in materials science.		
Course	es (type, r	number of weekly contact hours, I	anguage — if other than Ger	rman)			
P (no i	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)		
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	t every semester, information on whether		
		.5 minutes) and log (appr ssessment: German or E					
Alloca	tion of p	olaces					
Additio	onal inf	ormation					
Worklo	oad						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
	Master's degree (1 major) Chemistry (2013)						
	Master's degree (1 major) Chemistry (2010)						
Master	Master's degree (1 major) Chemistry (2014)						



	TANK TO WE OVER THE TANK THE T						
Module title					Abbreviation		
Advanced transition metal chemistry					08-HKM4-102-m01		
Module	coord	inator		Module offered by			
lecture	r of the	seminar "Spezielle Über	gangsmetallchemie"	Institute of Inorganic Chemistry			
ECTS	Metho	od of grading	of grading Only after succ. compl. of module(s)				
5	nume	numerical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
nation	chemis				of transition metals and coordi- discusses recent developments		
Intende	ed learı	ning outcomes					
		able to explain transition field. They can explain th		•	nonstrating a high degree of exchemistry.		
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	man)			
S (no in	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	2)		
	Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)						
oral exa thods of the curr	a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course. Language of assessment: German or English						
Allocat	Allocation of places						
Additional information							
							
Workload							
Teachir	Teaching cycle						
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)			

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2010)



Module	e title	,	Abbreviation				
Practic	Practical course medicinal chemistry 08-MCM1-102-m01						
Module	e coord	inator		Module offered by			
lecture mistry)		mazeutische Chemie (Ph	armaceutical Che-	Institute of Pharma	cy and Food Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
10	(not)	successfully completed					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	its						
Selecte	ed meth	nods and topics in medic	inal chemistry (synth	esis, testing, analysi	s, theory, pharmacokinetics).		
Intend	ed lear	ning outcomes					
Studer	its have	e developed a knowledge	of medicinal chemis	try and are able to a	pply it to practical experiments.		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ge	man)			
P (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	9)		
module is	Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus) Vortestate (pre-experiment exams) and Nachtestate (post-experiment exams) (approx. 20 minutes), assessment of practical performance, written report (approx. 30 to 50 pages)						
		ssessment: German or E	nglish				
Allocat	ion of p	places					
Additio	nal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
							
Module appears in							
Master Master	Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2010) Master's degree (1 major) Chemistry (2014) Master's degree (1 major) FOKUS Pharmacy (2012)						
MUSICI	viasiei s uegiee (1 iiiajui) fukus fiiaiiiiacy (2012)						



Module	Module title Abbreviation						
Supran	Supramolecular Chemistry (Practical Course) 08-SCM2-102-m01						
Module	e coord	inator		Module offered by	I.		
lecturer of lecture "Supramolekularen Chemie (Organische Chemie/Physikalische Chemie)"				Faculty of Chemistr	Faculty of Chemistry and Pharmacy		
ECTS	CTS Method of grading Only after succ. compl. of module(s)						
5	(not)	successfully completed					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	its						
mistry.	They w		host-guest complexe		ents in supramolecular che- nd nanoparticles and use advan-		
Intende	ed learı	ning outcomes					
		able to perform syntheses hem. They are able to pro			roscopic methods to analyse and hem microscopically.		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)			
P (no ir	nformat	ion 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		
		, logs (approx. 5 pages e ssessment: German or E					
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
 Worklo	ad						
	***OIRCORU						
Teachi	Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module	Module appears in						
Master	Master's degree (1 major) Chemistry (2013)						
	Master's degree (1 major) Chemistry (2010)						
Master	Master's degree (1 major) Chemistry (2014)						



Module	o titlo				Abbreviation		
Module title Programming in Theoretical Chemistry					+		
Progra		in Theoretical Chemis	try		08-TCM3-102-m01		
Module	e coord	linator	Module offered by	1			
lecture mie"	r of lec	ture "Programmieren ir	n Theoretischer Che-	Institute of Physic	Institute of Physical and Theoretical Chemistry		
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)			
5 numerical grade							
Duratio	on	Module level	Other prerequisites	i			
1 seme	ster	graduate					
Conten	ıts	, -					
		orovides an introductio ation areas.	n to the fundamentals	of programming in t	heoretical chemistry and discus-		
Intend	ed lear	ning outcomes					
		able to explain and use		ng languages typica	ally used in theoretical chemistry		
Course	S (type,	number of weekly contact hou	rs, language — if other than Ge	rman)			
S + Ü (ı	no info	rmation on SWS (week	ly contact hours) and c	ourse language ava	ilable)		
		sessment (type, scope, langular for bonus)	guage — if other than German,	examination offered — if r	not every semester, information on whether		
		nd discussion of appro assessment: German o		ises as well as talk	(approx. 45 minutes)		
Allocat	tion of	places					
Additio	onal inf	formation					
Worklo	oad						
Teachi	Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
Master's degree (1 major) Chemistry (2013)							
	Master's degree (1 major) Chemistry (2010)						
	Master's degree (1 major) Chemistry (2014)						
Master	Master's degree (1 major) Mathematics (2012)						

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

Master's degree (1 major) Computational Mathematics (2012)



Module title					Abbreviation
Molecular Biology Lab					08-BC-MOLP-111-m01
Modul	e coord	inator		Module offered by	
holder of the Chair of Biochemistry				Chair of Biochemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
10	nume	rical grade	o8-BC (module com	ponent o8-BC-1 only)
Duration Module level		Other prerequisites			
1 semester undergraduate					

Contents

This module equips students with practical skills in the areas of recombinant engineering and characterisation of macromolecular complexes, modern biomolecular techniques, in vivo analysis of biochemical processes, and modern imaging techniques.

Intended learning outcomes

Students have developed a knowledge of molecular biology and are able to apply it to practical experiments.

Courses (type, number of weekly contact hours, language — if other than German)

Ü (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)

a) written examination (approx. 60 to 90 minutes) or b) log (approx. 20 pages) or c) oral examination of one candidate each (approx. 20 minutes) or d) oral examination in groups of up to 3 candidates (groups of 2: approx. 30 minutes, groups of 3: approx. 40 minutes) or d) presentation (approx. 30 minutes). Students will be informed about the method and length of the assessment prior to the course.

Assessment offered: once a year, winter semester Language of assessment: German or English

Allocation of places

Biochemie (Biochemistry) Bachelor's: 24 places. Chemie (Chemistry) Master's: 6 places. Selection process Biochemie (Biochemistry) Bachelor's: Should the number of applications exceed the number of available places, places will be allocated according to the following quotas: Quota 1 (two thirds of places): current average grade of successfully completed modules; among applicants with the same average grade, places will be allocated by lot. Quota 2 (one third of places) number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available. Selection process Chemie (Chemistry) Master's: Should the number of applications exceed the number of available places, places will be allocated according to the following quotas: Quota 1 (two thirds of places): grade of module o8-BC; among applicants with the same grade, places will be allocated by lot. Quota 2 (one third of places) number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.

be maintained and places re-allocated as they become available. Additional information - Workload - Teaching cycle - Referred to in LPO I (examination regulations for teaching-degree programmes) --

Module appears in

Bachelor' degree (1 major) Biochemistry (2011)

Master's with 1 major Chemistry (2013)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 145 / 293
	reg. data record Master (120 ECTS) Chemie - 2013	





	e title				Abbreviation
Polymers II					03-PM2-122-m01
Module	e coordi	inator		Module offered by	
holder of the Chair of Functional Materials in Medicine Dentistry			ials in Medicine and	Faculty of Medicine	
ECTS	Method of grading Only after succ. compl. of module(s)				
5	numei	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
group a graphie	analysis es, poly				meation chromatography, end- block-copolymers, polymer topo-
		lire an advanced knowle	dgo of polymor synth	osis modification as	ad characterication
		umber of weekly contact hours, l			iu characterisation.
					ablo)
S + Ü (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) a) written examination (approx. 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) talk (30 minutes)					
-	-	ssossmant, Garman ar F	nglich		
Langua	ge of a	ssessment: German or E	nglish		
-	ge of a		nglish		
Langua Allocat	ige of a	laces	nglish		
Langua Allocat	ige of a		nglish		
Allocat Additio	ige of a	laces	nglish		
Langua Allocat	ige of a	laces	nglish		
Langua Allocat Additio Worklo	ige of a ion of p onal info	olaces	nglish		
Allocat Additio	ige of a ion of p onal info	olaces	nglish		
Langua Allocat Additio Worklo Teachin	ige of a ion of p onal info onal onal	olaces ormation		mmes)	
Langua Allocat Additio Worklo Teachin	ige of a ion of p onal info onal onal	olaces		mmes)	
Langua Allocat Additio Worklo Teachin	ion of ponal info	places prmation Places LPO I (examination regulation		mmes)	
Additio Worklo Teachin Referre Module	ion of ponal info	places prmation Places LPO I (examination regulation	s for teaching-degree progra	mmes)	

Master's degree (1 major) Functional Materials (2012)



Module title					Abbreviation	
Chemically and bio-inspired Nanotechnology for Material Syr				Synthesis	08-NT-122-m01	
Module	e coord	inator		Module offered	by	
holder of the Chair of Chemical Technology of Material Synthesis			chnology of Material Syn-	Chair of Chemical Technology of Material Synthesis		
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)		
5	nume	rical grade				
Duration Module level Other prerequisite			Other prerequisites	•		
1 semester graduate						
Conten	Contents					

This module provides an introduction to the synthesis methods of sol-gel chemistry and discusses the methods of analysis used to characterise the generated materials. It also discusses the fundamental principles of biomineralisation and uses examples to introduce students to bio-inspired material synthesis.

Intended learning outcomes

Module appears in

Students have developed an advanced knowledge of sol-gel chemistry and biomineralisation.

Courses (type, number of weekly contact hours, language — if other than German)

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- 08-NT-1-122: V (no information on SWS (weekly contact hours) and course language available)
- 08-NT-2-122: V (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)

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-NT-1-122: Sol-Gel Chemistry 1: Fundamentals

- 2 ECTS, Method of grading: numerical grade
- a) written examination (approx. 45 minutes) 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-NT-2-122: From Biomineralisation to biologically inspired Materials Synthesis

• 3 ECTS, Method of grading: numerical grade

Bachelor' degree (1 major) Nanostructure Technology (2012)

a) written examination (approx. 45 minutes) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes)

Allocation of places **Additional information** Workload **Teaching cycle Referred to in LPO I** (examination regulations for teaching-degree programmes)

Master's with 1 major Chemistry (2013)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 148 / 293
	reg. data record Master (120 ECTS) Chemie - 2013	



Bachelor' degree (1 major) Functional Materials (2012)

Master's degree (1 major) Chemistry (2013)

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)



Module title					Abbreviation
Polymer Chemistry					03-FU-PM1-122-m01
Module	e coord	inator		Module offered by	
	holder of the Chair of Functional Materials in Medicine and Dentistry			Faculty of Medicine	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duration Module level			Other prerequisites		
1 semester undergraduate					
Conten	Contents				

Basic methods of polymerisation: free radical polymerisations, polyadditions, ionic polymerisations, controlled radical polymerisations; characterisation of polymers and polymer analytics: gel permeation chromatography, endgroup analysis, mass spectrometry, rheology.

Intended learning outcomes

The students are familiar with the fundamentals of polymer chemistry and the related methods for their characterisation.

Courses (type, number of weekly contact hours, language — if other than German)

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- o3-FU-PM1-1-122: V (no information on SWS (weekly contact hours) and course language available)
- 03-FU-PM1-2-122: 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)

Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

Assessment in module component 03-FU-PM1-1-122: Polymer Chemistry (Lecture)

- 3 ECTS, Method of grading: numerical grade
- a) 1 to 3 written examinations (1 written examination: approx. 90 minutes; 2 written examinations: approx. 60 or 90 minutes each; 3 written examinations: approx. 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)
- Language of assessment: German, English if agreed upon with the examiner

Assessment in module component 03-FU-PM1-2-122: Polymer Chemistry (Practical course)

- 2 ECTS, Method of grading: (not) successfully completed
- Vortestate (pre-experiment exams, approx. 15 minutes each) and logs (approx. 5 pages each)

Assessment offered: once a year, summer semester
Language of assessment: German, English if agreed upon with the examiner
Allocation of places
-
Additional information
Workload
Teaching cycle
Referred to in LPO I (examination regulations for teaching-degree programmes)

Master's with 1 major Chemistry (2013)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 150 / 293
	reg. data record Master (120 ECTS) Chemie - 2013	



Bachelor' degree (1 major) Functional Materials (2012) Master's degree (1 major) Chemistry (2013)



Modul	e title				Abbreviation	
Material Science 1 (basic introduction) 08-FS1-122-mg					08-FS1-122-m01	
Module coordinator				Module offered by		
Dean o	f Studi	es Funktionswerkstoff	e (Functional Materials)	Chair of Chemical 1	Technology of Material Synthesis	
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	graduate				
Conter	ıts					
		discusses the fundame erties of materials.	ental relations between	chemical bonding, t	he structure, the microstructure	
Intend	ed lear	ning outcomes				
micros blems.	tructur	e and the properties of	f materials. They have d	eveloped the ability	cal bonding, the structure, the to apply them to research pro-	
Course	S (type, i	number of weekly contact hou	rs, language — if other than Ger	rman)		
V + Ü (no info	rmation on SWS (week	ly contact hours) and co	ourse language avai	lable)	
		sessment (type, scope, lan ble for bonus)	guage — if other than German, o	examination offered — if no	ot every semester, information on whether	
or 90 n each (a	ninutes approx.	each; 3 written exami	nations: approx. 60 mir examination in groups	nutes each) or b) ora	tten examinations: approx. 60 Il examination of one candidate k. 30 minutes)	
Allocat	tion of	places				
Additio	onal inf	ormation				
Worklo	Workload					
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulat	ions for teaching-degree progra	mmes)		

Bachelor' degree (1 major) Nanostructure Technology (2012) Bachelor' degree (1 major) Functional Materials (2012)



Module	Module title Abbreviation					
Materi	al Scier	nce 2 (the material group	s)		08-FS2-122-m01	
Modul	e coord	inator		Module offered by		
Dean of Studies Funktionswerkstoffe (Functional Materia			- unctional Materials)	Chair of Chemical T	echnology of Material Synthesis	
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	graduate				
Conter	its					
This m	odule d	eals with the fabrication	and properties of the	main material grou	ps.	
Intend	ed learı	ning outcomes				
		e developed a knowledge knowledge to research pr		d properties of the n	nain material groups and are able	
Course	S (type, r	number of weekly contact hours, I	anguage — if other than Ger	man)		
V + Ü (no info	mation on SWS (weekly	contact hours) and co	urse 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	
or 90 n each (a	ninutes approx.		tions: approx. 60 min	utes each) or b) ora	ten examinations: approx. 60 l examination of one candidate . 30 minutes)	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ng cycl	<u></u> е				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Modul	e appea	nrs in				
		ree (1 major) Nanostructu	ıre Technology (2012)			
Bachel	Bachelor' degree (1 major) Functional Materials (2012)					



Module title					Abbreviation
Principles of Biochemistry					08-BC-132-m01
Module coordinator				Module offered by	
holder	holder of the Chair of Biochemistry			Chair of Biochemistry	
ECTS	Metho	Method of grading Only after succ. cor		npl. of module(s)	
6	numerical grade				
Duration Module level			Other prerequisites		
1 semester undergraduate -					
Contents					

Comprising lectures and exercises, this module acquaints students with the fundamental principles of biochemistry.

Intended learning outcomes

Students have become familiar with the fundamental principles of biochemistry. They are able to describe the key biochemical processes in cellular systems.

Courses (type, number of weekly contact hours, language — if other than German)

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- o8-BC-1-132: V + Ü (no information on SWS (weekly contact hours) and course language available)
- o8-BC-2-132: V + Ü (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)

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-BC-1-132: Principles of Biochemistry 1 Principles of Biochemistry 1

- 3 ECTS, Method of grading: numerical grade
- written examination (approx. 60 to 90 minutes)

Assessment in module component o8-BC-2-132: Principles of Biochemistry 2 Principles of Biochemistry 2

- 3 ECTS, Method of grading: numerical grade
- written examination (approx. 60 to 90 minutes)

Allocation of places

Additional information

Workload

Teaching cycle

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

Module appears in

Bachelor' degree (1 major) Biochemistry (2013)

Bachelor' degree (1 major) Physics (2010)



					T	
Module title					Abbreviation	
Advanced Inorganic Chemistry 08-ACM1-132-m01					08-ACM1-132-m01	
Module	e coord	inator		Module offered by		
Manag	ing Dir	ector of the Institute of In	organic Chemistry	Institute of Inorgan	ic Chemistry	
ECTS	Meth	od of grading	Only after succ. con	pl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
2 seme	ester	graduate				
Conten	its					
specia	l comp		elements (MGEs), bo		metal chemistry. It focuses on MGEs and MGE compounds, the	
Intend	ed lear	ning outcomes				
the che	emical				roup elements. They can describe s chemical and physical aspects	
		number of weekly contact hours, l				
S + S (1	no info	rmation on SWS (weekly o	contact hours) and co	urse language avail	able)	
		sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
90 min (group:	utes eas		n of one candidate e		ritten examinations: approx. c) oral examination in groups	
Allocat	ion of	places				
Additio	nal inf	ormation				
Workload						
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		



	Module title Abbreviation						
norganic Chemistry practical course		08-ACPM-132-m01					
morganic chemistry practical course for advanced							
lodule coordinator		Module offered by					
ocus point coordinator "Inorganic Ch	emistry"	Institute of Inorgan	ic Chemistry				
CTS Method of grading	Only after succ. con	npl. of module(s)					
(not) successfully completed							
uration Module level	Other prerequisites						
semester graduate							
ontents							
his module gives students the oppo nods in inorganic chemistry. The foc al analysis and crystallography. Stu lab report documenting their findin	us will be on working u dents will be expected	inder inert atmosphe to conduct their wo	eres, purification methods, spec-				
ntended learning outcomes							
tudents are able to use advanced sy erpret their findings. They are able to	•	_	•				
ourses (type, number of weekly contact hours	, language — if other than Ger	rman)					
(no information on SWS (weekly co	ntact hours) and cours	e language available	e)				
lethod of assessment (type, scope, lang odule is creditable for bonus)	uage — if other than German,	examination offered — if no	ot every semester, information on whether				
ractical work with lab report (approx anguage of assessment: German or		pprox. 15 minutes)					
llocation of places							
dditional information							
Additional information on module duration: block placement with a duration of a minimum of 40 working days.							
Workload							
<u>- </u>							
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							

Master's degree (1 major) Chemistry (2013)



Module	Module title Abbreviation						
Modern Synthetic Methods					08-0CM-SYNT-132-m01		
Module coordinator				Module offered by			
lecturer	r of the	seminar		Institute of Organic	Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 semes	ster	graduate	ses in the respective	e classes (usually 70 ompleted) as well as	successful completion of exerci- % of exercises 10 to 15 hours s regular attendance of exercises		
Conten	ts						
		iscusses modern stereosemistry and catalysis.	selective synthesis m	ethods. It focuses or	n selected total syntheses, orga-		
Intende	ed learı	ning outcomes					
sis chei	mistry. s (type, n	number of weekly contact hours, l	anguage — if other than Ger	rman)	themistry and catalysis in synthe-		
S + Ü (n	o infor	mation on SWS (weekly	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	ot every semester, information on whether		
60 mini groups	utes ea (group		n of one candidate e es)		tten examinations: approx. utes) or c) oral examination in		
Allocati	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teachir	ng cycl	e					
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module							
Master'	Master's degree (1 major) Chemistry (2013)						



Modul	Module title Abbreviation						
Advan	Advanced Research Project 08-OCM-AKP1-122-mo1						
Module coordinator				Module offered by	ļ.		
head o	f the re	search group offering the	e module	Institute of Organic	Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	(not)	successfully completed					
Duratio	on	Module level	Other prerequisites				
1 seme	ester	graduate					
Conter	ıts		,				
		ives students the opport f Organic Chemistry and			the research groups based at ytical methods.		
Intend	ed learı	ning outcomes					
		able to describe and use well as to describe theor		s and analytical met	hods typically used by the rese-		
Course	es (type, r	umber of weekly contact hours, l	anguage — if other than Ger	rman)			
P (no i	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)		
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether		
		5 minutes) and log (appr ssessment: German or E					
Alloca	tion of p	olaces					
Additio	onal inf	ormation					
Worklo	oad						
Teachi	ng cycl	e					
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
Modul	Module appears in						
	Master's degree (1 major) Chemistry (2013)						
Master	Master's degree (1 major) Chemistry (2014)						



Modul	Module title Abbreviation						
Computational Chemistry					08-TCM2-132-m01		
Module coordinator				Module offered by			
lecture	r of lec	ture "Computational Che	mistry"	Institute of Physica	l and Theoretical Chemistry		
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)	·		
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 semester graduate			Admission prerequisite to assessment: successful completion of exercises in the respective classes (usually 70% of exercises 10 to 15 hours to be successfully completed) as well as regular attendance of exercises (a maximum of 2 incidents of absence).				
Conten	ıts						
This m	odule ii	ntroduces students to the	e fundamental princip	oles of computation	al chemistry.		
Intend	ed lear	ning outcomes					
		able to explain the theore	etical principles of co	mputational chemis	try and to apply methods in com-		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)			
S + Ü (no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	lable)		
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether		
		nation (approx. 90 minut ssessment: German or E					
Allocat	tion of p	olaces					
	-						
Additio	onal inf	ormation					
Worklo	ad						
Teaching cycle							
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)			
Module appears in							
Master	Master's degree (1 major) Chemistry (2013)						



Modul	e title	·			Abbreviation	
Laser Spectroscopy					08-PCM1a-132-m01	
Modul	e coord	linator		Module offered by	I.	
lecturer of seminar "Laserspektroskopie" (Laser Spectros- copy) Institute of Physical and Theoretical Chemi					l and Theoretical Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites	i		
1 seme	ster	graduate	-			
Conter	nts					
		ntroduces students to the spectroscopy.	e fundamental princi	oles of laser spectro	scopy. It discusses absorption	
Intend	ed lear	ning outcomes				
		able to explain the compo ology. They are able to de			as well as the optical principles emission spectroscopy.	
Course	S (type,	number of weekly contact hours, l	anguage — if other than Ge	rman)		
S + Ü (no info	rmation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
		nation (90 minutes) or or nssessment: German or Er		ninutes)		
Allocat	tion of	places				
Additio	onal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Modul	Module appears in					
Master	Master's degree (1 major) Chemistry (2013)					
Master	Master's degree (1 major) Chemistry (2014)					



					1		
Module title					Abbreviation		
Advanced Physical Chemistry (Lab)					08-PCM1b-132-m01		
Module	coord	inator		Module offered by			
lecture copy)	r of ser	ninar "Laserspektroskopi	e" (Laser Spectros-	Institute of Physica	l and Theoretical Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	(not)	successfully completed					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
borato	ry. Afte		ıdents autonomously	conduct experimen	ds in physical chemistry in the lats in the laboratory. Students will		
Intende	ed lear	ning outcomes					
		e developed a high level of to analyse the resulting r			ethods in physical chemistry.		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)			
P (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	e)		
		sessment (type, scope, langua ble for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether		
Vortest			l Nachtestate (post-e	xperiment exams) (a	approx. 15 minutes) and log (ap-		
		ssessment: German or E	nglish				
Allocat	ion of p	places					
Additio	nal inf	ormation					
Additio	Additional information on module duration: block placement with a duration of a minimum of 20 working days.						
Worklo	Workload						
Teaching cycle							
							
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						



Module	Module title Abbreviation						
Theore	tical Ch	nemistry (Basics)		08-TCM1-132-m01			
Module	coord	inator		Module offered by	,		
lecture	r of lect	ture "Theoretische Chemi	ie"	Institute of Physica	l and Theoretical Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
Admission prerequisite to assessment: successful completion ses in the respective classes (usually 70% of exercises 10 to be successfully completed) as well as regular attendance of (a maximum of 2 incidents of absence).			% of exercises 10 to 15 hours				
Conten	ts						
This mo	dule ir	ntroduces students to the	e fundamental princip	oles of theoretical ch	emistry.		
Intende	ed learı	ning outcomes					
		able to describe the math amical approaches of the		al principles underly	ing the quantum chemical and		
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	rman)			
S + Ü (r	o infor	mation on SWS (weekly	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	ot every semester, information on whether		
		nation (approx. 90 minut ssessment: German or E					
Allocati	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teaching cycle							
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
<u></u>							
	Module appears in						
Master'	Master's degree (1 major) Chemistry (2013)						



Module	Module title Abbreviation					
Physical Chemistry (Advanced Lab) 08-PCM6-132-mo1						
Module coordinator Module offered by						
lecture	rs Phys	sikalische Chemie (Physic	al Chemistry)	Institute of Physica	l and Theoretical Chemistry	
ECTS	Meth	od of grading	Only after succ. con	ıpl. of module(s)		
5	(not)	successfully completed	08-PCM1			
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
		gives students the opport of Physical Chemistry and			f the research groups based at lytical methods.	
Intende	ed lear	ning outcomes				
					relevant physical chemistry resequestions in physical chemistry.	
Course	S (type, i	number of weekly contact hours, l	anguage — if other than Ger	man)		
P (no in	forma	tion on SWS (weekly cont	act hours) and cours	e language available	e)	
		sessment (type, scope, langua ble for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
		(approx. 20 minutes) Issessment: German or El	nglish			
Allocat	ion of	places				
Additio	nal inf	ormation				
Additio	nal inf	ormation on module dura	tion: block placemer	nt with a duration of	a minimum of 20 working days.	
Worklo	ad					
			,			
Teachir	ng cycl	e				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
Module	appea	ars in				
Master'	's degr	ee (1 major) Chemistry (2	013)			



Module title Abbreviation						
Molecu	lar Biology			08-BC-MOLM-132-m01		
Module	coordinator		Module offered by			
holder o	of the Chair of Biochemistry		Chair of Biochemist	try		
ECTS	Method of grading	Only after succ. com	pl. of module(s)			
5	numerical grade					
Duratio	n Module level	Other prerequisites				
1 semes	ster undergraduate					
Content	ts					
	sing a lecture and an exercise, to iochemistry.	this module discusse	s advanced topics ir	n molecular physiology and func-		
Intende	d learning outcomes					
Student	ts have developed a sound kno	wledge of molecular	biology.			
Courses	(type, number of weekly contact hours,	language — if other than Ger	man)			
V + Ü (n	o information on SWS (weekly	contact hours) and co	ourse language avail	able)		
		ge — if other than German, e	examination offered — if no	ot every semester, information on whether		
	creditable for bonus)					
didate 6 30 minu about th	each (approx. 20 minutes) or d)	oral examination in g inutes) or d) presenta sessment prior to the	groups of up to 3 car tion (approx. 30 mir	or c) oral examination of one candidates (groups of 2: approx. nutes). Students will be informed		
Allocati	on of places					
Addition	nal information					
Workloa	Workload					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	Module appears in					



Module title					Abbreviation
Practic	al cour	se Molecular Machine	s for advanced students	5	08-BC-VPMM-132-m01
Modul	e coord	linator		Module offered by	!
holder	of the	Chair of Biochemistry		Chair of Biochemi	stry
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
10	nume	rical grade	o8-BC, o8-BCP		
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	its				
lar biol	ogy an	d biochemistry; cloning		expression and pu	ed methods and topics in molecu rification, RNA-protein and prote mplexes.
Intend	ed lear	ning outcomes			
Studer work.	its are a	able to explore a speci	ic research topic and d	eliver an oral prese	ntation on the results of their
Course	S (type, r	number of weekly contact hour	s, language — if other than Ger	man)	
P (no ir	nforma	tion on SWS (weekly co	ntact hours) and cours	e language availab	le)
		sessment (type, scope, lang ble for bonus)	guage — if other than German,	examination offered — if r	not every semester, information on whether
	•	o pages) and talk (app	=		
		_			

Allocation of places

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Additional information

Additional information on module duration: block placement with a duration of a minimum of 40 working days.

Workload

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Teaching cycle

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$\textbf{Referred to in LPO I} \ \ (\text{examination regulations for teaching-degree programmes})$

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Module appears in



Module	title				Abbreviation		
Practic	Practical course Protein Degradation in Eukaryotes for advanced students 08-BC-VPPD-132-mo1						
Module	coord	linator	у				
holder	of the	Chair of Biochemistry		Chair of Biochem	istry		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
10	nume	rical grade	o8-BC, o8-BCP				
Duratio	n	Module level	Other prerequisites	1			
1 seme	ster	graduate					
Conten	ts						
This mo	_	gives students the oppo	rtunity to explore a res	earch topic in the	field of protein degradation in eu-		
Intende	ed lear	ning outcomes					
Studen work.	ts are	able to explore a specif	ic research topic and d	eliver an oral pres	entation on the results of their		
Course	S (type, i	number of weekly contact hour	s, language — if other than Ge	rman)			
P (no ir	nforma	tion on SWS (weekly co	ntact hours) and cours	e language availal	ole)		
		sessment (type, scope, lang ble for bonus)	uage — if other than German,	examination offered — if	not every semester, information on whether		
•	•	o pages) and talk (app assessment: German or	-				
Allocat	ion of	places					
Additio	nal inf	ormation					
Additio	nal inf	ormation on module du	ration: block placeme	nt with a duration o	of a minimum of 40 working days.		
Worklo	ad						
			·				
Teachi	ng cycl	e					
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module	appe	ars in					



Module title					Abbreviation
Practical course RNA Biochemistry for advanced students					08-BC-VPRB-132-m01
Modul	e coord	inator		Module offered by	Į.
holder of the Chair of Biochemistry			ŷ	Chair of Biochemis	try
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
10	nume	rical grade	o8-BC, o8-BCP		
Durati	on	Module level	Other prerequisites	1	
1 seme	ester	graduate			
Conte	nts		,		
on, in value on, in value on, in value on one of the one on one of the one of	vitro tra ed lear nts are a They are th the h	inslation in different ning outcomes able to explore a sp e able to familiarise	cell-free systems. ecific research topic and d	eliver an oral presen mechanisms of gene	esynthesis. Gradient centrifugati- ntation on the results of their eral and specific translation con- appropriate and understandable
Course		number of weekly contact	nours, language — if other than Ge	rman)	
			contact hours) and cours		
Metho	d of ass				ot every semester, information on whether
		o pages) and talk (a ssessment: Germar			
Alloca	tion of _I	places			
Additio	onal inf	ormation			
Additional information on module duration: block placement with a duration of a minimum of 40 working days.					

Workload

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Teaching cycle

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 $\textbf{Referred to in LPO I} \ \ (\text{examination regulations for teaching-degree programmes})$

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Module appears in



Modul	a titla				Abbreviation	
	Practical course Structural Biology for advanced students				08-BC-VPSB-132-m01	
	e coord			Module offered by		
holder	of the (Chair of Biochemistry	F	Chair of Biochemis	try	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade	o8-BC, o8-BCP			
Durati	on	Module level	Other prerequisites			
1 seme	ester	graduate				
Conte	nts					
the fur		tal principles and techni			tallisation. It teaches students sation as well as crystallographic	
Intend	ed lear	ning outcomes				
					constructs for crystallisation. Il as data collection and proces-	
Course	es (type, r	number of weekly contact hours,	anguage — if other than Ger	rman)		
P (no i	nformat	tion on SWS (weekly con	act hours) and cours	e language available	2)	
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
		o pages) and talk (appro ssessment: German or E				
Alloca	tion of p	olaces				
Additional information						
Additional information on module duration: block placement with a duration of a minimum of 40 working days.						
Workload						
Teachi	ing cycl	e				

Master's degree (1 major) Chemistry (2013)

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



Module	e title				Abbreviation		
Princip	les of c	drug design			08-MCM3-132-m01		
Module	coord	inator		Module offered by			
lecture mistry)	rs Phar	mazeutische Chemie (Ph	armaceutical Che-	Institute of Pharma	cy and Food Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
teractions, lead finding; lead optimisation. Experimental methods: bioassays, HTS, combinatorial chemistry, naturally occurring substances. Theoretical methods: molecular modelling, structure-based drug design, pharmacophore models, docking, virtual screening, simulation methods, de novo design. Ligand-based drug design. QSAR. Predictions of pharmacokinetic and toxicological components (ADME). Case examples, prodrug strategies, bioisosterism, SAR.							
Intende	ed lear	ning outcomes					
Studen	ts mas	ter the theoretical and ex	perimental methods	and aspects of drug	design.		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)			
S + Ü (r	no infor	rmation on SWS (weekly o	contact hours) and co	ourse language avail	able)		
		sessment (type, scope, langua vle for bonus)	ge — if other than German,	examination offered — if no	et every semester, information on whether		
'		with discussion (approx. ssessment: German or Ei					
Allocat	ion of p	olaces	· -				
Additio	nal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module	appea	ars in					
	_	ee (1 major) Chemistry (2	= -				
Master	Master's degree (1 major) Chemistry (2014)						



Module	Module title Abbreviation					
Molecu	lar Ma	terials			o8-FMM-CT-132-mo1	
Module	coord	inator		Module offered by	,	
Dean of	f Studi	es Funktionswerkstoffe (Functional Materials)	Chair of Chemical T	echnology of Material Synthesis	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	graduate	ses in the respective	e classes (usually 70 ompleted) as well as	successful completion of exerci- % of exercises 10 to 15 hours s regular attendance of exercises	
Conten	ts					
This mo	odule d	iscusses the theoretical	principles of molecul	ar and soft materials	5.	
Intende	ed leari	ning outcomes				
		e developed a knowledge ge to research problems.		nolecular and soft m	aterials and are able to apply	
Course	S (type, r	number of weekly contact hours,	language — if other than Ger	man)		
V + Ü (r	no infor	mation on SWS (weekly	contact hours) and co	ourse language avail	able)	
		sessment (type, scope, langua le for bonus)	age — if other than German, o	examination offered — if no	ot every semester, information on whether	
prox. 90	o minu		ons: approx. 60 minut	es each) or b) oral e	ons (1 written examination: ap- xamination of one candidate . 30 minutes total)	
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	appea	nrs in				
Master'	's degr	ee (1 major) Chemistry (2	2013)			



Madula					Abbroviction		
Module		11		! - 4	Abbreviation		
Practica	al cour	se Homogeneous catalys	sis in inorganic Chem	istry	08-HKM3AC-132-m01		
Module	coord	inator		Module offered by			
		seminar "Spezielle Meta vendung in der Homoger		Institute of Inorgan	ic Chemistry		
ECTS	Metho	od of grading	Only after succ. com	ıpl. of module(s)			
5	(not) s	successfully completed					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
thods in	n homo stallog	geneous catalysis. The f	ocus will be on cataly expected to conduct the	st synthesis and ch	synthesis and analytical me- aracterisation, spectral analysis independently, write a lab report		
Intende	ed learn	ning outcomes					
					eneous catalysis in the lab and to dings and deliver a presentation.		
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)			
P (no in	format	ion on SWS (weekly cont	act hours) and cours	e language available	2)		
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether		
		with lab report (approx. ssessment: German or E		pprox. 15 minutes)			
Allocat	ion of p	olaces					
Additio	nal info	ormation					
Additio	nal info	ormation on module dura	tion: block placemer	t with a duration of	a minimum of 20 working days.		
Worklo	ad						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module	Module appears in						



Module title					Abbreviation	
Practic	al cour	se Homogeneous catalys	sis in Organic Chemis	stry	08-HKM30C-132-m01	
Module	coord	inator		Module offered by		
		seminar "Spezielle Meta vendung in der Homoger		Institute of Organic	Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
thods i and cry	n homo stallog	geneous catalysis. The f	ocus will be on cataly expected to conduct t	st synthesis and ch	synthesis and analytical mearacterisation, spectral analysis independently, write a lab report	
Intende	ed learr	ning outcomes				
					eneous catalysis in the lab and to dings and deliver a presentation.	
Course	S (type, n	umber of weekly contact hours,	anguage — if other than Ger	rman)		
P (no ir	format	ion on SWS (weekly cont	act hours) and cours	e language available	e)	
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
		with lab report (approx. ssessment: German or E		pprox. 15 minutes)		
Allocat	ion of p	olaces				
Additio	nal info	ormation				
Additio	nal info	ormation on module dura	ation: block placemer	nt with a duration of	a minimum of 20 working days.	
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						



Modul	Module title Abbreviation					
Pharm	aceutic	al/Medicinal Chemistry			08-MCM2-132-m01	
Modul	e coord	inator		Module offered by	<u> </u>	
lecture mistry)		mazeutische Chemie (Ph	armaceutical Che-	Institute of Pharma	cy and Food Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
3 seme	ester	graduate				
Conter	nts					
structu in the i	ıre-activ module	vity relationships; molecu	ular effect mechanism thesis; biotransforma	ns; pharmacological	gies for active agent discovery; principles of the drugs discussed tics of individual drugs; history of	
Intend	ed lear	ning outcomes				
Studer	its have	e developed a knowledge	of pharmaceutical/r	nedicinal chemistry.		
Course	S (type, i	number of weekly contact hours, l	anguage — if other than Ge	rman)		
V + V +	V (no i	nformation on SWS (wee	kly contact hours) an	d course language a	vailable)	
		sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
_		ations of one candidate e ssessment: German or E		utes each)		
Allocat	tion of	places				
Additio	onal inf	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master	Master's degree (1 major) Chemistry (2013)					



			Abbreviation			
Theoretical Chemistry - Project course wave-packet dynamics 08-TCAP1-132-mo1						
		Module offered by	Į.			
group offering the	module	Institute of Physica	l and Theoretical Chemistry			
rading	Only after succ. com	ipl. of module(s)				
sfully completed						
le level	Other prerequisites					
ate						
ıtcomes						
f weekly contact hours, l	anguage — if other than Ger	man)				
SWS (weekly cont	act hours) and cours	e language available	e)			
ent (type, scope, langua nus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether			
k. 30 minutes) nent: German or Er	nglish					
on						
on on module dura	tion: 4 weeks.					
Workload						
						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
-						
	rading sfully completed le level ate udents the opport retical Chemistry a ret dynamics. utcomes ed some of the me ey are able to expl fweekly contact hours, I SWS (weekly cont ent (type, scope, langua nus) x. 30 minutes) nent: German or Er	le level Other prerequisites ate udents the opportunity to get involved retical Chemistry and learn some of the ret dynamics. utcomes ed some of the methods typically used ey are able to explain issues that are ref weekly contact hours, language — if other than Gersent (type, scope, language — if other than German, on the contact hours) c. 30 minutes) nent: German or English on on on module duration: 4 weeks.	group offering the module rading Only after succ. compl. of module(s) sfully completed le level Other prerequisites ate udents the opportunity to get involved in the work of one of retical Chemistry and learn some of the methods typically used to detect dynamics. utcomes ed some of the methods typically used in theoretical chemicely are able to explain issues that are relevant to the field off weekly contact hours, language — if other than German) SWS (weekly contact hours) and course language available (ent (type, scope, language — if other than German, examination offered — if no nus) a. 30 minutes) ment: German or English on on on module duration: 4 weeks.			



Modul	e title			Abbreviation		
Theore	Theoretical Chemistry - Project coursewave function based methods 08-TCAP2-132-mo1					
Modul	e coord	inator		Module offered by	•	
head o	of the re	search group offering the	e module	Institute of Physica	l and Theoretical Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	graduate				
Conter	nts					
the Ins	stitute o				f the research groups based at used in the discipline. The focus	
Intend	ed lear	ning outcomes				
					stry and, in particular, in wave of wave function methods.	
Course	es (type, r	number of weekly contact hours,	anguage — if other than Ger	rman)		
P (no i	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	
		(approx. 30 minutes) ssessment: German or E	nglish			
Allocat	tion of	olaces				
Additio	onal inf	ormation				
Additio	onal inf	ormation on module dura	ition: 4 weeks.			
Worklo	Workload					
Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					



Module	title	Abbreviation			
Theore	tical Chemistry - Project course	e Computational Phot	ochemistry	08-TCAP3-132-m01	
Module	coordinator		Module offered by		
head of	f the research group offering th	e module	Institute of Physica	al and Theoretical Chemistry	
ECTS	Method of grading	Only after succ. con	pl. of module(s)		
5	(not) successfully completed				
Duratio	n Module level	Other prerequisites			
1 seme	ster graduate				
Conten	ts				
the Inst	odule gives students the oppor titute of Theoretical Chemistry a on theoretical photochemistry.			f the research groups based at used in the discipline. The focus	
Intende	ed learning outcomes				
				stry and, in particular, in theoreti- I of theoretical photochemistry.	
Course	S (type, number of weekly contact hours,	language — if other than Ger	man)		
P (no in	nformation on SWS (weekly con	tact hours) and cours	e language availabl	e)	
	d of assessment (type, scope, language creditable for bonus)	age — if other than German, o	examination offered — if n	ot every semester, information on whether	
	tation (approx. 30 minutes) ge of assessment: German or E	nglish			
Allocati	ion of places				
Additio	nal information				
Additio	nal information on module dur	ation: 4 weeks.			
Workload					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appears in				



Other additional qualifications

(10 ECTS credits)



Modul	e title	·	Abbreviation			
Toxico	logy an	ıd legal studies			03-TR-072-m01	
Modul	e coord	inator		Module offered by	1	
lecture	lecturer of lecture "Toxikologie und Rechtskunde"			Faculty of Medicin	Faculty of Medicine	
ECTS	Meth	od of grading	Only after succ.	compl. of module(s)		
3	nume	rical grade				
Duratio	Duration Module level		Other prerequisites			
1 seme	1 semester undergraduate					
Conten	Contents					

Basics of legal regulations for chemists (handling and transportation of hazardous materials), fundamentals of toxicology.

Intended learning outcomes

The students master the basics of legal regulations for chemists (handling and transport of hazardous substances) as well as the fundamentals of toxicology.

Courses (type, number of weekly contact hours, language — if other than German)

V + V (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)

written examination (approx. 90 minutes)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Bachelor' degree (1 major) Biochemistry (2011)

Bachelor' degree (1 major) Biochemistry (2013)

Bachelor' degree (1 major) Biochemistry (2009)

Bachelor' degree (1 major) Chemistry (2007)

Bachelor' degree (1 major) Chemistry (2008)

Bachelor' degree (1 major) Chemistry (2010)

Bachelor' degree (1 major) Chemistry (2009)

Bachelor' degree (1 major) Food Chemistry (2009)

Bachelor' degree (1 major) FOKUS Chemistry (2011)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Chemistry (2014)

First state examination for the teaching degree Grundschule Chemistry (2009)

First state examination for the teaching degree Hauptschule Chemistry (2009)

First state examination for the teaching degree Realschule Chemistry (2009)

First state examination for the teaching degree Gymnasium Chemistry (2009)



First state examination for the teaching degree Mittelschule Chemistry (2013)



Module	Module title Abbreviation					
Tutorin	g 1 (pr	actical course)			08-WRM1-132-m01	
Module	coord	inator		Module offered by		
Dean o	f Studi	es Chemie (Chemistry)		Faculty of Chemistr	y and Pharmacy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	(not)	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate	module is not permi		arch assistant contract for this ust accompany a different course M2.	
Conten	ts					
		ives students the opport I Pharmacy and learn how			lecture offered by the Faculty of an appropriate manner.	
Intende	ed lear	ning outcomes				
Studen needs.	ts are a	able to teach students in	earlier stages of thei	r degrees and tailor t	their teaching to those students'	
Course	S (type, r	number of weekly contact hours, I	anguage — if other than Ger	rman)		
Ü (no ir	nforma	tion on SWS (weekly con	tact 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	
		f materials for demonstra ssessment: German or E		approx. 120 hours to	otal)	
Allocat	ion of _l	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
						
	Module appears in					
Master's degree (1 major) Chemistry (2013)						
Master's degree (1 major) Chemistry (2014)						



Module	Module title Abbreviation						
Tutorin	g 2 (pr	actical course)		08-WRM2-132-m01			
Module	coord	inator		Module offered by	l.		
Dean o	f Studi	es Chemie (Chemistry)		Faculty of Chemistr	y and Pharmacy		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	(not)	successfully completed					
Duratio	n	Module level	Other prerequisites	i			
1 seme	ster	graduate	module is not permi		arch assistant contract for this ust accompany a different course M1.		
Conten	ts						
		ives students the opport I Pharmacy and learn how			lecture offered by the Faculty of an appropriate manner.		
Intende	ed lear	ning outcomes					
Studen needs.	ts are a	able to teach students in	earlier stages of thei	r degrees and tailor	their teaching to those students'		
Course	S (type, r	number of weekly contact hours,	anguage — if other than Ger	rman)			
Ü (no ir	nforma	tion on SWS (weekly con	tact 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		
		f materials for demonstra ssessment: German or E		approx. 120 hours to	otal)		
Allocat	ion of _l	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teachi	Teaching cycle						
-							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
							
	Module appears in						
	Master's degree (1 major) Chemistry (2013)						
Master	Master's degree (1 major) Chemistry (2014)						



	OKEBO		5 (23) 8	83 9 - 19 Ma	aster's with 1 major, 120 ECTS credits		
Modul	e title			Abbreviation			
Foreig	Foreign Studies (short)				08-APM1-132-m01		
Modul	e coord	inator		Module offered b	y		
Erasmı	us prog	ramme coordinator Chen	nie (Chemistry)	Faculty of Chemis	stry and Pharmacy		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
5	(not)	successfully completed					
Duratio	on	Module level	Other prerequisites	;			
1 seme	ester	graduate	(a maximum of 2 inc	cidents of absence	t: regular attendance of placement); consultation with course adviso- commended; not to be combined		
Conter	nts		•				
change course compe	e progra offered etent co	ammes such as Erasmus	etc. The contents of t	he course should o	ete this course in the context of ex- correspond to the contents of a lab TS credits); please consult with the		
		familiar with procedures I subject-specific skills a			ountries other than Germany. They ills.		
Course	es (type, i	number of weekly contact hours,	language — if other than Ge	rman)			
P (no i	nforma	tion on SWS (weekly con	tact hours) and cours	e language availab	ole)		
		sessment (type, scope, langua ole for bonus)	age — if other than German,	examination offered — if	not every semester, information on whether		
		es); proof of having comp essessment: German or E		ne respective place	ement country where required		
Alloca	tion of	olaces					
Additio	Additional information						
Additio	Additional information on module duration: block placement abroad with a duration of a minimum of 20 working days.						
Worklo	Workload						
							
Teachi	Teaching cycle						
I							

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

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Module appears in

Master's degree (1 major) Chemistry (2013)

Master's degree (1 major) Chemistry (2014)



WURZBURG Master's with 1 major, 120 ECTS credits							
Module title	Module title Abbreviation						
Foreign Studies (long)				08-APM2-132-m01			
Module coordinator			Module offered by				
Erasmus programme coordir	nator Chem	nie (Chemistry)	Faculty of Chemist	ry and Pharmacy			
ECTS Method of grading		Only after succ. con	npl. of module(s)				
10 (not) successfully co	mpleted						
Duration Module level		Other prerequisites					
2 semester graduate		(a maximum of 2 inc	cidents of absence)	regular attendance of placement; consultation with course adviso- ommended; not to be combined			
Contents							
change programmes such as	Erasmus t of the Ma vance.	etc. The contents of t	he course should co	te this course in the context of ex- correspond to the contents of a lab S credits); please consult with the			
Students are familiar with pr have acquired subject-speci				untries other than Germany. They lls.			
Courses (type, number of weekly co	ontact hours, l	anguage — if other than Ge	rman)				
P (no information on SWS (w	eekly cont	act hours) and cours	e language availabl	e)			
Method of assessment (type, module is creditable for bonus)	scope, langua	ge — if other than German,	examination offered — if r	not every semester, information on whether			
report (2 pages); proof of ha Language of assessment: Ge			ne respective placer	ment country where required			
Allocation of places							
l							
Additional information							
Additional information on module duration: block placement abroad with a duration of a minimum of 40 working days.							
Workload							

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2014)



Module title					Abbreviation	
Chemistry-related courses outside of the Natural Sciences					08-CHPM1-132-m01	
Modul	e coord	inator		Module offered by		
Dean o	f Studi	es Chemie (Chemistry)		Faculty of Chemisti	ry and Pharmacy	
ECTS	Meth	od of grading	Only after succ. con	ıpl. of module(s)		
5	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate	Please consult with	course advisory ser	vice.	
Conter	its		•			
other F	acultie		cluded in the acaden		elated courses that are offered by neir programmes. Students MUST	
Intend	ed lear	ning outcomes				
Studer	its have	e developed the knowled	ge and skills taught i	n the courses attend	ded by them.	
Course	S (type, ı	number of weekly contact hours,	anguage — if other than Ger	man)		
V (no i	nforma	tion on SWS (weekly cont	act hours) and cours	e language availabl	e)	
		sessment (type, scope, langua ble for bonus)	ge — if other than German, o	examination offered — if n	ot every semester, information on whether	
candid cessfu	ate ead l compl		r c) oral examination ecturer		or b) oral examination of one f 2, approx. 30 minutes) or suc-	
Allocat	ion of	places				
Additio	nal inf	ormation				
Workload						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						

Module appears in

Master's degree (1 major) Chemistry (2013)



Module title Abbreviation					Abbreviation
Chemistry-related courses within the Natural Sciences 08-CHPM2-132-m01					o8-CHPM2-132-m01
Module	e coord	inator		Module offered by	•
Dean o	f Studi	es Chemie (Chemistry)		Faculty of Chemistr	y and Pharmacy
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)	
5	(not)	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate	Please consult with	course advisory sen	vice.
Conten	its		,		
other F	acultie		cluded in the acaden		elated courses that are offered by leir programmes. Students MUST
Intend	ed learı	ning outcomes			
Studer	its have	e developed the knowled	ge and skills taught i	n the courses attend	led by them.
Course	S (type, r	number of weekly contact hours, I	anguage — if other than Ger	man)	
V (no ii	nformat	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, o	examination offered — if no	ot every semester, information on whether
assess candid cessful	ment: a ate eac l compl	a) 1 to 3 written examinat	r c) oral examination ecturer		or b) oral examination of one f 2, approx. 30 minutes) or suc-
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
	_		,		
Workload					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					

Module appears in

Master's degree (1 major) Chemistry (2013)



Compulsory Courses (double degree)

(5 ECTS credits)



Module title					Abbreviation	
Toxico	logy an	d legal studies			03-TR-072-m01	
Module	e coord	inator		Module offered by		
lecture	lecturer of lecture "Toxikologie und Rechtskunde"			Faculty of Medicine		
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)		
3	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	1 semester undergraduate					
Conten	Contents					

Basics of legal regulations for chemists (handling and transportation of hazardous materials), fundamentals of toxicology.

Intended learning outcomes

The students master the basics of legal regulations for chemists (handling and transport of hazardous substances) as well as the fundamentals of toxicology.

Courses (type, number of weekly contact hours, language — if other than German)

V + V (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)

written examination (approx. 90 minutes)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Bachelor' degree (1 major) Biochemistry (2011)

Bachelor' degree (1 major) Biochemistry (2013)

Bachelor' degree (1 major) Biochemistry (2009)

Bachelor' degree (1 major) Chemistry (2007)

Bachelor' degree (1 major) Chemistry (2008)

Bachelor' degree (1 major) Chemistry (2010)

Bachelor' degree (1 major) Chemistry (2009)

Bachelor' degree (1 major) Food Chemistry (2009)

Bachelor' degree (1 major) FOKUS Chemistry (2011)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Chemistry (2014)

First state examination for the teaching degree Grundschule Chemistry (2009)

First state examination for the teaching degree Hauptschule Chemistry (2009)

First state examination for the teaching degree Realschule Chemistry (2009)

First state examination for the teaching degree Gymnasium Chemistry (2009)



First state examination for the teaching degree Mittelschule Chemistry (2013)



Module	Module title Abbreviation					
Advanc	Advanced chemical practical course 08-VPM-DA-132-mo1					
Module	coord	inator		Module offered by		
head of	f the re	search group offering the	e module	Faculty of Chemistr	y and Pharmacy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
2	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
		ives students the opport ne in question.	unity to explore a res	earch topic and app	ly the methods commonly used	
Intende	ed learr	ning outcomes				
Studen oral pre			research topic and p	resent the results of	their work in a written report or	
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
P (no in	format	ion on SWS (weekly cont	act hours) and cours	e language available	<u>e)</u>	
		eessment (type, scope, langua le for bonus)	ge $-$ if other than German, ϵ	examination offered — if no	ot every semester, information on whether	
		(approx. 3 pages) ssessment: German, Eng	lish			
Allocat	ion of p	laces				
Additio	nal info	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in						
	Master's degree (1 major) Chemistry (2013)					
Master	Master's degree (1 major) Chemistry (2014)					



Compulsory Electives (double degree)

(55 ECTS credits)

Students must choose two focuses (focus 1 with 30 ECTS credits, focus 2 with 25 ECTS credits).



Inorganic Chemistry

(ECTS credits)



Compulsory Courses

(20 ECTS credits)



					A	
Module title Advanced Inorganic Chemistry					Abbreviation	
Advano	ed Ino	rganic Chemistry			08-ACM1-132-m01	
Module	e coord	inator		Module offered by		
Manag	ing Dire	ector of the Institute of In	organic Chemistry	Institute of Inorgan	ic Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
2 seme	ester	graduate				
Conten	ts					
specia	l compo		elements (MGEs), bo		metal chemistry. It focuses on MGEs and MGE compounds, the	
Intend	ed learı	ning outcomes				
the che	emical p				roup elements. They can describe s chemical and physical aspects	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)		
S + S (1	no infor	mation on SWS (weekly o	contact hours) and co	urse language avail	able)	
		sessment (type, scope, langua vle for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
90 min (group:	utes eas		n of one candidate e		itten examinations: approx. c) oral examination in groups	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Workload						
Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					

Module appears in

Master's degree (1 major) Chemistry (2013)



Module	Module title				Abbreviation	
Inorga	nic Che	mistry practical course f	or advanced		08-ACPM-132-m01	
Module	e coord	inator		Module offered by	I.	
focus p	oint co	ordinator "Inorganic Che	mistry"	Institute of Inorgan	ic Chemistry	
ECTS	Metho	od of grading	Only after succ. compl. of module(s)			
10	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	its					
This module gives students the opportunity to enhance their skills in advanced synthesis and analytical methods in inorganic chemistry. The focus will be on working under inert atmospheres, purification methods, spectral analysis and crystallography. Students will be expected to conduct their work in the lab independently, write a lab report documenting their findings and deliver a presentation.						

Intended learning outcomes

Students are able to use advanced synthesis and analytical methods in inorganic chemistry in the lab and to interpret their findings. They are able to write a lab report documenting their findings and deliver a presentation.

Courses (type, number of weekly contact hours, language - if other than German)

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)

practical work with lab report (approx. 20 pages) and talk (approx. 15 minutes) Language of assessment: German or English

Allocation of places

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Additional information

Additional information on module duration: block placement with a duration of a minimum of 40 working days.

Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Chemistry (2013)

Master's degree (1 major) Chemistry (2014)



Compulsory Electives

(ECTS credits)



Module title Abbreviation							
Bioinorganic Chemistry					08-ACM2-102-m01		
Module coordinator Module offered by							
lecturer of seminar "Anorganische Aspekte der Biochemie and Medizinischen Chemie" (Inorganic Aspects of Bioche- mistry and Medicinal Chemistry)				Institute of Inorgan	ic Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
	ds of BI				chemistry (BIC). It discusses the ns of BIC in the fields of diagnosis		
Intende	ed lear	ning outcomes					
		able to describe the princ us enzymes and describe			xplain the structure and effects medicine.		
Course	S (type, r	number of weekly contact hours, I	language — if other than Ge	rman)			
S (no ir	nforma	tion on SWS (weekly cont	tact hours) and cours	e language available	e)		
		sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether		
oral exa thods of the cur	aminat of asse rent se	ion in groups (groups of :	2, 30 minutes). Shou dinator will choose th of the course.	ld there be the optio	candidate each (20 minutes) or c) n to choose between several med d for the module component in		
Allocat	ion of	places					
Additio	nal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in							
	Master's degree (1 major) Biochemistry (2012)						
Master	Master's degree (1 major) Chemistry (2012)						
Master	Master's degree (1 major) Chemistry (2010)						

Master's degree (1 major) FOKUS Pharmacy (2012)



Module title					Abbreviation		
Solid s	state ch	emistry and inorganic m	aterials		08-ACM3-102-m01		
Modul	e coord	inator		Module offered by	L		
		ninar "Festkörperchemie Solid State Chemistry an		Institute of Inorgan	ic Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Durati	on	Module level	Other prerequisites	i			
1 seme	ester	graduate					
Conte	nts						
		rovides an introduction t nthesis methods and sel			structure, chemical and physical		
Intend	led lear	ning outcomes					
					xplain methods for solid-state the corresponding solids.		
Course	es (type, r	number of weekly contact hours,	language — if other than Ge	rman)			
S (no i	nformat	tion on SWS (weekly con	tact hours) and cours	e language available	e)		
		sessment (type, scope, langua le for bonus)	age — if other than German,	examination offered — if no	ot every semester, information on whether		
oral ex thods the cu	caminat of asses rrent se	ion in groups (groups of	2, 30 minutes). Shou dinator will choose tl of the course.	ld there be the optio	candidate each (20 minutes) or c) n to choose between several me- d for the module component in		
Alloca	tion of p	olaces					
1							
Additi	onal inf	ormation					
Workle	oad						
-							
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Modul	Module appears in						
Maste	Master's degree (1 major) Chemistry (2013)						
AA 4 -							

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



Modul	e title		Abbreviation					
Advan	ced org	anometallic chemistry	08-HKM2-102-m01					
lysis								
Modul	e coord	linator		Module offered by				
		e seminar "Spezielle Me wendung in der Homog		Institute of Inorgan	ic Chemistry			
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)				
5	nume	rical grade						
Durati	on	Module level	Other prerequisites					
1 seme	ester	graduate						
Conte	nts							
This m	iodule e	examines elementary or	ganic compounds of tr	ansition metals with	homogeneous catalytic applica-			
Intend	led lear	ning outcomes						
					nentary organic compounds. They neous catalysis reactions.			
Course	es (type, i	number of weekly contact hour	s, language — if other than Ger	rman)				
S (no i	nforma	tion on SWS (weekly co	ntact hours) and cours	e language available	e)			
		sessment (type, scope, lang ble for bonus)	ruage — if other than German,	examination offered — if no	ot every semester, information on whether			
oral ex thods the cu	caminat of asse rrent se	ion in groups (groups o	of 2, 30 minutes). Should be a solution or dinator will choose the gof the course.	d there be the optio	candidate each (20 minutes) or c) n to choose between several med d for the module component in			
	tion of							
Additio	onal inf	ormation						
	-							
Workle	oad							
								
Teaching cycle								
Referr	ed to in	LPO I (examination regulati	ons for teaching-degree progra	mmes)				
Modul	e appe	ars in						
	Master's degree (1 major) Chemistry (2013)							
	Mantale days (majer) Chamistry (and							

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



Module title					Abbreviation		
Advanced NMR- and Mass Spectrometry					08-OCM-NMRMS-102-m01		
Module coordinator Mod				Module offered by			
lab coı	ırse su	pervisor		Institute of Organic	Chemistry		
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	ester	graduate					
Conter	nts						
sights	into the		the two measuring to	echniques and inclu	pectrometry. It offers deeper indes exercises that give students ometer.		
Intend	ed lear	ning outcomes					
		able to discuss NMR and to experiment with both			n degree of expertise in the field. spectra.		
Course	S (type, i	number of weekly contact hours,	language — if other than Ger	rman)			
P (no i	nforma	tion on SWS (weekly con	tact hours) and cours	e language availabl	e)		
		sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if n	ot every semester, information on whether		
oral ex	aminat	en examinations (60 or 90 ion in groups (groups of assessment: German or E	2, 30 minutes)	examination of one o	candidate each (20 minutes) or c)		
Allocat	tion of	places					
Additio	onal inf	ormation					
Worklo	oad						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Modul	Module appears in						

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2010)



Modul	Module title Abbreviation					
Compu	ıtationa	l Chemistry			08-TCM2-132-m01	
Module coordinator				Module offered by		
lecture	r of lec	ture "Computational Che	mistry"	Institute of Physica	l and Theoretical Chemistry	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)	·	
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	graduate	Admission prerequisite to assessment: successful completion of exercises in the respective classes (usually 70% of exercises 10 to 15 hours to be successfully completed) as well as regular attendance of exercises (a maximum of 2 incidents of absence).			
Conten	ıts					
This m	odule ii	ntroduces students to the	e fundamental princip	oles of computation	al chemistry.	
Intend	ed lear	ning outcomes				
		able to explain the theore	etical principles of co	mputational chemis	try and to apply methods in com-	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)		
S + Ü (no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	lable)	
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
		nation (approx. 90 minut ssessment: German or E				
Allocat	tion of p	olaces				
	-					
Additio	onal inf	ormation				
Worklo	ad					
Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in						
Master's degree (1 major) Chemistry (2013)						



Organic Chemistry

(ECTS credits)



Compulsory Courses

(15 ECTS credits)



Module title Abbreviation					Abbreviation		
Advanced NMR- and Mass Spectrometry 08-OCM-NMRMS-103					08-OCM-NMRMS-102-m01		
Module coordinator Module of					<u> </u>		
lab cou	ırse su	pervisor		Institute of Organic	Chemistry		
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	graduate					
Conter	nts						
sights the op	into the portuni		the two measuring to	echniques and inclu	des exercises that give students meter.		
Studer	nts are a				n degree of expertise in the field. spectra.		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)			
P (no i	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	e)		
		sessment (type, scope, langua ole for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether		
oral ex	aminat	n examinations (60 or 90 ion in groups (groups of 2 ssessment: German or E	2, 30 minutes)	examination of one o	candidate each (20 minutes) or c)		
	tion of p						
Additio	onal inf	ormation					
Worklo	ad						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Modul	e appea	ars in					

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2010)



Module title Abbreviation						
Modern	n Synth	etic Methods			08-OCM-SYNT-132-m01	
Module coordinator				Module offered by		
lecture	r of the	seminar		Institute of Organic	Chemistry	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
5	numei	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme:	ster	graduate	Admission prerequisite to assessment: successful completion of exercises in the respective classes (usually 70% of exercises 10 to 15 hours to be successfully completed) as well as regular attendance of exercises (a maximum of 2 incidents of absence).			
Conten	ts					
		iscusses modern stereos emistry and catalysis.	selective synthesis m	ethods. It focuses or	n selected total syntheses, orga-	
Intende	ed learr	ning outcomes				
sis che	mistry.	umber of weekly contact hours, l			hemistry and catalysis in synthe-	
S + Ü (r	no infor	mation on SWS (weekly	contact hours) and co	urse language avail	able)	
		essment (type, scope, langualle for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
60 min groups	utes ea (group		on of one candidate e es)		tten examinations: approx. utes) or c) oral examination in	
Allocat	ion of p	olaces				
Additio	nal info	ormation				
Workload						
						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in Mactaria dagge (4 major) Chamistry (2042)						
waster'	Master's degree (1 major) Chemistry (2013)					



Modul	Module title Abbreviation					
Advan	Advanced Research Project 08-0CM-AKP1-122-m01					
Module coordinator				Module offered by	ļ.	
head o	f the re	search group offering the	e module	Institute of Organic	Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	graduate				
Conter	ıts		,			
		ives students the opport f Organic Chemistry and			the research groups based at ytical methods.	
Intend	ed learı	ning outcomes				
		able to describe and use well as to describe theor		s and analytical met	hods typically used by the rese-	
Course	es (type, r	umber of weekly contact hours, l	anguage — if other than Ger	rman)		
P (no i	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)	
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
		5 minutes) and log (appr ssessment: German or E				
Alloca	tion of p	olaces				
Additio	onal inf	ormation				
Worklo	oad					
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
	Master's degree (1 major) Chemistry (2013)					
Master	Master's degree (1 major) Chemistry (2014)					



Compulsory Electives

(ECTS credits)



Module lecturer	Aspects of Natural Productor coordinator of the seminar	A	Chemistry	08-0CM-NAT-102-m01		
lecturer	of the seminar					
			Module offered by			
ECTS		li	nstitute of Organic	Chemistry		
	Method of grading	Only after succ. comp	l. of module(s)			
5	numerical grade					
Duratio	n Module level	Other prerequisites				
1 semes	ter graduate					
Content	S					
This mo	dule discusses advanced t	opics in natural product ch	emistry and biolog	gical chemistry.		
Intende	d learning outcomes					
Student	s are able to discuss advar	ced topics in natural produ	uct chemistry and	biological chemistry.		
Courses	(type, number of weekly contact ho	urs, language — if other than Germa	an)			
S (no in	formation on SWS (weekly	contact hours) and course l	language available	2)		
	of assessment (type, scope, la creditable for bonus)	nguage — if other than German, exa	amination offered — if no	ot every semester, information on whether		
oral exa thods of the curr	mination in groups (groups	of 2, 30 minutes). Should coordinator will choose the ng of the course.	there be the optio	candidate each (20 minutes) or c) n to choose between several med d for the module component in		
	on of places	<u>_</u>				
Chemist	try Master's: no restrictions	. Biochemistry Master's: 20	o places. Places w	ill be allocated by lot.		
Additio	nal information		•	·		
Workload						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						

Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Module title					Abbreviation	
Organi	ic Funct	ional Materials			08-OCM-FM-102-m01	
Module coordinator				Module offered by		
lecture	lecturer of the seminar "Organische Funktionsmaterialien"			Institute of Organic Chemistry		
ECTS	Metho	od of grading	Only after succ. cor	npl. of module(s)		
5	nume	rical grade				
Duratio	Duration Module level		Other prerequisites	Other prerequisites		
1 semester graduate						
Conten	Contents					

The module deals with specific topics in organic functional materials. The focus is on fundamental (photo)physical effects in organic molecular and polymeric semiconductors as well as their application in (opto)electronic components such as field effect transistors, organic light-emitting diodes, or organic solar cells as well as in non-linear optics.

Intended learning outcomes

The students are able to explain fundamental (photo)physical processes in organic semiconductors. He/She can explain the synthesis of these semiconductor materials as well as their application in (opto)electronic components such as field effect transistors, organic light-emitting diodes or in organic photovoltaics as well as in nonlinear optics.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course.

Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Functional Materials (2012)



Module title					Abbreviation
Organ	o- and E	Biocatalysis			08-HKM1-102-m01
Module coordinator				Module offered by	
lecture	lecturer of the seminar "Organo- and Biokatalyse"			Institute of Organic Chemistry	
ECTS	Meth	lethod of grading Only after succ. cor		npl. of module(s)	
5	nume	rical grade			
Duratio	Duration Module level		Other prerequisites		
1 semester graduate					

Contents

This module provides students with deeper insights into topics in organic compounds and enzymes in catalytic processes. Organocatalysis: enantioselective implementation, principles, green chemistry, substance classes and application areas. Biocatalysis: effects of enzymes in view of different aspects, especially regarding organic synthesis.

Intended learning outcomes

Students are able to categorise organocatalysts and explain their effects and areas of application. They can describe the structure and applications of enzymes in organic synthesis. They are able to mechanistically describe and analyse the effects of enzymes.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course.

Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Module title					Abbreviation	
Supramolecular Chemistry (Basics)					08-SCM1-102-m01	
Module coordinator Module offered by						
lecturer of lecture "Organischen Chemie"			hemie"	Faculty of Chemist	Faculty of Chemistry and Pharmacy	
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)		
5	nume	erical grade				
Duratio	on	Module level	Other prerequisite	25		
1 semester g		graduate				
Contents						
This module introduces students to the fundamental principles of supramolecular chemistry. It focuses on inter-						

Intended learning outcomes

dern applications of supramolecular chemistry.

Students are able to explain interactions between molecules demonstrating a high degree of expertise in the field as well as to describe the formation, structure and polymers of coordination compounds. They are able to describe the self-assembly of polymers in aqueous media as well as to identify the characteristics of synthetic ion channels. They can name modern applications of supramolecular chemistry.

actions between molecules, molecular recognition by receptors, complexes, supramolecular polymers, coordination polymers and networks, liquid crystals, self-assembly in aqueous media, synthetic ion channels and mo-

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

written examination (approx. 90 minutes) or oral examination of one candidate each (approx. 20 minutes) Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Chemistry (2014)

Master's degree (1 major) Functional Materials (2012)



Modul	e title				Abbreviation	
Bioorganic Chemistry					08-SCM3-102-m01	
Modul	e coord	inator		Module offered by		
lecturer of lecture "Bioorganische Chemie" (Chemistry)			mie" (Bioorganic	Institute of Organic Chemistry		
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)		
5	nume	rical grade				
Duratio	Duration Module level		Other prerequisites			
1 semester graduate						
Conten	Contents					

This module discusses topics at the interface of organic chemistry, biology and medicine. It focuses on molecular interactions and recognition, molecular diversity, active agent development, new aspects of DNA, RNA, proteins and carbohydrates.

Intended learning outcomes

Students are able to describe molecular interactions and detection mechanisms of bioorganic chemistry. They can explain the molecular diversity of biological systems. They can characterise the fabrication of agents. They can describe modern aspects of DNA, RNA, proteins and carbohydrates.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course.

Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Module	Module title Abbreviation					
Clinica	l and A	nalytical Chemistry (prac	ctical course)		08-PH-KACP-092-m01	
Module	Module coordinator			Module offered by	L	
		ture "Klinisch-analytische l Chemistry)	e Chemie" (Clinical	Institute of Pharma	cy and Food Chemistry	
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)		
5	(not)	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
This mo		covers practical topics in	clinical chemistry and	d clinical diagnostics	s as well as the related analytical	
Intende	ed lear	ning outcomes				
Studen ments.		e developed a knowledge	e of clinical analytical	chemistry and are a	ble to apply it to practical experi-	
Course	S (type,	number of weekly contact hours, I	language — if other than Ge	rman)		
P (no ir	nforma	tion on SWS (weekly cont	tact hours) and cours	e language available	2)	
		sessment (type, scope, langua	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
examin	ation t	alks (Testate, approx. 15	minutes each), log (a	approx. 5 to 10 pages	5)	
Allocat	ion of	places				
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ng cycl	le				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	ammes)		
Module	Module appears in					
	Master's degree (1 major) Biochemistry (2012)					
Master	Master's degree (1 major) Chemistry (2013)					
	_	ree (1 major) Chemistry (2	•			
Master	Master's degree (1 major) Chemistry (2014)					



Modul	Module title Abbreviation					
Computational Chemistry 08-TCM2-132-mo1					08-TCM2-132-m01	
Modul	Module coordinator			Module offered by		
lecture	r of lec	ture "Computational Che	mistry"	Institute of Physica	l and Theoretical Chemistry	
ECTS	Metho	od of grading	Only after succ. con	ipl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	graduate	ses in the respective	e classes (usually 70 ompleted) as well as	successful completion of exerci- % of exercises 10 to 15 hours s regular attendance of exercises	
Conter	its					
This m	odule ii	ntroduces students to the	e fundamental princip	oles of computationa	al chemistry.	
Intend	ed lear	ning outcomes				
		able to explain the theore emistry.	etical principles of co	mputational chemist	try and to apply methods in com-	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
S + Ü (no info	rmation on SWS (weekly	contact hours) and co	urse language avail	able)	
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
		nation (approx. 90 minut ssessment: German or E				
Allocat	tion 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						
Master's degree (1 major) Chemistry (2013)						



Physical Chemistry

(ECTS credits)



Compulsory Courses

(20 ECTS credits)



Module title					Abbreviation	
Chemical Dynamics 08-PCM2-102-m01						
Module coordinator				Module offered by		
lecturer of seminar "Chemische Dynamik" (Chemical Dy mics)				Institute of Physical and Theoretical Chemistry		
ECTS	Metho	Method of grading Only after succ. compl. of module(s)				
5	numerical grade					
Duration Module		Module level	Other prerequisites			
1 semester		graduate	-			
Contents						
This module gives students the opportunity to explore advanced topics in chemical kinetics and reaction dynamics in more detail. It discusses methods and models for investigating and describing chemical reactions.						
Intended learning outcomes						
Students are able to discuss advanced topics in chemical kinetics and reaction dynamics. They can describe methods and models for the investigation of chemical reactions.						
Courses (type, number of weekly contact hours, language — if other than German)						
S + Ü (no information on SWS (weekly contact hours) and course language available)						
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
written examination (90 minutes) or oral examination of one candidate each (20 minutes) or talk (30 minutes) Language of assessment: German or English						
Allocation of places						
Additional information						
Workload						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Modul	e appea	nrs in				
Master's degree (1 major) Chemistry (2013)						
	Master's degree (1 major) Chemistry (2010)					
Maste	r's degr	ee (1 major) Chemistry (2	014)			

Master's degree (1 major) Mathematics (2012)

Master's degree (1 major) Computational Mathematics (2012)



Modul	Module title Abbreviation					
Laser S	Spectro	scopy			08-PCM1a-132-m01	
Modul	e coord	inator		Module offered by	L	
lecture copy)	er of ser	ninar "Laserspektroskopi	e" (Laser Spectros-	Institute of Physica	l and Theoretical Chemistry	
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	ester	graduate				
Conter	nts					
		ntroduces students to the spectroscopy.	e fundamental princip	oles of laser spectro	scopy. It discusses absorption	
Intend	ed lear	ning outcomes				
		able to explain the compo ology. They are able to de			as well as the optical principles emission spectroscopy.	
Course	es (type, r	number of weekly contact hours, l	anguage — if other than Gei	rman)		
S + Ü (no info	rmation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
		nation (90 minutes) or or ssessment: German or E	•	ninutes)		
Allocat	tion of	places				
Additio	onal inf	ormation				
Worklo	oad					
-						
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Modul	Module appears in					
	Master's degree (1 major) Chemistry (2013)					
Master	Master's degree (1 major) Chemistry (2014)					



Module	e title				Abbreviation		
Advanced Physical Chemistry (Lab)					08-PCM1b-132-m01		
Module	coord	inator		Module offered by			
lecture copy)	r of ser	ninar "Laserspektroskopi	e" (Laser Spectros-	Institute of Physica	l and Theoretical Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	(not)	successfully completed					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
borato	ry. Afte		ıdents autonomously	conduct experimen	ds in physical chemistry in the lats in the laboratory. Students will		
Intende	ed lear	ning outcomes					
		e developed a high level of to analyse the resulting r			ethods in physical chemistry.		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)			
P (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	e)		
		sessment (type, scope, langua ble for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether		
Vortest			l Nachtestate (post-e	xperiment exams) (a	approx. 15 minutes) and log (ap-		
		ssessment: German or E	nglish				
Allocat	ion of p	places					
Additio	nal inf	ormation					
Additional information on module duration: block placement with a duration of a minimum of 20 working days.							
Workload							
							
Teaching cycle							
							
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						

Module appears in

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2014)



Module	Module title Abbreviation					
Physic	al Cher	nistry (Advanced Lab)			08-PCM6-132-m01	
Module	e coord	inator		Module offered by		
lecture	rs Phys	ikalische Chemie (Physic	al Chemistry)	Institute of Physica	l and Theoretical Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	(not)	successfully completed	o8-PCM1			
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
	_	ives students the opport f Physical Chemistry and	, .		f the research groups based at lytical methods.	
Intende	ed lear	ning outcomes				
					relevant physical chemistry resequestions in physical chemistry.	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)		
P (no ir	nformat	ion 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	
		approx. 20 minutes) ssessment: German or E	nglish			
Allocat	ion of p	olaces				
	,					
Additio	nal inf	ormation				
Additio	nal inf	ormation on module dura	tion: block placemer	nt with a duration of	a minimum of 20 working days.	
Workload						
						
Teaching cycle						
						
Referred to in LPO I (examination regulations for teaching-degree programmes)						

Master's degree (1 major) Chemistry (2013)



Compulsory Electives

(ECTS credits)



Module title Abbreviation					Abbreviation	
Ultrafast spectroscopy and quantum-control					08-PCM4-132-m01	
Module	e coord	inator		Module offered by	l .	
lecture Quante		e seminar "Ultrakurzzeitsp rolle"	oektroskopie and	Institute of Physica	l and Theoretical Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade	08-PCM1a, 08-PCM1	ıb		
Duratio	n	Module level	Other prerequisites	i		
1 seme	ster	graduate				
Conten	ts					
		liscusses advanced topic time-resolved laser spect			control. It focuses on ultrashort	
Intende	ed lear	ning outcomes				
plain th	ne theo		spectroscopy and na		naracterise them. They can ex- ethods. They can describe the	
Course	S (type, i	number of weekly contact hours, l	anguage — if other than Ge	rman)		
S + Ü (r	no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)	
		sessment (type, scope, langua ble for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
nutes)		mination (90 minutes) or		of one candidate ead	ch (20 minutes) or c) talk (30 mi-	
Allocat			-3			
Additio	nal inf	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master	Master's degree (1 major) Chemistry (2013)					



Module title					Abbreviation	
Nanos	cale Ma	aterials			08-PCM3-102-m01	
Module coordinator				Module offered by		
lecture	lecturer of the seminar "Nanoskalige Materialien"			Institute of Physica	Institute of Physical and Theoretical Chemistry	
ECTS	Meth	od of grading	Only after succ. co	ompl. of module(s)		
5	nume	rical grade				
Duratio	Duration Module level		Other prerequisit	Other prerequisites		
1 seme	1 semester graduate					
Conten	Contents					

This module discusses advanced topics in nanoscale materials. It focuses on the structure, properties, fabrication, modern characterisation methods and application areas of nanoscale materials.

Intended learning outcomes

Students are able to characterise nanoscale materials. They are able to name analytical methods and application areas of nanoscale materials.

Courses (type, number of weekly contact hours, language — if other than German)

S + Ü (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)

written examination (90 minutes) or oral examination of one candidate each (20 minutes) or talk (30 minutes) Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Bachelor' degree (1 major) Nanostructure Technology (2010)

Bachelor' degree (1 major) Nanostructure Technology (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Chemistry (2014)

Master's degree (1 major) Mathematics (2012)

Master's degree (1 major) Computational Mathematics (2012)

Master's degree (1 major) Functional Materials (2012)



Module	title				Abbreviation	
Physical chemistry of supramolecular assemblies					08-PCM5-102-m01	
Module	coord	inator		Module offered by	l.	
lecture kularer		seminar "Physikalische uren"	Chemie Supramole-	Institute of Physica	al and Theoretical Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5		rical grade		•		
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
cal pro	perties	xamines the basic intera of aggregates as well as ning outcomes			he formation and physical-chemi nistry.	
Studen in the f	ts are a	able to explain the basic	ation and physical-c		trating a high degree of expertise of aggregates. They can name mo	
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	rman)		
S + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avai	lable)	
		eessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if n	ot every semester, information on whether	
minute	s)	nation (90 minutes) and/ ssessment: German or Ei		of one candidate ea	ch (20 minutes) and/or talk (30	
Allocat						
Additio	nal info	ormation				
Worklo	 ad					
Teachir	ng cvcl	e				
	<u> </u>					
Referred to in LPO I (examination regulations for teaching-degree programmes)						
(communication regulations for teaching degree programmes)						
Module appears in						
Master's degree (1 major) Chemistry (2013)						
	Master's degree (1 major) Chemistry (2010)					
	_	ee (1 major) Mathematics				
Master	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) Computational Mathematics (2012)

Master's degree (1 major) Functional Materials (2012)



Modul	Module title Abbreviation					
Lab Co	urse M	aterials Science			08-FMM-MP-102-m01	
Modul	e coord	inator		Module offered by		
	rs spec Materi	ialisation subject Funktic	onsmaterialien (Fun-	Chair of Chemical T	echnology of Material Synthesis	
ECTS	Meth	od of grading	Only after succ. con	ipl. of module(s)		
5	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	nts					
Ten se	lected e	experiments in materials	science.			
Intend	ed lear	ning outcomes				
Studer	nts have	e developed an advanced	proficiency in the pe	erformance of experi	ments in materials science.	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
P (no ii	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	2)	
		sessment (type, scope, langua ole for bonus)	ge — if other than German, o	examination offered — if no	t every semester, information on whether	
cal per	forman	e-experiment exams) and ce, log (5 to 10 pages) essessment: German or Ei	•	xperiment exams) (1	5 minutes), assessment of practi-	
	tion of _I					
Additio	onal inf	ormation				
Worklo	oad					
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
	Master's degree (1 major) Chemistry (2013)					
	Master's degree (1 major) Chemistry (2010)					
Master	Master's degree (1 major) Chemistry (2014)					



Module title					Abbreviation	
Programming in Theoretical Chemistry					08-TCM3-102-m01	
Modul	Module coordinator Module					
lecture mie"	er of lec	ture "Programmieren in	Theoretischer Che-	Institute of Physica	l and Theoretical Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5		erical grade		•		
Duratio		Module level	Other prerequisites			
1 seme	ester	graduate				
Conter	nts	, 5				
		provides an introduction ation areas.	to the fundamentals	of programming in th	neoretical chemistry and discus-	
Intend	ed lear	ning outcomes				
Studer	nts are	-		ng languages typical	ly used in theoretical chemistry	
Course	es (type,	number of weekly contact hours,	language — if other than Ge	man)		
	_	rmation on SWS (weekly			lable)	
		sessment (type, scope, langu	age — if other than German,	examination offered — if no	ot every semester, information on whether	
		nd discussion of approx. assessment: German or E		ises as well as talk (approx. 45 minutes)	
Allocat	tion of	places				
Additio	onal inf	formation				
Worklo	oad		-			
		,	_			
Teachi	ng cyc	le	_			
	<u> </u>					
Referre	ed to in	LPO I (examination regulation	ns for teaching-degree progra	ımmes)		
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Chemistry (2013)						
Master's degree (1 major) Chemistry (2010)						
		ree (1 major) Chemistry (2				
	_	ree (1 major) Mathematic	•			
		(') \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	- ()			

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

Master's degree (1 major) Computational Mathematics (2012)



Module title Abbreviation						
Material Science 1 (basic introduction) 08-FS1-122-mo1						
Module	coord	inator		Module offered by		
Dean o	f Studi	es Funktionswerkstoffe (I	unctional Materials)	Chair of Chemical T	echnology of Material Synthesis	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
		liscusses the fundamenta erties of materials.	al relations between o	chemical bonding, th	ne structure, the microstructure	
Intende	ed lear	ning outcomes				
microst blems.	tructure	e and the properties of m	aterials. They have de	eveloped the ability	al bonding, the structure, the to apply them to research pro-	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
V + Ü (r	no infor	rmation on SWS (weekly	contact hours) and co	urse 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	
or 90 m	ninutes pprox.		tions: approx. 60 min amination in groups (utes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)	
Allocat	ion of p	olaces				
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) Nanostructure Technology (2012)

Bachelor' degree (1 major) Functional Materials (2012)



Modul	Module title Abbreviation					
Computational Chemistry					08-TCM2-132-m01	
Module coordinator				Module offered by		
lecture	r of lec	ture "Computational Che	mistry"	Institute of Physica	l and Theoretical Chemistry	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)	·	
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	graduate	Admission prerequisite to assessment: successful completion of exercises in the respective classes (usually 70% of exercises 10 to 15 hours to be successfully completed) as well as regular attendance of exercises (a maximum of 2 incidents of absence).			
Conten	ıts					
This m	odule ii	ntroduces students to the	e fundamental princip	oles of computation	al chemistry.	
Intend	ed lear	ning outcomes				
		able to explain the theore	etical principles of co	mputational chemis	try and to apply methods in com-	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)		
S + Ü (no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	lable)	
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
		nation (approx. 90 minut ssessment: German or E				
Allocat	tion 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						
Master	Master's degree (1 major) Chemistry (2013)					



Module	Module title Abbreviation					
Theore	tical Ch	nemistry (Basics)		08-TCM1-132-m01		
Module	coord	inator		Module offered by	,	
lecture	r of lect	ture "Theoretische Chemi	ie"	Institute of Physica	l and Theoretical Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	graduate	ses in the respective	e classes (usually 70 ompleted) as well as	successful completion of exerci- % of exercises 10 to 15 hours s regular attendance of exercises	
Conten	ts					
This mo	dule ir	ntroduces students to the	e fundamental princip	oles of theoretical ch	emistry.	
Intende	ed learı	ning outcomes				
		able to describe the math amical approaches of the		al principles underly	ing the quantum chemical and	
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	rman)		
S + Ü (r	o infor	mation on SWS (weekly	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	ot every semester, information on whether	
		nation (approx. 90 minut ssessment: German or E				
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					
Master'	Master's degree (1 major) Chemistry (2013)					



Modul	Module title Abbreviation							
		nemistry - Project course	08-TCAP1-132-m01					
incore		- Toject course	1	00 TCAI 1 132 III01				
Modul	e coord	inator		Module offered by				
head c	of the re	search group offering the	e module	Institute of Physica	l and Theoretical Chemistry			
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)				
5	(not)	successfully completed						
Durati	on	Module level	Other prerequisites					
1 seme	ester	graduate						
Conte	nts							
the Ins	stitute o				f the research groups based at seed in the discipline. The focus			
Intend	ed learı	ning outcomes						
		e learned some of the me lics. They are able to exp			stry and, in particular, in wave f wave packet dynamics.			
Course	es (type, r	number of weekly contact hours,	language — if other than Ger	rman)				
P (no i	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	e)			
		sessment (type, scope, langua	ige — if other than German,	examination offered — if no	ot every semester, information on whether			
		(approx. 30 minutes) ssessment: German or E	nglish					
Alloca	tion of p	olaces						
Additio	onal inf	ormation						
Additio	onal info	ormation on module dura	ation: 4 weeks.					
Workload								
Teaching cycle								
Referred to in LPO I (examination regulations for teaching-degree programmes)								

Module appears in

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2014)



Modul	Module title Abbreviation							
Theoretical Chemistry - Project coursewave function based methods 08-TCAP2-132-mo1								
	e coord			Module offered by				
head c	of the re	search group offering the	e module	Institute of Physica	l and Theoretical Chemistry			
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)				
5	(not)	successfully completed						
Durati	on	Module level	Other prerequisites					
1 seme	ester	graduate						
Conter	nts							
the Ins	stitute o				f the research groups based at seed in the discipline. The focus			
Intend	ed lear	ning outcomes						
					stry and, in particular, in wave of wave function methods.			
Course	es (type, r	number of weekly contact hours, I	anguage — if other than Ger	rman)				
P (no i	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	e)			
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether			
		approx. 30 minutes) ssessment: German or E	nglish					
Alloca	tion of p	olaces						
Additio	onal inf	ormation						
Additio	onal info	ormation on module dura	ition: 4 weeks.					
Workload								
								
Teaching cycle								
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)							

Master's degree (1 major) Chemistry (2013)



Module title					Abbreviation		
Theoretical Chemistry - Project course Computational Photochemistry					08-TCAP3-132-m01		
Module coordinator				Module offered	d by		
head o	f the re	search group offering the	e module	Institute of Phy	sical and Theoretical Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s	s)		
5	(not) s	successfully completed		-			
Duratio	on	Module level	Other prerequisites	i			
1 seme	ster	graduate					
Conten	its						
the Ins	titute o				ne of the research groups based at ally used in the discipline. The focus		
Intend	ed learı	ning outcomes					
					nemistry and, in particular, in theoretifield of theoretical photochemistry.		
Course	S (type, n	number of weekly contact hours,	anguage — if other than Ge	rman)			
P (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language avai	lable)		
		sessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered -	— if not every semester, information on whether		
•		(approx. 30 minutes) ssessment: German or E	nglish				
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Additio	nal info	ormation on module dura	ation: 4 weeks.				
Worklo	ad						
Teachi	Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in							
Master	's degr	ee (1 major) Chemistry (2	013)				



Biochemistry

(ECTS credits)



Compulsory Courses

(15 ECTS credits)



Module title					Abbreviation	
Molecular Biology Lab					08-BC-MOLP-111-m01	
Module coordinator				Module offered by		
holder	holder of the Chair of Biochemistry			Chair of Biochemistry		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade	o8-BC (module com	ponent o8-BC-1 only)	
Duration Module level (Other prerequisites				
1 semester undergraduate						

Contents

This module equips students with practical skills in the areas of recombinant engineering and characterisation of macromolecular complexes, modern biomolecular techniques, in vivo analysis of biochemical processes, and modern imaging techniques.

Intended learning outcomes

Students have developed a knowledge of molecular biology and are able to apply it to practical experiments.

Courses (type, number of weekly contact hours, language — if other than German)

Ü (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)

a) written examination (approx. 60 to 90 minutes) or b) log (approx. 20 pages) or c) oral examination of one candidate each (approx. 20 minutes) or d) oral examination in groups of up to 3 candidates (groups of 2: approx. 30 minutes, groups of 3: approx. 40 minutes) or d) presentation (approx. 30 minutes). Students will be informed about the method and length of the assessment prior to the course.

Assessment offered: once a year, winter semester Language of assessment: German or English

Allocation of places

Biochemie (Biochemistry) Bachelor's: 24 places. Chemie (Chemistry) Master's: 6 places. Selection process Biochemie (Biochemistry) Bachelor's: Should the number of applications exceed the number of available places, places will be allocated according to the following quotas: Quota 1 (two thirds of places): current average grade of successfully completed modules; among applicants with the same average grade, places will be allocated by lot. Quota 2 (one third of places) number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available. Selection process Chemie (Chemistry) Master's: Should the number of applications exceed the number of available places, places will be allocated according to the following quotas: Quota 1 (two thirds of places): grade of module o8-BC; among applicants with the same grade, places will be allocated by lot. Quota 2 (one third of places) number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.

Additional information --Workload --Teaching cycle

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

Module appears in

Module appears in

Bachelor' degree (1 major) Biochemistry (2011)



Bachelor' degree (1 major) Biochemistry (2013) Master's degree (1 major) Chemistry (2013)



Module	Module title Abbreviation						
Molecular Biology					o8-BC-MOLM-132-mo1		
Module	Module coordinator			Module offered by			
holder	of the	Chair of Biochemistry		Chair of Biochemis	try		
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	its						
Compri tional b			this module discusse	s advanced topics in	n molecular physiology and func-		
Intend	ed lear	ning outcomes					
Studen	its have	e developed a sound kno	wledge of molecular	biology.			
Course	S (type, 1	number of weekly contact hours,	language — if other than Gei	rman)			
V + Ü (r	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		
didate 30 min about t	each (a utes, g the met	approx. 20 minutes) or d)	oral examination in ginutes) or d) presenta sessment prior to the	groups of up to 3 car tion (approx. 30 mir	or c) oral examination of one candidates (groups of 2: approx.nutes). Students will be informed		
Allocat	ion of	places					
	-						
Additio	nal inf	ormation					
Worklo	ad						
Teaching cycle							
							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module	Module appears in						



Compulsory Electives

(ECTS credits)



Specialist Lab Course

(10 ECTS credits)



Module title Abbreviation							
Practical course Molecular Machines for advanced students				5	08-BC-VPMM-132-m01		
Module coordinator Module offered by					I.		
holder	of the (Chair of Biochemistry		Chair of Biochemis	try		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
10	nume	rical grade	o8-BC, o8-BCP				
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conter	its		•				
in-prot Intend	ein inte ed lear	eractions, isolation and f	unctional analysis of	macromolecular con	rification, RNA-protein and prote- nplexes.		
work.		able to explore a specific	. research topic and d	enver an oral preser	itation on the results of their		
Course	S (type, r	number of weekly contact hours,	language — if other than Ger	rman)			
P (no iı	nformat	tion on SWS (weekly con	tact hours) and cours	e language available	e)		
		sessment (type, scope, langu le for bonus)	age — if other than German,	examination offered — if no	ot every semester, information on whether		
		o pages) and talk (approssessment: German or E					
Allocat	ion of p	olaces					
Additional information							
Additional information on module duration: block placement with a duration of a minimum of 40 working days.							
Workload							
							
Teachi	ng cycl	e					

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

Module appears in



Modul	e title		Abbreviation					
Practio	Practical course Protein Degradation in Eukaryotes for advanced students 08-BC-VPPD-132-mo1							
Modul	e coord	linator		Module offered by	,			
holder	of the	Chair of Biochemistry		Chair of Biochemis	stry			
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)				
10	nume	rical grade	o8-BC, o8-BCP					
Duratio	on	Module level	Other prerequisites					
1 seme	ester	graduate						
Conter	nts	,						
This m	_	gives students the opport	unity to explore a res	earch topic in the fi	eld of protein degradation in eu-			
Intend	ed lear	ning outcomes						
Studer work.	nts are	able to explore a specific	research topic and d	eliver an oral prese	ntation on the results of their			
Course	es (type, i	number of weekly contact hours,	language — if other than Ger	rman)				
P (no i	nforma	tion on SWS (weekly con	tact hours) and cours	e language availab	le)			
		sessment (type, scope, langua ole for bonus)	ge — if other than German, o	examination offered — if r	not every semester, information on whether			
		o pages) and talk (appro						
Alloca	tion of	places						
Additio	onal inf	ormation						
Additio	onal inf	ormation on module dura	ation: block placemer	nt with a duration o	f a minimum of 40 working days.			
Worklo	oad							
								
Teachi	Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)								
Modul	Module appears in							



Module title					Abbreviation	
Practical course RNA Biochemistry for advanced students					08-BC-VPRB-132-m01	
Module coordinator Mo				Module offered by		
holder	of the	Chair of Biochemistr	у	Chair of Biochemis	try	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade	o8-BC, o8-BCP			
Duratio	on	Module level	Other prerequisites	i		
1 seme	ester	graduate				
Conter	nts	,	,			
mes as	s "mole		gulatory mechanisms of e		eld of RNA biochemistry. Ribososynthesis. Gradient centrifugati-	
Intend	ed lear	ning outcomes				
work.	They are th the h	e able to familiarise	themselves with different	mechanisms of gen	ntation on the results of their eral and specific translation con- appropriate and understandable	
Course	es (type, i	number of weekly contact h	nours, language — if other than Ge	rman)		
P (no i	nforma	tion on SWS (weekly	contact hours) and cours	e language available	e)	
		sessment (type, scope, ble for bonus)	language — if other than German,	examination offered — if no	ot every semester, information on whether	
		o pages) and talk (a assessment: Germar				
Alloca	tion of	places				
Additio	onal inf	ormation				
Additional information on module duration: block placement with a duration of a minimum of 40 working days.						
Worklo	oad					
				· ·		

Teaching cycle

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 $\textbf{Referred to in LPO I} \ \ (\text{examination regulations for teaching-degree programmes})$

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Module appears in



Module title					Abbreviation	
Practical course Structural Biology for advanced students					08-BC-VPSB-132-m01	
Modul	e coord	linator		Module offered by	I.	
holder	of the	Chair of Biochemistry		Chair of Biochemis	try	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade	o8-BC, o8-BCP			
Durati	on	Module level	Other prerequisites	i		
1 seme	ester	graduate				
Conte	nts					
the fur		ntal principles and tec			stallisation. It teaches students sation as well as crystallographic	
Intend	led lear	ning outcomes				
					constructs for crystallisation. Il as data collection and proces-	
Course	es (type, i	number of weekly contact ho	urs, language — if other than Ge	rman)		
P (no i	nforma	tion on SWS (weekly o	contact hours) and cours	e language available	e)	
		sessment (type, scope, la ble for bonus)	nguage — if other than German,	examination offered — if no	ot every semester, information on whether	
		o pages) and talk (ap assessment: German o				
Alloca	tion of	places				
Additi	Additional information					
Additional information on module duration: block placement with a duration of a minimum of 40 working days.						
Workload						
Teaching cycle						

Module appears in

Master's degree (1 major) Chemistry (2013)

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



Other Courses

(ECTS credits)



Modul	e title				Abbreviation	
Bioche	emistry	Lab			08-BCP-092-m01	
Module coordinator				Module offered by		
holder	holder of the Chair of Biochemistry			Chair of Biochemistry		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	(not)	successfully completed	o8-BC			
Duratio	Duration Module level		Other prerequisites			
1 semester undergraduate						

Contents

Practical exercises give students the opportunity to learn the fundamental principles of conducting biochemical experiments.

Intended learning outcomes

Students have become proficient in essential methods in biochemistry.

Courses (type, number of weekly contact hours, language — if other than German)

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)

pre/post-experiment examination talks (Vortestate and Nachtestate, approx. 15 minutes each), practical work (log, approx. 5 to 10 pages)

Assessment offered: once a year, summer semester

Allocation of places

Number of places: 24. Should the number of applications exceed the number of available places, places will be allocated in a standardised procedure among all applicants irrespective of their subjects according to the following quotas: Quota 1 (80% of places): grade achieved in module 08-BC; among applicants with the same grade, places will be allocated by lot. Quota 2 (20% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.

Additional information

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Workload

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Teaching cycle

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 $\textbf{Referred to in LPO I} \ \ (\text{examination regulations for teaching-degree programmes})$

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Module appears in

Bachelor' degree (1 major) Chemistry (2010)

Bachelor' degree (1 major) Chemistry (2009)

Master's degree (1 major) Chemistry (2013)



Module title					Abbreviation	
Bioinorganic Chemistry					08-ACM2-102-m01	
Modul	e coord	linator		Module offered by		
lecturer of seminar "Anorganische Aspekte der Biochemie and Medizinischen Chemie" (Inorganic Aspects of Bioche mistry and Medicinal Chemistry)				Institute of Inorgan	ic Chemistry	
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	graduate				
Conter	ıts	,				
Studer	ed lear	ning outcomes able to describe the prir us enzymes and describ			explain the structure and effects	
		number of weekly contact hours			medicine.	
		tion on SWS (weekly cor			e)	
		sessment (type, scope, languole for bonus)	age — if other than German,	examination offered — if no	ot every semester, information on whether	
a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course. Language of assessment: German or English						
Allocation of places						
Additio	Additional information					
	·-					

Workload

Teaching cycle

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

Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Modul	e title	Abbreviation				
Moder	n Aspects of Natura	al Product Che	al Chemistry	08-OCM-NAT-102-m01		
Modul	e coordinator			Module offered b	у	
lecture	r of the seminar			Institute of Organ	nic Chemistry	
ECTS	Method of gradin	ıg	Only after succ. com	npl. of module(s)		
5	numerical grade					
Duratio	on Module lev	vel	Other prerequisites			
1 seme	ster graduate					
Conter	its					
This m	odule discusses ac	dvanced topics	s in natural product o	chemistry and biol	ogical chemistry.	
Intend	ed learning outcon	nes				
Studer	ts are able to disc	uss advanced	topics in natural pro	duct chemistry an	d biological chemistry.	
Course	S (type, number of week	kly contact hours, la	anguage — if other than Ger	rman)		
S (no i	nformation on SWS	S (weekly conta	act hours) and cours	e language availal	ble)	
	d of assessment (ty s creditable for bonus)	/pe, scope, languag	${f ge-if}$ other than German, ${f e}$	examination offered — if	f not every semester, information on whether	
oral ex thods of the cur	amination in group	os (groups of 2 module coord ne beginning o	, 30 minutes). Shoul linator will choose th f the course.	d there be the opt	e candidate each (20 minutes) or c) ion to choose between several me- sed for the module component in	
Allocat	ion of places					
Chemis	stry Master's: no re	estrictions. Bio	chemistry Master's:	20 places. Places	will be allocated by lot.	
Additio	onal information					
Workload						
Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					

Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Modul	e title	<u> </u>			Abbreviation
Organ	o- and E	Biocatalysis			08-HKM1-102-m01
Module coordinator				Module offered by	
lecture	lecturer of the seminar "Organo- and Biokatalyse"			Institute of Organic Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	Duration Module level Otl		Other prerequisites		
1 semester graduate					
Contor	Contonts				

Contents

This module provides students with deeper insights into topics in organic compounds and enzymes in catalytic processes. Organocatalysis: enantioselective implementation, principles, green chemistry, substance classes and application areas. Biocatalysis: effects of enzymes in view of different aspects, especially regarding organic synthesis.

Intended learning outcomes

Students are able to categorise organocatalysts and explain their effects and areas of application. They can describe the structure and applications of enzymes in organic synthesis. They are able to mechanistically describe and analyse the effects of enzymes.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course.

Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Modul	Module title Abbreviation					
Clinica	Clinical and Analytical Chemistry				08-PH-KAC-092-m01	
Modul	e coord	inator		Module offered by		
1		ture "Klinisch-analytische Chemistry)	e Chemie" (Clinical	Institute of Pharmacy and Food Chemistry		
ECTS	Metho	od of grading	Only after succ. compl. of module(s)			
5	nume	rical grade				
Duration	on	Module level	Other prerequisites			
1 seme	ester	undergraduate				
Conter	nts					
This m	odule d	iscusses advanced topic	s in clinical analytica	l chemistry.		
Intend	ed lear	ning outcomes				
Studer	nts have	e developed an advanced	knowledge of molec	ular biology.		
Course	es (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)		
V (no i	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	e)	
			ge — if other than German,	examination offered — if no	t every semester, information on whether	
	module is creditable for bonus)					
	_	nation (120 minutes)				
Alloca	tion of p	olaces				
Additio	Additional information					
Worklo	ad					
						
Teachi	Teaching cycle					
						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
<u></u>						
Module appears in						
Master's degree (1 major) Biochemistry (2012)						
	Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2010)					
	Master's degree (1 major) Chemistry (2010) Master's degree (1 major) Chemistry (2014)					
Mastel	iviasier s degree (1 major) Chemishy (2014)					



Module title Abbreviation					Abbreviation	
Clinical and Analytical Chemistry (practical course) 08-PH-KACP-092-m01					08-PH-KACP-092-m01	
Module coordinator				Module offered by		
	lecturer of lecture "Klinisch-analytische Chemie" (Clinical and Analytical Chemistry)			Institute of Pharmacy and Food Chemistry		
ECTS	Metho	thod of grading Only after succ. compl. of module(s)				
5	(not)	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate	duate			
Conten	ts					
This mo		overs practical topics in	clinical chemistry and	d clinical diagnostics	s as well as the related analytical	
Intende	ed lear	ning outcomes				
Studen ments.	ts have	e developed a knowledge	of clinical analytical	chemistry and are a	ble to apply it to practical experi-	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)		
P (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	<u>e)</u>	
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)						
examin	ation t	alks (Testate, approx. 15	minutes each), log (a	pprox. 5 to 10 pages	5)	
Allocat	ion of p	places				
-						
Additio	Additional information					
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Biochemistry (2012)						
Master's degree (1 major) Chemistry (2013)						
	Master's degree (1 major) Chemistry (2010)					
Master's degree (1 major) Chemistry (2014)						



Module title					Abbreviation	
Principles of Biochemistry					08-BC-132-m01	
Module coordinator				Module offered by		
holder of the Chair of Biochemistry				Chair of Biochemistry		
ECTS	Meth	thod of grading Only after succ. con		npl. of module(s)		
6	nume	rical grade				
Duration Module level		Other prerequisite	Other prerequisites			
1 semester		undergraduate				
Contents						

Contents

Comprising lectures and exercises, this module acquaints students with the fundamental principles of biochemistry.

Intended learning outcomes

Students have become familiar with the fundamental principles of biochemistry. They are able to describe the key biochemical processes in cellular systems.

Courses (type, number of weekly contact hours, language — if other than German)

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- 08-BC-1-132: V + Ü (no information on SWS (weekly contact hours) and course language available)
- o8-BC-2-132: V + Ü (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)

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-BC-1-132: Principles of Biochemistry 1 Principles of Biochemistry 1

- 3 ECTS, Method of grading: numerical grade
- written examination (approx. 60 to 90 minutes)

Assessment in module component o8-BC-2-132: Principles of Biochemistry 2 Principles of Biochemistry 2

- 3 ECTS, Method of grading: numerical grade
- written examination (approx. 60 to 90 minutes)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Bachelor' degree (1 major) Biochemistry (2013)

Bachelor' degree (1 major) Physics (2010)



Module	Module title Abbreviation					
Princip	les of c	drug design			o8-MCM3-132-mo1	
Module coordinator				Module offered by		
lecturers Pharmazeutische Chemie (Pharmaceutical Chemistry)			armaceutical Che-	Institute of Pharmacy and Food Chemistry		
ECTS	Metho	ood of grading Only after succ. compl. of module(s)				
5	nume	rical grade				
Duration Module level Other prerequisites						
1 semester		graduate				
Conten	its					
turally occurring substances. Theoretical methods: molecular modelling, structure-based drug design, pharmacophore models, docking, virtual screening, simulation methods, de novo design. Ligand-based drug design. QSAR. Predictions of pharmacokinetic and toxicological components (ADME). Case examples, prodrug strategies, bioisosterism, SAR.						
		ning outcomes				
		ter the theoretical and ex		,	g design.	
		number of weekly contact hours, l				
		rmation on SWS (weekly				
		sessment (type, scope, langua _l le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
		with discussion (approx. ssessment: German or E				
Allocat	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						
Master's degree (1 major) Chemistry (2013)						
Master	Master's degree (1 major) Chemistry (2014)					



Functional Materials

(ECTS credits)



Compulsory Courses

(20 ECTS credits)



Module title					Abbreviation
Organic Functional Materials					08-0CM-FM-102-m01
Module coordinator				Module offered by	
lecture	r of the	seminar "Organische Fu	unktionsmaterialien"	Institute of Organic Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	Duration Module level		Other prerequisites		
1 seme	1 semester graduate				
Contents					

The module deals with specific topics in organic functional materials. The focus is on fundamental (photo) physical effects in organic molecular and polymeric semiconductors as well as their application in (opto)electronic components such as field effect transistors, organic light-emitting diodes, or organic solar cells as well as in nonlinear optics.

Intended learning outcomes

The students are able to explain fundamental (photo)physical processes in organic semiconductors. He/She can explain the synthesis of these semiconductor materials as well as their application in (opto)electronic components such as field effect transistors, organic light-emitting diodes or in organic photovoltaics as well as in nonlinear optics.

Courses (type, number of weekly contact hours, language — if other than German)

S (no information on SWS (weekly contact hours) and course language available)

 $\textbf{Method of assessment} \ (\textbf{type}, \textbf{scope}, \textbf{language} - \textbf{if other than German, examination offered} - \textbf{if not every semester, information on whether} \ (\textbf{type}, \textbf{scope}, \textbf{language} - \textbf{if other than German, examination offered} - \textbf{if not every semester, information on whether} \ (\textbf{type}, \textbf{scope}, \textbf{language}) \ (\textbf{type}, \textbf{language}) \$ module is creditable for bonus)

a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course.

Language of assessment: German or English

Allocation of places

Additional information

Workload

Teaching cycle

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

Module appears in

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Functional Materials (2012)



Module	Module title Abbreviation						
Lab Course Materials Science					08-FMM-MP-102-m01		
Module	e coord	linator		Module offered by			
lecture ctional		cialisation subject Funktio	onsmaterialien (Fun-	-	echnology of Material Synthesis		
ECTS	Meth	od of grading	Only after succ. con	ipl. of module(s)			
5	(not)	successfully completed					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	its						
Ten sel	ected (experiments in materials	science.				
Intende	ed lear	ning outcomes					
Studen	its hav	e developed an advanced	proficiency in the pe	erformance of experi	ments in materials science.		
Course	S (type, i	number of weekly contact hours, l	anguage — if other than Ger	rman)			
P (no ir	nforma	tion on SWS (weekly cont	act hours) and cours	e language available	<u>e)</u>		
		sessment (type, scope, langua ble for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether		
cal per	forman	e-experiment exams) and ice, log (5 to 10 pages) assessment: German or Ei	·	xperiment exams) (1	5 minutes), assessment of practi-		
Allocat							
Additio	nal 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							
	Master's degree (1 major) Chemistry (2013)						
	_	ee (1 major) Chemistry (2					
Master	Master's degree (1 major) Chemistry (2014)						



Module	Module title Abbreviation						
Project Work 08-FMM-PA-102-m01					08-FMM-PA-102-m01		
Module	Module coordinator			Module offered by			
head o	f the re	search group offering the	e module	Chair of Chemical T	echnology of Material Synthesis		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	(not)	successfully completed					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate	-				
Conten	its						
		ives students the opport findings.	unity to explore a res	earch topic under th	e guidance of a supervisor and to		
Intend	ed lear	ning outcomes					
Studen	its have	e developed an advanced	proficiency in the pe	erformance of experi	ments in materials science.		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)			
P (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	2)		
		sessment (type, scope, langua	ge — if other than German, o	examination offered — if no	ot every semester, information on whether		
		15 minutes) and log (appr ssessment: German or E					
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	Module appears in						
	Master's degree (1 major) Chemistry (2013)						
	_	ee (1 major) Chemistry (2					
Master	Master's degree (1 major) Chemistry (2014)						



Module	Module title Abbreviation					
Materia	al Scier	nce 1 (basic introduction)			08-FS1-122-m01	
Module	coord	inator		Module offered by	•	
Dean o	f Studie	es Funktionswerkstoffe (F	unctional Materials)	Chair of Chemical T	echnology of Material Synthesis	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	numei	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
		iscusses the fundamenta	al relations between o	chemical bonding, tl	ne structure, the microstructure	
Intende	ed learn	ning outcomes				
					al bonding, the structure, the to apply them to research pro-	
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V + Ü (r	o infor	mation on SWS (weekly o	contact hours) and co	urse language avail	able)	
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether	
or 90 m each (a	inutes pprox.		tions: approx. 60 min amination in groups (utes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)	
Allocat	ion of p	olaces				
Additio	nal info	ormation				
Workload						
Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					

Module appears in

Bachelor' degree (1 major) Nanostructure Technology (2012)

Bachelor' degree (1 major) Functional Materials (2012)

Master's degree (1 major) Chemistry (2013)



Compulsory Electives

(ECTS credits)



Module title					Abbreviation		
Solid state chemistry and inorganic materials					08-ACM3-102-m01		
Modul	le coord	inator		Module offered by	L		
		ninar "Festkörperchem Solid State Chemistry a		Institute of Inorgan	ic Chemistry		
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)			
5	nume	rical grade					
Durati	on	Module level	Other prerequisites				
1 seme	ester	graduate					
Conte	nts						
		provides an introduction nthesis methods and s			structure, chemical and physical		
Intend	led lear	ning outcomes					
					xplain methods for solid-state the corresponding solids.		
Course	es (type, r	number of weekly contact hour	s, language — if other than Ge	rman)			
S (no i	informa	tion on SWS (weekly co	ontact hours) and cours	se language availabl	e)		
		sessment (type, scope, lang le for bonus)	guage — if other than German,	examination offered — if no	ot every semester, information on whether		
oral ex thods the cu	caminat of asse rrent se	ion in groups (groups c	of 2, 30 minutes). Shou ordinator will choose t g of the course.	ld there be the optio	candidate each (20 minutes) or c) on to choose between several me- ed for the module component in		
Alloca	tion of	olaces					
Additi	onal inf	ormation					
			·				
Workle	oad						
Teachi	ing cycl	e					
Referr	ed to in	LPO I (examination regulati	ons for teaching-degree progra	ammes)			
Modul	le appea	ars in					
	Master's degree (1 major) Chemistry (2013)						
11	Mastaria dagrae (4 major) Chamistry (2010)						

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



Module title					Abbreviation	
Supramolecular Chemistry (Basics)					08-SCM1-102-m01	
Module coordinator				Module offered by	Module offered by	
lecturer of lecture "Organischen Chemie"			emie"	Faculty of Chemistry and Pharmacy		
ECTS	Meth	Method of grading Only after succ. co		mpl. of module(s)		
5	nume	erical grade				
Duratio	on	Module level	Other prerequisite	Other prerequisites		
1 seme	ester	graduate				
Contents						
			•		ılar chemistry. It focuses on inter pramolecular polymers, coordi-	

actions between molecules, molecular recognition by receptors, complexes, supramolecular polymers, coordination polymers and networks, liquid crystals, self-assembly in aqueous media, synthetic ion channels and modern applications of supramolecular chemistry.

Intended learning outcomes

Students are able to explain interactions between molecules demonstrating a high degree of expertise in the field as well as to describe the formation, structure and polymers of coordination compounds. They are able to describe the self-assembly of polymers in aqueous media as well as to identify the characteristics of synthetic ion channels. They can name modern applications of supramolecular chemistry.

Courses (type, number of weekly contact hours, language — if other than German)

S (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)

written examination (approx. 90 minutes) or oral examination of one candidate each (approx. 20 minutes) Language of assessment: German or English

Allocation of places

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Additional information

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Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Chemistry (2014)

Master's degree (1 major) Functional Materials (2012)



Module title					Abbreviation
Nanoscale Materials					08-PCM3-102-m01
Module coordinator				Module offered by	
lecture	lecturer of the seminar "Nanoskalige Materialien"			Institute of Physical and Theoretical Chemistry	
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)	
5	nume	rical grade			
Duratio	Duration Module level		Other prerequisites		
1 seme	1 semester graduate				
Contents					

This module discusses advanced topics in nanoscale materials. It focuses on the structure, properties, fabrication, modern characterisation methods and application areas of nanoscale materials.

Intended learning outcomes

Students are able to characterise nanoscale materials. They are able to name analytical methods and application areas of nanoscale materials.

Courses (type, number of weekly contact hours, language — if other than German)

S + Ü (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)

written examination (90 minutes) or oral examination of one candidate each (20 minutes) or talk (30 minutes) Language of assessment: German or English

Allocation of places

Additional information

Workload

Teaching cycle

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

Module appears in

Bachelor' degree (1 major) Nanostructure Technology (2010)

Bachelor' degree (1 major) Nanostructure Technology (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) Chemistry (2014)

Master's degree (1 major) Mathematics (2012)

Master's degree (1 major) Computational Mathematics (2012)

Master's degree (1 major) Functional Materials (2012)



Module	e title		Abbreviation		
Chemically and bio-inspired Nanotechnology for Material S				Synthesis	08-NT-122-m01
Module	e coord	linator		Module offered by	
holder thesis	holder of the Chair of Chemical Technology of Material Synthesis			Chair of Chemical Technology of Material Synthesis	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	Duration Module level O		Other prerequisites		
1 semester graduate					
Contents					

This module provides an introduction to the synthesis methods of sol-gel chemistry and discusses the methods of analysis used to characterise the generated materials. It also discusses the fundamental principles of biomineralisation and uses examples to introduce students to bio-inspired material synthesis.

Intended learning outcomes

Students have developed an advanced knowledge of sol-gel chemistry and biomineralisation.

Courses (type, number of weekly contact hours, language — if other than German)

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- 08-NT-1-122: V (no information on SWS (weekly contact hours) and course language available)
- 08-NT-2-122: V (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)

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-NT-1-122: Sol-Gel Chemistry 1: Fundamentals

- 2 ECTS, Method of grading: numerical grade
- a) written examination (approx. 45 minutes) 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-NT-2-122: From Biomineralisation to biologically inspired Materials Synthesis

- 3 ECTS, Method of grading: numerical grade
- a) written examination (approx. 45 minutes) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes)

minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes) Allocation of places -Additional information -Workload -Teaching cycle -Referred to in LPO 1 (examination regulations for teaching-degree programmes) --

Module appears in

Bachelor' degree (1 major) Nanostructure Technology (2012)

Master's with 1 major Chemistry (2013)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 262 / 293
	reg. data record Master (120 ECTS) Chemie - 2013	



Bachelor' degree (1 major) Functional Materials (2012)

Master's degree (1 major) Chemistry (2013)

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)



Module title Abbreviation							
Material Science 2 (the material groups) 08-FS2-122-mo1					08-FS2-122-m01		
Module coordinator				Module offered by			
Dean o	f Studi	es Funktionswerkstoffe	(Functional Materials)	Chair of Chemical T	echnology of Material Synthesis		
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
This mo	odule d	leals with the fabrication	n and properties of the	main material grou	ps.		
Intende	ed lear	ning outcomes					
		e developed a knowledg knowledge to research p		d properties of the r	main material groups and are able		
Course	S (type, r	number of weekly contact hours,	, language — if other than Ger	man)			
V + Ü (r	no infor	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)		
		sessment (type, scope, langu	age — if other than German, e	examination offered — if no	ot every semester, information on whether		
or 90 m	ninutes ipprox.		ations: approx. 60 min xamination in groups (utes each) or b) ora	tten examinations: approx. 60 l examination of one candidate 30 minutes)		
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referre	d to in	LPO I (examination regulatio	ns for teaching-degree progra	mmes)			
Module	appea	ars in					
Bachel	Bachelor' degree (1 major) Nanostructure Technology (2012)						

Bachelor' degree (1 major) Functional Materials (2012)

Master's degree (1 major) Chemistry (2013)



Module	Module title Abbreviation						
Computational Chemistry 08-TCM2-132-m01					08-TCM2-132-m01		
Module	coord	inator		Module offered by			
lecture	r of lect	ture "Computational Che	mistry"	Institute of Physica	l and Theoretical Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 semester graduate Admission prerequisite to assessment: successful comple ses in the respective classes (usually 70% of exercises 1 to be successfully completed) as well as regular attendance (a maximum of 2 incidents of absence).			% of exercises 10 to 15 hours				
Conten	ts						
This mo	dule ir	ntroduces students to the	e fundamental princip	oles of computationa	al chemistry.		
Intende	ed learı	ning outcomes					
		able to explain the theore emistry.	etical principles of co	mputational chemist	try and to apply methods in com-		
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	rman)			
S + Ü (r	o infor	mation on SWS (weekly	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	ot every semester, information on whether		
		nation (approx. 90 minut ssessment: German or E					
Allocati	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teaching cycle							
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
<u></u>							
	Module appears in						
Master'	Master's degree (1 major) Chemistry (2013)						



Module	Module title Abbreviation					
Molecu	lar Ma	terials			08-FMM-CT-132-m01	
Module	coord	inator		Module offered by		
Dean of	f Studi	es Funktionswerkstoffe ((Functional Materials)	Chair of Chemical T	echnology of Material Synthesis	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme:	ster	graduate	ses in the respective	e classes (usually 70 ompleted) as well as	successful completion of exerci- 9% of exercises 10 to 15 hours 5 regular attendance of exercises	
Conten	ts					
This mo	odule d	liscusses the theoretical	principles of molecul	ar and soft materials	S.	
Intende	ed lear	ning outcomes				
		e developed a knowledg ge to research problems.		nolecular and soft m	naterials and are able to apply	
Course	S (type, r	number of weekly contact hours,	language — if other than Ger	rman)		
V + Ü (r	no infor	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)	
		sessment (type, scope, langu le for bonus)	age — if other than German, o	examination offered — if no	ot every semester, information on whether	
prox. 9	o minu		ons: approx. 60 minut	es each) or b) oral e	ons (1 written examination: ap- xamination of one candidate . 30 minutes total)	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teaching cycle						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	Module appears in					
Master'	Master's degree (1 major) Chemistry (2013)					



Medicinal Chemistry

(ECTS credits)

Compulsory Courses

(10 ECTS credits)



Module title Abbreviation						
Pharmaceutical/Medicinal Chemistry					08-MCM2-132-m01	
Modul	e coord	inator		Module offered by	<u> </u>	
lecture mistry)		mazeutische Chemie (Ph	armaceutical Che-	Institute of Pharma	cy and Food Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
3 seme	ester	graduate				
Conter	its					
structu in the i	re-activ module	vity relationships; molecu	ular effect mechanism thesis; biotransforma	ns; pharmacological	gies for active agent discovery; principles of the drugs discussed tics of individual drugs; history of	
Intend	ed lear	ning outcomes				
Studer	its have	e developed a knowledge	of pharmaceutical/r	nedicinal chemistry.		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)		
V + V +	V (no i	nformation on SWS (wee	kly contact hours) an	d course language a	vailable)	
		sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
-		ations of one candidate ε issessment: German or Ε		utes each)		
Allocat	ion of	places				
Additio	nal inf	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master	Master's degree (1 major) Chemistry (2013)					



Compulsory Electives

(ECTS credits)



Module title					Abbreviation		
Bioinorganic Chemistry					08-ACM2-102-m01		
Modul	e coord	inator		Module offered by			
lecturer of seminar "Anorganische Aspekte der Biochemi and Medizinischen Chemie" (Inorganic Aspects of Bioche mistry and Medicinal Chemistry)				Institute of Inorgan	lic Chemistry		
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)			
5	nume	rical grade					
Durati	on	Module level	Other prerequisites	3			
1 seme	ester	graduate					
Conte	nts						
metho and th	ds of Blerapy.	C, structures and effo			chemistry (BIC). It discusses the ns of BIC in the fields of diagnosis		
		ning outcomes					
			rinciples of, and method ribe applications of BIC		explain the structure and effects medicine.		
Course	es (type, i	number of weekly contact ho	ours, language — if other than Ge	rman)			
S (no i	nforma	tion on SWS (weekly	contact hours) and cours	se language availabl	e)		
			nguage — if other than German,	examination offered — if no	ot every semester, information on whether		
oral ex thods the cu	module is creditable for bonus) a) 1 to 3 written examinations (60 or 90 minutes) or b) oral examination of one candidate each (20 minutes) or c) oral examination in groups (groups of 2, 30 minutes). Should there be the option to choose between several methods of assessment, the module coordinator will choose the method to be used for the module component in the current semester at the beginning of the course. Language of assessment: German or English						
Alloca	tion of	places					
Additional information							
Worklo	Workload						
Teachi	Teaching cycle						

Teaching cycle

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

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Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Modul	e title			Abbreviation	
Modern Aspects of Natural Product Chemistry and Biological Ch				al Chemistry	08-OCM-NAT-102-m01
Modul	e coordi	inator		Module offered b	y
lecture	r of the	seminar		Institute of Organ	nic Chemistry
ECTS	Metho	d of grading	Only after succ. con	ıpl. of module(s)	
5	numer	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
This m	odule d	iscusses advanced	topics in natural product o	chemistry and biol	ogical chemistry.
Intend	ed learr	ing outcomes			
Studer	ts are a	ble to discuss adva	nced topics in natural pro	duct chemistry an	d biological chemistry.
Course	S (type, n	umber of weekly contact h	ours, language — if other than Ger	rman)	
S (no ii	nformat	ion on SWS (weekly	contact hours) and cours	e language availal	ole)
		essment (type, scope, le for bonus)	anguage — if other than German, o	examination offered — if	not every semester, information on whether
oral ex thods of the cur	aminati of asses rent ser	on in groups (group	s of 2, 30 minutes). Shoul coordinator will choose thing of the course.	d there be the opt	e candidate each (20 minutes) or c) ion to choose between several mesed for the module component in
Allocat	ion of p	laces			
Chemis	stry Mas	ster's: no restriction	s. Biochemistry Master's:	20 places. Places	will be allocated by lot.
Additional information					
Workload					

Teaching cycle

$\textbf{Referred to in LPO I} \ \ (\text{exa}\underline{\text{mination regulations for teaching-degree programmes})}$

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Module appears in

Master's degree (1 major) Biochemistry (2012)

Master's degree (1 major) Chemistry (2013)

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

Master's degree (1 major) FOKUS Pharmacy (2012)



Modul	Module title Abbreviation					
Clinica	ıl and A	nalytical Chemistry			08-PH-KAC-092-m01	
Modul	e coord	inator		Module offered by		
		ture "Klinisch-analytische Chemistry)	e Chemie" (Clinical	Institute of Pharma	cy and Food Chemistry	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
5	nume	rical grade	-			
Durati	on	Module level	Other prerequisites			
1 seme	ester	undergraduate				
Conte	nts					
This m	odule d	iscusses advanced topic	s in clinical analytica	l chemistry.		
		ning outcomes				
Studer	nts have	e developed an advanced	knowledge of molec	ular biology.		
Course	es (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
V (no i	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	<u>e)</u>	
		•			ot every semester, information on whether	
		le for bonus)	,		,	
writter	exami	nation (120 minutes)				
Alloca	tion of p	olaces				
Additio	onal inf	ormation				
Workle	oad					
Teachi	ng cycl	 e				
	. ,					
Referre	ed to in	LPO I (examination regulations	s for teaching-degree progra	ımmes)		
	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in						
	Master's degree (1 major) Biochemistry (2012)					
I	Master's degree (1 major) Chemistry (2013)					
	_	ee (1 major) Chemistry (2	·			
Maste	r's degr	ee (1 major) Chemistry (2	014)			



Module	Module title Abbreviation					
Clinica	l and A	nalytical Chemistry (prac	ctical course)		08-PH-KACP-092-m01	
Module	Module coordinator			Module offered by	L	
		ture "Klinisch-analytische l Chemistry)	e Chemie" (Clinical	Institute of Pharma	cy and Food Chemistry	
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)		
5	(not)	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
This mo		covers practical topics in	clinical chemistry and	d clinical diagnostics	s as well as the related analytical	
Intende	ed lear	ning outcomes				
Studen ments.		e developed a knowledge	e of clinical analytical	chemistry and are a	ble to apply it to practical experi-	
Course	S (type,	number of weekly contact hours, I	language — if other than Ge	rman)		
P (no ir	nforma	tion on SWS (weekly cont	tact hours) and cours	e language available	2)	
		sessment (type, scope, langua	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
examin	ation t	alks (Testate, approx. 15	minutes each), log (a	approx. 5 to 10 pages	5)	
Allocat	ion of	places				
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ng cycl	le				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	ammes)		
Module	Module appears in					
	Master's degree (1 major) Biochemistry (2012)					
Master	Master's degree (1 major) Chemistry (2013)					
	_	ree (1 major) Chemistry (2	•			
Master	Master's degree (1 major) Chemistry (2014)					



Module	e title	,			Abbreviation		
Practic	al cour	se medicinal chemistry			08-MCM1-102-m01		
Module	e coord	inator		Module offered by			
lecture mistry)		mazeutische Chemie (Ph	armaceutical Che-	Institute of Pharma	cy and Food Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
10	(not)	successfully completed					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	its						
Selecte	ed meth	nods and topics in medic	inal chemistry (synth	esis, testing, analysi	is, theory, pharmacokinetics).		
Intend	ed lear	ning outcomes					
Studer	its have	e developed a knowledge	of medicinal chemis	try and are able to a	pply it to practical experiments.		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)			
P (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	e)		
module is	s creditab tate (pr	ole for bonus)	l Nachtestate (post-e	xperiment exams) (a	pprox. 20 minutes), assessment		
		ssessment: German or E	nglish				
Allocat	ion of p	places					
Additio	nal 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						
Master Master	Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2010) Master's degree (1 major) Chemistry (2014) Master's degree (1 major) FOKUS Pharmacy (2012)						
master's degree (1 major) fokus priamacy (2012)							



Module	e title		Abbreviation				
Modern	n Synth	etic Methods			08-OCM-SYNT-132-m01		
Module coordinator				Module offered by			
lecture	r of the	seminar		Institute of Organic	Chemistry		
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)			
5	numei	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme:	ster	graduate	Admission prerequisite to assessment: successful completion of exercises in the respective classes (usually 70% of exercises 10 to 15 hours to be successfully completed) as well as regular attendance of exercises (a maximum of 2 incidents of absence).				
Conten	ts						
		iscusses modern stereos emistry and catalysis.	selective synthesis m	ethods. It focuses or	n selected total syntheses, orga-		
Intende	ed learr	ning outcomes					
sis che	mistry.	umber of weekly contact hours, l			hemistry and catalysis in synthe-		
S + Ü (r	no infor	mation on SWS (weekly	contact hours) and co	ourse language avail	able)		
		essment (type, scope, langualle for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether		
60 min groups	utes ea (group		on of one candidate e es)		tten examinations: approx. utes) or c) oral examination in		
Allocat	ion of p	olaces					
Additio	nal info	ormation					
Worklo	Workload						
							
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
	Module appears in						
waster'	Master's degree (1 major) Chemistry (2013)						



Module	Module title Abbreviation						
Molecu	lar Bio	logy		08-BC-MOLM-132-m01			
Module	coord	inator		Module offered by			
holder	of the (Chair of Biochemistry		Chair of Biochemist	try		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	ts		,				
Compri tional b	_		his module discusse	s advanced topics ir	n molecular physiology and func-		
Intende	ed learı	ning outcomes					
Studen	ts have	e developed a sound kno	wledge of molecular	biology.			
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	man)			
V + Ü (r	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	ot every semester, information on whether		
didate 30 min about t	each (a utes, g he met	approx. 20 minutes) or d)	oral examination in g nutes) or d) presenta sessment prior to the	groups of up to 3 car Ition (approx. 30 mir	or c) oral examination of one candidates (groups of 2: approx. nutes). Students will be informed		
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teachi	Teaching cycle						
							
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
		_					
Module	Module appears in						

Master's degree (1 major) Chemistry (2013)



Module title					Abbreviation	
Practical course Structural Biology for advanced students					08-BC-VPSB-132-m01	
Modul	le coord	linator		Module offered by		
holde	r of the	Chair of Biochemistry		Chair of Biochemis	try	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade	o8-BC, o8-BCP			
Durati	on	Module level	Other prerequisites			
1 seme	ester	graduate				
Conte	nts					
the fu		ntal principles and tec			stallisation. It teaches students sation as well as crystallographic	
Intend	led lear	ning outcomes				
					constructs for crystallisation. Il as data collection and proces-	
Course	es (type, ı	number of weekly contact ho	urs, language — if other than Ge	rman)		
P (no i	nforma	tion on SWS (weekly o	ontact hours) and cours	e language available	e)	
		sessment (type, scope, lable for bonus)	nguage — if other than German,	examination offered — if no	ot every semester, information on whether	
		o pages) and talk (ap assessment: German c				
Alloca	tion of	places				
Additi	onal inf	ormation				
Additional information on module duration: block placement with a duration of a minimum of 40 working days.						
Workload						
Teach	ing cycl	e				
	<u>.</u>					

Module appears in

Master's degree (1 major) Chemistry (2013)

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



Module title Abbreviation							
Princip	les of c	drug design			08-MCM3-132-m01		
Module	e coord	inator		Module offered by			
lecture mistry)		mazeutische Chemie (Ph	armaceutical Che-	Institute of Pharma	cy and Food Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	its						
cophor QSAR. gies, b	e mode Predict ioisoste	els, docking, virtual scree	ening, simulation met	hods, de novo desig	re-based drug design, pharma- rn. Ligand-based drug design. ase examples, prodrug strate-		
	-	ter the theoretical and ex	vnorimental methods	and acports of drug	docian		
		number of weekly contact hours,		· ·	uesigii.		
		rmation on SWS (weekly			ahle)		
Metho	d of ass	sessment (type, scope, langua			ot every semester, information on whether		
presen	tation v	le for bonus) with discussion (approx. ssessment: German or E					
Allocat	ion of p	olaces					
	1						
Additio	nal inf	ormation					
Worklo	ad						
			_				
Teachi	ng cycl	е					
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
	Module appears in						
	Master's degree (1 major) Chemistry (2013)						
Master	Master's degree (1 major) Chemistry (2014)						



Theoretical Chemistry

(ECTS credits)



Compulsory Courses

(10 ECTS credits)



Module title					Abbreviation		
Programming in Theoretical Chemistry 08-TCM3-102-m01							
Module coordinator Module offer					,		
lecture mie"	r of lec	ture "Programmieren	in Theoretischer Che-	Institute of Physica	al and Theoretical Chemistry		
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	graduate					
Conten	its						
		provides an introducti ation areas.	ion to the fundamentals	of programming in t	heoretical chemistry and discus		
Intend	ed lear	ning outcomes					
		able to explain and us		ng languages typica	lly used in theoretical chemistr		
Course	S (type, i	number of weekly contact ho	ours, language — if other than Ge	rman)			
S + Ü (ı	no info	rmation on SWS (wee	kly contact hours) and co	ourse language avai	ilable)		
		sessment (type, scope, la ble for bonus)	anguage — if other than German,	examination offered — if n	not every semester, information on whethe		
		nd discussion of appr ssessment: German	ox. 5 programming exerc or English	ises as well as talk	(approx. 45 minutes)		
Allocat	ion of	places					
Additio	nal inf	ormation	·				
Worklo	ad						
Teachi	ng cycl	e					
Referre	ed to in	LPO I (examination regul	ations for teaching-degree progra	ammes)			
Module	e appea	ars in					
		ee (1 major) Chemistr	y (2013)				
	_	ee (1 major) Chemistr					
	_	ee (1 major) Chemistr	• •				
Mactor	Master's degree (1 major) Mathematics (2012)						

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

Master's degree (1 major) Computational Mathematics (2012)



Module	Module title Abbreviation						
Theore	Theoretical Chemistry (Basics)				08-TCM1-132-m01		
Module	coord	inator		Module offered by	,		
lecture	r of lect	ture "Theoretische Chemi	ie"	Institute of Physica	l and Theoretical Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 semes	ster	graduate	Admission prerequisite to assessment: successful completion of exercises in the respective classes (usually 70% of exercises 10 to 15 hours to be successfully completed) as well as regular attendance of exercises (a maximum of 2 incidents of absence).				
Conten	ts						
This mo	dule ir	ntroduces students to the	e fundamental princip	oles of theoretical ch	emistry.		
Intende	ed learı	ning outcomes					
		able to describe the math amical approaches of the		al principles underly	ing the quantum chemical and		
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	rman)			
S + Ü (r	o infor	mation on SWS (weekly	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	ot every semester, information on whether		
		nation (approx. 90 minut ssessment: German or E					
Allocati	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
			,				
Teaching cycle							
							
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
<u></u>							
	Module appears in						
Master'	Master's degree (1 major) Chemistry (2013)						



Compulsory Electives

(ECTS credits)

One to two of the following modules must be taken: o8-TCAP1, o8-TCAP2, o8-TCAP3



Modul	Module title Abbreviation						
Compu	Computational Chemistry 08-TCM2-132-m01						
Modul	Module coordinator Module offered by						
lecturer of lecture "Computational Chemist			mistry"	Institute of Physical and Theoretical Chemistry			
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 semester graduate Admission prerequisite to assessment: successful completion ses in the respective classes (usually 70% of exercises 10 to to be successfully completed) as well as regular attendance of (a maximum of 2 incidents of absence).			% of exercises 10 to 15 hours				
Conter	ıts						
This m	odule ii	ntroduces students to the	e fundamental princip	oles of computation	al chemistry.		
Intend	ed lear	ning outcomes					
		able to explain the theore emistry.	etical principles of co	mputational chemis	try and to apply methods in com-		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)			
S + Ü (no info	rmation on SWS (weekly	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)						
		nation (approx. 90 minut ssessment: German or E					
Allocat	tion of p	olaces					
Additio	onal inf	ormation					
Worklo	Workload						
Teaching cycle							
-							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
							
Modul	e appea	ars in					
Master	's degr	ee (1 major) Chemistry (2	013)				



Module	Module title Abbreviation						
Principles of drug design 08-MCM ₃ -1					o8-MCM3-132-mo1		
Module coordinator				Module offered by	I.		
lecturers Pharmazeutische Chemie (Pharmaceutical Chemistry)			armaceutical Che-	Institute of Pharma	cy and Food Chemistry		
ECTS	Metho	od of grading	Only after succ. compl. of module(s)				
5	nume	rical grade					
Duratio	Ouration Module level Other prerequisites						
1 seme	ster	graduate					
Conten	ıts						
cophor QSAR. gies, b	re mode Predict ioisoste	els, docking, virtual scree ions of pharmacokinetic erism, SAR.	ning, simulation met	hods, de novo desig	ure-based drug design, pharmagn. Ligand-based drug design. ase examples, prodrug strate-		
	-	ning outcomes					
		ter the theoretical and ex		,	g design.		
		number of weekly contact hours, l					
		rmation on SWS (weekly	•				
		sessment (type, scope, langua _l le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether		
		with discussion (approx. ssessment: German or E					
Allocat	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						
	_	ee (1 major) Chemistry (2	=				
Master	Master's degree (1 major) Chemistry (2014)						



Modul	Module title Abbreviation					
Theore	Theoretical Chemistry - Project course wave-packet dynamics 08-TCAP1-132-m01					
Module coordinator Module offered by					I.	
head o	of the re	search group offering the	e module	Institute of Physical and Theoretical Chemistry		
ECTS				npl. of module(s)		
5	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	graduate				
Conter	nts					
the Ins	stitute o				f the research groups based at sed in the discipline. The focus	
Intend	ed lear	ning outcomes				
		e learned some of the me lics. They are able to exp			stry and, in particular, in wave f wave packet dynamics.	
Course	es (type, r	number of weekly contact hours,	anguage — if other than Ger	rman)		
P (no i	nforma	tion on SWS (weekly cont	act hours) and cours	e language available	e)	
		sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
		(approx. 30 minutes) ssessment: German or E	nglish			
Alloca	tion of	places				
Additio	Additional information					
Additio	Additional information on module duration: 4 weeks.					
Workload						
Teachi	Teaching cycle					
						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					

Module appears in

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2014)



Module title Abbreviation					
Theoretical Chemistry - Project coursewave function based methods 08-TCAP2-132-mo1					
Module coordinator Module offered b				Module offered by	
head o	f the re	search group offering the	e module	Institute of Physica	al and Theoretical Chemistry
ECTS	TS Method of grading Only after succ. compl. of module(s)			npl. of module(s)	
5	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
the Ins	titute o				f the research groups based at used in the discipline. The focus
Intende	ed learr	ning outcomes			
					stry and, in particular, in wave of wave function methods.
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	rman)	
P (no ir	format	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, o	examination offered — if n	ot every semester, information on whether
		approx. 30 minutes) ssessment: German or E	nglish		
Allocat	ion of p	olaces			
Additio	nal info	ormation			
Additional information on module duration: 4 weeks.					
Workload					
Teaching cycle					
					
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	

Module appears in

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2014)



Module title					Abbreviation	
Theore	Theoretical Chemistry - Project course Computational Photochemistry 08-TCAP3-132-mo1					
Module coordinator Module offer				Module offered by	ered by	
head of the research group offering the module			e module	Institute of Physica	l and Theoretical Chemistry	
ECTS	Metho	d of grading	Only after succ. compl. of module(s)			
5	(not) s	uccessfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ıts					
the Ins	titute of				f the research groups based at used in the discipline. The focus	
Intend	ed learr	ing outcomes				
					stry and, in particular, in theoreti- l of theoretical photochemistry.	
Course	S (type, n	umber of weekly contact hours,	anguage — if other than Ger	man)		
P (no ir	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	e)	
		essment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
		approx. 30 minutes) ssessment: German or E	nglish			
Allocat	tion of p	laces				
Additio	onal info	ormation				
Additio	onal info	ormation on module dura	ation: 4 weeks.			
Workload						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appea	rs in				

Master's degree (1 major) Chemistry (2013) Master's degree (1 major) Chemistry (2014)



Courses at partner university abroad

(30 ECTS credits)



Module	Module title Abbreviation					
Course	Courses at the partner university 08-VPU-141-mo1					
Module coordinator				Module offered by		
programme coordinator of the exchange programme			ge programme	Faculty of Chemistr	y and Pharmacy	
ECTS				npl. of module(s)		
30	(not) s	successfully completed				
Duratio	on	Module level	ıle level Other prerequisites			
2 seme	ster	graduate	Please consult with	course advisory serv	vice.	
Conten	ts					
This mo	odule d	iscusses topics from the	curriculum of the par	tner university abro	ad.	
Intende	ed learı	ning outcomes				
Studen sity.	its have	e developed the knowled	ge and skills taught i	n the courses attend	led by them at the partner univer-	
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (no ir	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	e)	
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
on (app examin of the a	assessment or successful completion as certified by the lecturer; methods of assessment: a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (approx. 20 to 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes); students will be informed about the method and length of the assessment prior to the course Language of assessment: German or English					
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appea	rs in				
Master	's degr	ee (1 major) Chemistry (2	013)			

Master's degree (1 major) Chemistry (2014)



Thesis

(30 ECTS credits)



Module title					Abbreviation	
Master-Thesis					08-MA-132-m01	
Module coordinator				Module offered	Module offered by	
degree programme coordinator Chemie (Chemistry)			mie (Chemistry)	Faculty of Chemi	Faculty of Chemistry and Pharmacy	
ECTS	Meth	ood of grading Only after succ. compl. of module(s)				
30	nume	rical grade				
Duration Module level Other prerequi			Other prerequis	tes		
1 semester graduate Where applicab			Where applicabl	, specific modules as specified by supervisor.		
Contents						
This module gives students the opportunity to research and write on a defined problem within a given time frame and using the scientific methods they have learned during the programme.						

Intended learning outcomes

Students are able to conduct research on a defined problem/topic, adhering to the principles of good scientific practice, and to present the results of their work in written form.

Courses (type, number of weekly contact hours, language — if other than German)

no courses assigned

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 thesis (approx. 60 to 80 pages)

Language of assessment: German or English

Allocation of places

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Additional information

Additional information on module duration: 6 months.

Workload

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Teaching cycle

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

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Module appears in

Master's degree (1 major) Chemistry (2013)

Master's degree (1 major) Chemistry (2014)