

Subdivided Module Catalogue for the Subject

Chemistry

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

Examination regulations version: 2009 Responsible: Faculty of Chemistry and Pharmacy

JMU Würzburg • generated 26-Aug-2024 • exam. reg. data record 82|032|-|-|H|2009



Course of Studies - Contents and Objectives

The chemistry program in Würzburg offers a research-oriented curriculum. Graduates of the Bachelorprogram in chemistry are acquainted with the fundamentals of chemistry, possess the relevant experimental skills and are familiar with the general methods of scientific research. In lectures and tutorials the basic knowledge of the various areas of chemistry is imparted as well as the foundations of mathematics and physics. A further hallmark is the comparably large number of student lab courses. In these labs the laboratory skills and techniques used in experimental scientific work are taught. During their Bachelor thesis the students finally work for a limited time on a specific chemical problem. They demonstrate their scientific abilities in work which is performed under guidance, but to a large extent independently. The students obtain the necessary knowledge to attend a research-oriented Masters program. In addition they possess the basic qualifications necessary for further professional training in industry and business. In supplementary modules they acquire science-related soft skills in specific areas of chemistry and general soft skills that match their personal interests and serve as an additional qualification for various professional areas.

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	reg. data record Bachelor (180 ECTS) Chemie - 2009	

Abbreviations used

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

Term: **SS** = summer semester, **WS** = winter semester

Methods of grading: **NUM** = numerical grade, **B/NB** = (not) successfully completed

Regulations: **(L)ASPO** = general academic and examination regulations (for teaching-degree programmes), **FSB** = subject-specific provisions, **SFB** = list of modules

Other: **A** = thesis, **LV** = course(s), **PL** = assessment(s), **TN** = participants, **VL** = prerequisite(s)

Conventions

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

Notes

Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the method of assessment to be used in the current semester by two weeks after the start of the course at the latest and will communicate this in the customary manner.

Should the module comprise more than one graded assessment, all assessments will be equally weighted, unless otherwise stated below.

Should the assessment comprise several individual assessments, successful completion of the module will require successful completion of all individual assessments.

In accordance with

the general regulations governing the degree subject described in this module catalogue:

ASPO2007

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

19-Nov-2009 (2009-74)

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.

Bachelor's with 1	major Chemistry (2009)
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The subject is divided into

Abbreviation	Module title	ECTS credits	Method of grading	page		
Compulsory Courses (145 ECTS credits)						
11-EFNF-072-m01	Introduction to Physics for Students of Non-physics-related Mi- nor Subjects	7	NUM	37		
11-PFNF-072-m01	Practical Course Physics for Students of Non-physics-related Minor Subjects	3	B/NB	39		
08-AC2-092-m01	Inorganic Chemistry 2	6	NUM	8		
08-AC3-092-m01	Inorganic Chemistry 3	9	NUM	9		
08-0C2-092-m01	Organic Chemistry 2	9	NUM	20		
08-0C3-092-m01	Organic Chemistry 3	15	NUM	21		
08-0C4-092-m01	Organic Chemistry 4	10	NUM	23		
08-PC1-092-m01	Physical Chemistry 1	8	NUM	25		
08-PC2-092-m01	Physical Chemistry 2: Thermodynamics, Kinetics, Electroche- mistry	18	NUM	27		
08-PC4-092-m01	Physical Chemistry 4: Statistical Thermodynamics	3	NUM	31		
08-BC-092-m01	Biochemistry	6	NUM	14		
10-M-MCB-092-m01	Mathematics for students of Chemistry and Biology (lecture and practice)	5	NUM	36		
08-TC-092-m01	Theoretical Models in Chemistry	3	NUM	34		
08-AC1-092-m01	Inorganic Chemistry 1	21	NUM	6		
08-AN1-092-m01	Analytical Chemistry 1	11	NUM	11		
08-PC3-092-m01	Physical and Theoretical Chemistry 3: Symmetry and Quantum Chemistry	6	NUM	29		
08-0C1-092-m01	Organic Chemistry 1	5	NUM	18		
Compulsory Electives (5 ECTS credits)		I			
08-PS3-092-m01	Applied Spectroscopy 3	5	NUM	33		
08-PKC-092-m01	Programming course for Chemistry Majors	5	B/NB	32		
08-BCP-092-m01	Biochemistry Lab	5	B/NB	15		
Thesis (10 ECTS credits)						
08-BA-092-m01	Bachelor Thesis	10	NUM	13		
Subject-specific Key Sk	ills (10 ECTS credits)		1			
03-TR-072-m01	Toxicology and legal studies	3	NUM	5		
08-VP-092-m01	Advanced chemical practical course	5	B/NB	35		
08-LRAC-092-m01	Literature research methods	1	B/NB	16		
08-LROC-092-m01	Literature research methods	1	B/NB	17		

Module title			Abbreviation			
Toxicology and legal studies			03-TR-072-m01			
Module coordinator			Module offered by			
lecturer of lecture "Toxikologie und Rechtskunde"			chtskunde"	Faculty of Medicine		
ECTS		od of grading	Only after succ. con	,		
3		rical grade		1		
Duratio	·	Module level	Other prerequisites			
1 seme		undergraduate				
Conten	ts		P			
Basics toxicol	-	l regulations for chemists	s (handling and trans	portation of hazardo	ous materials), funda	mentals of
Intend	ed learı	ning outcomes				
		master the basics of lega s the fundamentals of tox		nists (handling and t	ransport of hazardo	us substan-
Course	s (type	, number of weekly conta	ict hours, language –	- if other than Germa	n)	
		mation on SWS (weekly o				
		sessment (type, scope, la on on whether module ca			tion offered — if not	every seme-
written	examiı	nation (approx. 90 minut	es)			
	ion of p					
Additic	nal inf	ormation				
Auunu						
Worklo	ad					
	uu					
Teachi	ng cycl	۵				
	ing cycl					
Referre	d to in	LPOI (examination regu	lations for teaching-	legree programmes)		
	<u></u>					
Module	e appea	urs in				
		ree (1 major) Biochemistr	v (2011)			
	-	ree (1 major) Biochemisti				
	-	ree (1 major) Biochemisti				
Bachel	or' deg	ree (1 major) Chemistry (2	2007)			
Bachel	or' deg	ree (1 major) Chemistry (2	2008)			
Bachel	or' deg	ree (1 major) Chemistry (2	2010)			
Bachel	or' deg	ree (1 major) Chemistry (2	2009)			
Bachel	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)					
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		mination for the teaching				,
Bachelor's	with 1 maj	jor Chemistry (2009)		rg • generated 26-Aug-2024 rd Bachelor (180 FCTS) Chem		page 5 / 40

Module	e title				Abbreviation
	Inorganic Chemistry 1 08-AC1-092-m01				
Module	Module coordinator			Module offered by	
lecture Chemis		ture "Experimentalchemi	e" (Experimental	Institute of Inorgan	ic Chemistry
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
21	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
les, me module exercis autono ques, t	tals, ac introd es base mously he synt	id-base reactions, the po uces fundamental mode ed on the lecture on expe conduct experiments in	eriodic table, chemica ls of chemistry and p erimental chemistry a the laboratory. The c ces and analyses of u	al equilibrium and co rinciples of inorganio nd its extension. Afto ourse focuses on lab	of chemistry. It focuses on partic- omplexometry. In addition, the c chemistry. It includes practical er a safety briefing, the students poratory safety, simple lab techni- . In addition, students have the
Intende	ed learı	ning outcomes			
le to ex mical fe are abl are abl loped t	plain b ormula: e to de: e to ide he abil	asic models of the struct s to describe chemical re scribe the main quantitat entify fundamental proble	ure of matter. They h actions and to interp tive and qualitative a ems in chemistry and ary stoichiometric ca	ave developed the a ret them by identifyi nalytical methods ar perform experiment	formation from it. They are ab- bility to use the language of che- ng the type of reaction. Students nd their application areas. They s to solve them. They have deve- ibe the chemical processes in an
Course	s (type	, number of weekly conta	ict hours, language –	- if other than Germa	n)
• 0 • 0 • 0	8-AC1- 8-AC1- 8-AC1-	as 4 components; inform 1-092: V + V + Ü (no infor 2-092: P (no information 3-092: V (no information 4-092: P (no information	mation on language a on language and nur on language and nur	and number of week nber of weekly conta nber of weekly conta	ly contact hours available) act hours available) act hours available)
		s essment (type, scope, la on on whether module ca			tion offered — if not every seme-
		as the following 4 assess nent components to pass	•		ise, students must pass all of
Chemie 1 a e n Assess 6 V tu e Assess mie 1 4 3	e o ECTS) 1-3 w xamsje ation in ment c o ECTS o xamina ment c . ECTS o writter	credits, method of gradi ritten exams(1 written ex 6 o minutes) or b) oral e n groups (groups of two, omponent to module cor credits, method of gradin the (pre-experiment exams, foost-experiment exams, ation offered once a year, omponent to module cor credits, method of gradin n examinations (45 minut	ng: numerical grade kamination 90 minut xamination of on can approx. 30 minutes) nponent 08-AC1-2-09 g: (not) successfully s, approx. 15 minutes approx. 15 minutes winter semester nponent 08-AC1-3-09 g: numerical grade tes each), weighted 1	es, 2 written examsj didate each (approx 92: Praktikum Anorga completed each), assessment c each) 92: Erläuterungen zu :1:1, dates to be ann	of practical performance, Nach- m Praktikum Anorganische Che-

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• 1 ECTS credits, method of grading: (not) successfully completed

• practical assessment (safety drill in laboratory, length to be specified at the beginning of the course

Allocation of places

Additional information

Workload

Teaching cycle

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

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Module appears in

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	reg. data record Bachelor (180 ECTS) Chemie - 2009	

Module title				Abbreviation	
Inorganic Chemistry 2					08-AC2-092-m01
Module	e coord	inator		Module offered by	
lecture mistry)	r of lect	ture "Festkörperchemie"	(Solid State Che-	Institute of Inorgan	ic Chemistry
ECTS		od of grading	Only after succ. cor	npl. of module(s)	
6	nume	rical grade			
Duratio		Module level	Other prerequisites	;	
1 seme	ster	undergraduate			
Conten	ts				
		quips students with an a ures and properties, spe			l saline compounds. It focuses ical processes.
Intende	ed leari	ning outcomes			
priate r	manner bic metl	. They are able to system	ise them and charac	terise their structure	saline compounds in an appro- and reactivity. They can list spec- describe them in an appropriate
Course	s (type	, number of weekly conta	ct hours, language –	- if other than Germa	n)
V (no ir	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)
		s essment (type, scope, la on on whether module ca			tion offered — if not every seme-
					minations: 60 or 90 minutes s (groups of 2, approx. 30 minu-
Allocat	ion of p	olaces			
Additio	onal info	ormation			
Worklo	ad				
Teaching cycle					
Referre	ed to in	LPO I (examination regu	lations for teaching-	degree programmes)	
		<u> </u>			
Module	e appea	irs in			
Bachel	or' deg	ree (1 major) Chemistry (2	2009)		

Module	e title				Abbreviation		
Inorganic Chemistry 3				08-AC3-092-m01			
Module coordinator			Module offered by				
		ementorganisch	Chemie" (Flemental		ic Chemistry		
	ecturer of lecture "Elementorganische Chemie" (Elemental Institute of Inorganic Chemistry Drganic Chemistry)						
ECTS	Method of g	rading	Only after succ. con	pl. of module(s)			
9	numerical gr			nponent o8-AC1-2 or	nly) or 08-AN1 (modu	ıle compo-	
			nent o8-AN1-2 only)				
Duratio	on Modu	le level	Other prerequisites				
1 seme	ster under	graduate					
Conten	ts						
propert tunity t handlir is used	ties, special m o do some au ng of organom for the exact	aterial classes, r tonomous resear etallic compound determination of	advanced knowledge eactivity and technica ch and plan and cond ls, their synthesis and products.	l processes. The mod uct complex synthes	dule gives students es. The course focu	the oppor- ses on the	
	ed learning ou		cture and properties c				
able to explain researc in oral	systemise the principles fo h and perforn and written fo	em and character r the synthesis of n experiments to rm using approp	ise their structure and elementary organic co solve complex probler iate scientific termino g advanced lab techni	reactivity. In addition ompounds. Students ms. They are able to logy. They are able t	on, they are able to c are able to conduct describe the technic	levelop and autonomou al principles	
Course	s (type, numb	er of weekly cont	act hours, language –	- if other than Germa	n)		
compo • o • o Method	nent. 18-AC3-1-092: 18-AC3-2-092: d of assessme	V + Ü (no informa P (no informatio ent (type, scope, I	ponents. Information ation on SWS (weekly n on SWS (weekly con anguage — if other the	contact hours) and c tact hours) and cours an German, examina	ourse language ava se language availab	ilable) le)	
Assess low. Ur	ment in this n	nodule comprises	can be chosen to earn the assessments in t ful completion of the	he individual modul			
• 4 • a 2 Assess • 5 • V	ECTS, Metho) 1 to 3 writter es each; 3 writ o minutes) or ment in modu ECTS, Metho 'ortestate (pre estate (post-e	d of grading: nun examinations (1 ten examinations c) oral examinat le component of d of grading: (not -experiment exams xperiment exams	AC3-1-092: Elementa nerical grade written examination: g to minutes each) or on in groups (groups AC3-2-092: Inorgania) successfully complet ns, approx. 15 minutes , approx. 15 minutes r, winter semester	oo minutes; 2 written b) oral examination o of 2, approx. 30 minu c Chemistry 2 (lab) ted each), assessment o	examinations: 60 o of one candidate eac utes)	r 90 minu- h (approx.	
Allocat	ion of places						
Additio	nal information	on					
Worklo	ad						
			_				
	with 1 major Chemi						
achelon's		ctry (2000)	INALI \\//:	rg • generated 26-Aug-2024	• 0Y2m	page 9 / 40	

Teaching cycle

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

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Module appears in

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Module title			Abbreviation			
Analytical Chemistry 1				08-AN1-092-m01		
Module coordinator				Module offered by		
lecture mistry)	r of lect	ure "Analytische Chemie	" (Analytical Che-	Institute of Inorgan	ic Chemistry	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
11	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
ses on on, it in module lecture	bondin troduc gives (s). Afte	g conditions, trends in these students to elementation students to elementation students the opportunity	ne periodic table and ry organic chemistry, to apply in practice t tudents autonomous	the description and coordination chemis the knowledge they l y conduct experiment	and selected elements. It focu- structure of elements. In additi- stry and complex chemistry. The nave gained through the related nts in the laboratory. These expe-	
		ning outcomes				
Studen reactivi how to	ts are a ty and use the	able to characterise main fabrication. They are able	e to identify the coord ntial tool for chemists	dination of the atoms 5. Students are able t	ments in terms of their structure, s. In addition, they have learned to use different methods to ana- xtures.	
Course	s (type,	, number of weekly conta	ct hours, language –	- if other than Germa	n)	
compoi • 0	nent. 8-AN1-	2-092: P (no information	on SWS (weekly cont	tact hours) and cours	sted separately for each module se language available) ourse language available)	
		e ssment (type, scope, la on on whether module ca			tion offered — if not every seme-	
	less st	ated otherwise, successf			e components as specified be- successful completion of all indi-	
 Assessment in module component o8-AN1-2-o92: Analytical Chemistry (lab) 6 ECTS, Method of grading: (not) successfully completed Vortestate (pre-experiment exams, approx. 15 minutes each), assessment of practical performance, Nachtestate (post-experiment exams, approx. 15 minutes each) Assessment offered: once a year, summer semester Assessment in module component o8-AN1-1-o92: Principles of Analytical Chemistry Principles of Analytical Chemistry 5 ECTS, Method of grading: numerical grade a) 1 to 3 written examinations (1 written examination: 90 minutes; 2 written examinations: 60 or 90 minutes each; 3 written examinations: 60 minutes each) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes) 						
	Allocation of places					
Additio	nal info	ormation				
Worklo	ad					
WORKO	uu					

Teaching cycle

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

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Module appears in

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	reg. data record Bachelor (180 ECTS) Chemie - 2009	1

Module	Module title Abbreviation					
Bachel	or Thes	is			08-BA-092-m01	
Module	e coord	inator		Module offered by	<u> </u>	
head o	f the re	search group offering the	e module	Faculty of Chemistr	y and Pharmacy	
ECTS		od of grading	Only after succ. con	· · · ·	, ,	
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate	supervisor. Topic to be assigned by exar	be selected in cons	uous basis as agreed upon with ultation with supervisor. Topic to (Section 21 Subsection 3 ASPO ulations)).	
Conten	Its					
	-	ives students the opport scientific methods they		•	problem within a given time frame	
Intende	ed learr	ning outcomes				
		able to conduct research to present the results of			the principles of good scientific	
Course	e s (type,	, number of weekly conta	act hours, language –	- if other than Germa	in)	
no cou	rses as	signed				
		sessment (type, scope, la on on whether module c			tion offered — if not every seme-	
written Langua		ssessment: German or E	nglish			
Allocat	ion of p	olaces				
Additio	onal info	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Bachel	or' deg	ree (1 major) Chemistry (2009)			

Module title					Abbreviation	
Bioche	mistry				08-BC-092-m01	
Module	e coord	inator		Module offered by		
		hair of Biochemistry		Chair of Biochemist	try	
ECTS	r	od of grading	Only after succ. com			
6		rical grade				
Duratio	·	Module level	Other prerequisites			
2 seme		undergraduate			successful completion of exerci-	
			ses in the respective	e classes as specifie	d at the beginning of the course	
			(usually 70% of exe	rcises to be success	fully completed) as well as regu-	
			lar attendance of ex	ercises (usually a ma	aximum of 2 incidents of unexcu-	
			sed absence).			
Conten	ts					
Compr mistry.	ising le	ctures and exercises, this	s module acquaints s	tudents with the fun	damental principles of bioche-	
Intend	ed learr	ning outcomes				
		e become familiar with th al processes in cellular s		ples of biochemistry	. They are able to describe the	
Course	s (type,	, number of weekly conta	ct hours, language —	- if other than Germa	ın)	
V + Ü +	V + Ü (no information on SWS (\	weekly contact hours) and course langua	ge available)	
		e ssment (type, scope, la on on whether module ca			tion offered — if not every seme-	
or 90 n	ninutes		tions: approx. 60 min	nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)	
	ion of p					
Additio	onal info	ormation				
Worklo	ad					
Teachi	ng cycl	9				
Referre	ed to in	LPOI (examination regu	lations for teaching-o	degree programmes)		
Module	e appea	irs in				
	Bachelor' degree (1 major) Chemistry (2010)					
Bachelor' degree (1 major) Chemistry (2009)						
	Bachelor' degree (1 major) Nanostructure Technology (2010)					
	-	ree (1 major) Nanostructu ree (1 major) FOKUS Cher)		
	-	ee (1 major) FORUS Cher ee (1 major) Chemistry (2	•			
master	Jucan		,			

Module title					Abbreviation	
Bioche	mistry	Lab			08-BCP-092-m01	
Module	e coord	inator		Module offered by		
holder	of the C	Chair of Biochemistry		Chair of Biochemist	ry	
ECTS		od of grading	Only after succ. com	pl. of module(s)		
5		successfully completed	o8-BC			
Duratio		Module level	Other prerequisites			
1 seme		undergraduate				
Conten						
Practica experin		ises give students the or	oportunity to learn the	e fundamental princ	iples of conducting biochemical	
Intende	ed learr	ning outcomes				
Studen	ts have	e become proficient in es	sential methods in bi	ochemistry.		
Course	s (type,	, number of weekly conta	ct hours, language —	if other than Germa	n)	
P (no in	Iformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)	
		e ssment (type, scope, la on on whether module ca			tion offered — if not every seme-	
(log, ap	prox. 5	riment examination talks to 10 pages) ffered: once a year, sumr		htestate, approx. 15	minutes each), practical work	
Allocat	ion of p	olaces				
allocate wing qu de, plac cant; ai	ed in a uotas: (ces will mong a	standardised procedure Quota 1 (80% of places): be allocated by lot. Quo	among all applicants grade achieved in mo ta 2 (20% of places): number of subject se	irrespective of their odule o8-BC; among number of subject s mesters, places will	available places, places will be subjects according to the follo- applicants with the same gra- emesters of the respective appli- be allocated by lot. A waiting list	
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Bachelor' degree (1 major) Chemistry (2010)						
	-	ree (1 major) Chemistry (2	-			
	-	ee (1 major) Chemistry (2				
master	Master's degree (1 major) Chemistry (2010)					

Module	Module title Abbreviation				
Literat	Literature research methods				08-LRAC-092-m01
Module	e coord	inator		Module offered by	<u></u>
lecture Organi		ture "Elementorganische	Chemie" (Elemental	Institute of Inorgan	ic Chemistry
ECTS	r	od of grading	Only after succ. con	pl. of module(s)	
1		successfully completed			
Duratio	'n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Literatu	ure sea	rch for planning experime	ents in the field of inc	organic chemistry.	
Intend	ed lear	ning outcomes			
Studen	its know	w how to conduct literatu	re searches for plann	ing experiments in t	he field of inorganic chemistry.
Course	s (type	, number of weekly conta	ct hours, language –	- if other than Germa	in)
Ü (no iı	nforma	tion on SWS (weekly cont	tact hours) and cours	e language available	2)
		sessment (type, scope, la ion on whether module ca			tion offered — if not every seme-
2 litera	ture se	arches about given prepa	arations		
Allocat	ion of	places			
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
	0.95				
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Bachelor' degree (1 major) Chemistry (2010)					
Bachelor' degree (1 major) Chemistry (2009)					

Module title					Abbreviation	
Literatı	ure res	earch methods			08-LROC-092-m01	
Module	e coord	inator		Module offered by		
lecture	r of lect	ture "Organische Chemie	4"	Institute of Organic	Chemistry	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
1	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Literatu	ire sea	rch for planning experime	ents in the field of org	ganic chemistry.		
Intende	ed learı	ning outcomes				
Studen	ts knov	v how to conduct literatu	re searches for plann	ing experiments in t	he field of organic chemistry.	
Course	s (type	, number of weekly conta	ct hours, language —	· if other than Germa	n)	
Ü (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	e)	
		s essment (type, scope, la on on whether module ca			tion offered — if not every seme-	
1 literat	ture sea	arch about given prepara	tions			
Allocat	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 appears in						
	-	ree (1 major) Chemistry (2				
Bachel	Bachelor' degree (1 major) Chemistry (2009)					

Module	e title				Abbreviation	
	c Chem	istry 1			08-0C1-092-m01	
Module coordinator				Module offered by		
	1	Professorship of Organ	/	Institute of Organic	Chemistry	
ECTS		od of grading	Only after succ. con	npl. of module(s)		
5	· · · · ·	rical grade				
Duratio		Module level	Other prerequisites		<u> </u>	
1 seme	ster	undergraduate	ses in the respective (usually 70% of exe	Admission prerequisite to assessment: successful completion of exerci ses in the respective classes as specified at the beginning of the course (usually 70% of exercises to be successfully completed) as well as regular attendance of exercises (usually a maximum of 2 incidents of unexcessed absence).		
Conten	Its					
the bor organic	nding si c compo	tuation of carbon and ounds. The module als	an overview of the func introduces students to o discusses the fundar vell as synthesis planni	the nomenclature of nental principles of s	simple and modera	tely complex
Intende	ed learr	ning outcomes				
of nom lecules that pu synthes	enclatu . They a Irpose, ses.	re to determine simple are able to describe an they can analyse and c	of substances in orgar substance names. Stu d formulate some of th ategorise the characte	udents are able to an e most important rea ristic reaction condit	alyse the stereocher actions in organic ch ions and can use the	mistry of mo- emistry. For
			itact hours, language –			
1) Ü + V	no infor	mation on SWS (weekl	y contact hours) and co	ourse language avail	able)	
			language — if other th can be chosen to earn		tion offered — if not	every seme-
nutes e	each; 3	written examinations:	en examination: appro 60 minutes each) or b) pups (groups of 2, app	oral examination of		
Allocat	ion of p	olaces				
Additio	onal info	ormation				
Worklo	ad					
Teachi	ng cycl	9				
	0.75					
		-	gulations for teaching-			
§ 62 (1)) 2. Che	mie "Organische und I	Bioorganische Chemie"			
	e appea					
Bachelor' degree (1 major) Biochemistry (2011) Bachelor' degree (1 major) Biochemistry (2013) Bachelor' degree (1 major) Biochemistry (2009) Bachelor' degree (1 major) Chemistry (2010) Bachelor' degree (1 major) Chemistry (2009) Bachelor' degree (1 major) Mathematics (2012)						
Bachelor's	with 1 maj	or Chemistry (2009)		urg • generated 26-Aug-2024		page 18 / 40
			reg. data reco	ord Bachelor (180 ECTS) Chem	ne - 2009	

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Bachelor' degree (1 major) Mathematics (2013) Bachelor' degree (1 major) Computational Mathematics (2009) Bachelor' degree (1 major) Computational Mathematics (2012) Bachelor' degree (1 major) Computational Mathematics (2013) Bachelor' degree (1 major) FOKUS Chemistry (2011) First state examination for the teaching degree Gymnasium Chemistry (2009)

Bachelor's with 1 major Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 19 / 40
	reg. data record Bachelor (180 ECTS) Chemie - 2009	

Module					Abbreviation	
	Organic Chemistry 2 08-0C2-092-m01					
Module	e coord	inator		Module offered by		
holder	of the (Chair of Physically Organi	c Chemistry	Institute of Organic	Chemistry	
ECTS		od of grading	Only after succ. con	npl. of module(s)		
9	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
the exa on read well as	ample o ctions to rearrar	f carbonyl compounds, it o complex reaction mech	extends the student anisms. The course a ntroduces students to	s' knowledge of sub Ilso focuses on oxida	fic reactions of aromatics. Using stitution, elimination and additi- ation and reduction reactions as nethods of infrared spectrosco-	
Intend	ed lear	ning outcomes				
bonyl o they ca unknov	compou in plan wn reac	inds. They are able to des and formulate multi-stag	scribe specific reaction e syntheses with con to describe importan	ons of carbonyls and nplex reaction mecha	e the varying reactivity of car- aromatics. For that purpose, anisms and can transfer them to nods, to evaluate a spectrum and	
Course	s (type	, number of weekly conta	ct hours, language –	- if other than Germa	n)	
V + Ü +	V (no i	nformation on SWS (wee	kly contact hours) an	d course language a	vailable)	
		sessment (type, scope, la on on whether module ca			tion offered — if not every seme-	
					ninations: 60 or 90 minutes 5 (groups of 2, approx. 30 minu-	
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Bachelor' degree (1 major) Biochemistry (2009)						
	Bachelor' degree (1 major) Chemistry (2009)					
	Bachelor' degree (1 major) Computational Mathematics (2009)					

Module title				Abbreviation	
Organic Chemistry 3					08-0C3-092-m01
Module coordinator				Module offered by	<u> </u>
holder	ofthe	Professorship of Organic	Chemistry	Institute of Organic	Chemistry
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
15	nume	rical grade	08-AC1 (module cor	nponent o8-AC1-2 or	nly) or o8-AN1 (module compo-
			nent o8-AN1-2 only)	or 08-0C1 or 08-0C	1-GHR
Durati	on	Module level	Other prerequisites		
1 seme	ester	undergraduate	By way of exception	, additional prerequ	isites are listed in the section on
			assessments.		
Conter	nts				
radical tallic c ge they	ls. It dis hemist y have §	scusses the fundamental ry and retrosynthesis. The gained through the relate	principles of stereos e module gives stude d lecture(s). After a s	elective synthesis, a nts the opportunity afety briefing, the st	reactions, carbenes, nitriles and symmetric catalysis, organome- to apply in practice the knowled- udents autonomously conduct e expected to take oral tests and

write lab reports to demonstrate their knowledge. The course focuses on the safe handling of hazardous substances, simple experimental unit operations of organic chemistry, simple to multi-level syntheses and the analysis of the products.

Intended learning outcomes

Students are able to formulate olefination reactions. They are able to develop stereoselective syntheses and asymmetric catalyses. Students are able to describe organometallic reactions. They are able to conduct retrosynthetic analyses of molecules. Students know how to safely handle hazardous substances. They are able to conduct simple experimental operations of organic chemistry. They are able to analyse the yield and purity of the products and identify possible error sources. They are able to connect the theoretical aspects covered in the lecture with practical experiments in the laboratory.

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.

- 08-0C3-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available)
- 08-0C3-2-092: 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 can be chosen to earn a 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-OC3-1-092: Organic Chemistry 3 Organic Chemistry 3

- 6 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 or English
- Other prerequisites: Admission prerequisite to assessment: successful completion of exercises in the respective classes as specified at the beginning of the course (usually 70% of exercises to be successfully completed) as well as regular attendance of exercises (usually a maximum of 2 incidents of unexcused absence).

Assessment in module component o8-OC3-2-092: Organic Chemistry - lab 1

- 9 ECTS, Method of grading: (not) successfully completed
- Vortestate (pre-experiment exams, approx. 15 minutes each), assessment of practical performance, Nachtestate (post-experiment exams, approx. 15 minutes each)

Bachelor's with 1 major Chemistry (2009)	JMU Würzburg ● generated 26-Aug-2024 ● exam.	page 21 / 40
	reg. data record Bachelor (180 ECTS) Chemie - 2009	

Allocation of places

Additional information

Workload

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Teaching cycle

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

Module appears in

Bachelor's with 1 major Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 22 / 40
	reg. data record Bachelor (180 ECTS) Chemie - 2009	

Module title					Abbreviation	
Organ	ic Chen	nistry 4			08-0C4-092-m01	
Modul	e coord	linator		Module offered by		
holder	ofthe	Chair of Organic Cherr	istry II	Institute of Organic	Chemistry	
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)		
10	nume	rical grade	08-AC1 (module cor	nponent 08-AC1-2 or	nly) or o8-AC1-BC (module com-	
			ponent o8-AC1-BC-2	ponent o8-AC1-BC-2 only) or o8-AN1 (module component o8-AN1-2 only)		
Durati	on	Module level	Other prerequisites	Other prerequisites		
1 seme	ester	undergraduate	By way of exceptior	By way of exception, additional prerequisites are listed in the section on		
			assessments.	assessments.		
Conte	nts					
This module focuses on heterocyclic compounds, dyes, naturally occurring substances, biopolymers and protec- ting group techniques. Students enhance their experimental skills by working with special hazardous substan- ces, using complicated working and synthesis techniques as well as extensive purification methods and perfor- ming elaborate product analyses.						
Intended learning outcomes						
Students are able to name important heteroaromatics and to formulate their reactions and syntheses. They are able to characterise and categorise dyes. Students are able to describe the structure and selective synthesis of						

able to characterise and categorise dyes. Students are able to describe the structure and selective synthesis of proteins. In addition, they are able to describe the structure of the DNA, carbohydrates, fats, terpenes and steroids. Students know how to safely and responsibly handle special hazardous substances. They are able to perform complex syntheses, purification methods and product analyses. They are able to use specialist literature to plan experiments.

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.

- 08-0C4-2-092: P (no information on SWS (weekly contact hours) and course language available)
- 08-0C4-1-092: 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 can be chosen to earn a 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-OC4-2-092: Organic Chemistry - advanced laboratory course for students of chemistry

- 5 ECTS, Method of grading: (not) successfully completed
- Vortestate (pre-experiment exams, approx. 15 minutes each), assessment of practical performance, Nachtestate (post-experiment exams, approx. 15 minutes each)
- Assessment offered: once a year, winter semester

Assessment in module component o8-OC4-1-092: Organic Chemistry 4 Organic Chemistry 4

- 5 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)
- Other prerequisites: Admission prerequisite to assessment: successful completion of exercises in the respective classes as specified at the beginning of the course (usually 70% of exercises to be successfully completed) as well as regular attendance of exercises (usually a maximum of 2 incidents of unexcused absence).

Allocation of places

Ba

chelor's with 1	ı major Chemistry (2009)	

Additional information

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

Bachelor's with 1 major Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 24 / 40
	reg. data record Bachelor (180 ECTS) Chemie - 2009	

Module title				Abbreviation	
Physical Chei	nistry 1			08-PC1-092-m01	
Module coordinator Module offered by					
	ture "Grundlagen der C	uantenmechanik and	-	l and Theoretical Ch	emistrv
	e" (Principles of Quant		,,		,
	od of grading	Only after succ. con	npl. of module(s)		
	erical grade		• • • •		
Duration	Module level	Other prerequisites			
1 semester	undergraduate	ses in the respective (usually 70% of exe lar attendance of ex	site to assessment: e classes as specifie rcises to be success ercises (usually a m	d at the beginning o fully completed) as v	f the course well as regu-
Contents		sed absence).			
the basis of the module for UV-VIS spectre	he following models: p ocuses on vibrational s oscopy. In addition, th	the fundamental princip article in a box, harmon pectroscopy, angular m e module discusses ling r transform and orthogo	ic oscillator and rigi omentum quantisati ear operators, eigen	d rotor. As regards s on, microwave spec value problems, mat	pectroscopy, troscopy and rrix represen-
Intended lear	ning outcomes				
	ifferent spectroscopic r	dels of quantum mecha nethods. In addition, st			
Courses (type	, number of weekly co	ntact hours, language –	- if other than Germa	ın)	
$V + \ddot{U} + V + \ddot{U}$	(no information on SWS	S (weekly contact hours) and course langua	ge available)	
		, language — if other the e can be chosen to earn		ition offered — if not	every seme-
nutes each; 3	written examinations:	ten examination: appro 60 minutes each) or b) oups (groups of 2, appi	oral examination of		
Allocation of	places	;;;;;;;			
Additional inf	ormation				
Workload					
Teaching cycl	le				
Referred to in	LPOI (examination re	gulations for teaching-o	degree programmes)		
Module appea	ars in				
	roo (a major) Biachami	stry (2011)			
Bachelor' deg Bachelor' deg Bachelor' deg	gree (1 major) Biochemi gree (1 major) Biochemi gree (1 major) Biochemi gree (1 major) Chemistr	stry (2013) stry (2009)			

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Bachelor' degree (1 major) Chemistry (2009) Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013) Bachelor' degree (1 major) Computational Mathematics (2009) Bachelor' degree (1 major) Computational Mathematics (2012) Bachelor' degree (1 major) Computational Mathematics (2013) Bachelor' degree (1 major) FOKUS Chemistry (2011)

Bachelor's with 1 major Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 26 / 40
	reg. data record Bachelor (180 ECTS) Chemie - 2009	

Modul	e title			· · · · · · · · · · · · · · · · · · ·	Abbreviation
Physic	al Cher	nistry 2: Thermodynami	cs, Kinetics, Electroch	nemistry	08-PC2-092-m01
Modul	e coord	inator		Module offered by	^
lecture mie"	er of lec	ture "Thermodynamik, K	inetik, Elektroche-	Institute of Physica	ll and Theoretical Chemistry
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
18	nume	rical grade			
Duratio		Module level	Other prerequisites		
1 seme	ester	undergraduate	By way of exception assessments.	, additional prerequ	isites are listed in the section on
Conten	nts				
tunity t the stu will be	to apply idents a expect	y in practice the knowled	lge they have gained t xperiments in the lab	through the related l oratory. In addition t	dule gives students the oppor- lecture(s). After a safety briefing, to those experiments, students owledge.
of cher chemis rement	mical re stry and ts.	eactions. They are able to I spectroscopy with prac	o connect the theoreti tical laboratory experi	cal principles of the iments. They are abl	le to interpret the kinetic aspects rmodynamics, kinetics, electro- e to analyse the resulting measu-
		, number of weekly conta			
compo • c	onent. 08-PC2-	2-092: P (no information	n on SWS (weekly con	tact hours) and cour	isted separately for each module rse language available) course language available)
Metho	d of as		anguage — if other th	an German, examina	ation offered — if not every seme-
Assess low. Ur	sment i	n this module comprises ated otherwise, success	the assessments in t	he individual modul	e components as specified be- successful completion of all indi-
• 9	9 ECTS,	n module component o8 Method of grading: (not) ate (pre-experiment exarr) successfully comple	ted	

Bachelor's with 1 major Chemistry (2009)	JMU Würzburg ● generated 26-Aug-2024 ● exam.	page 27 / 40
	reg. data record Bachelor (180 ECTS) Chemie - 2009	

Allocation of places

Additional information

Workload

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Teaching cycle

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

§ 62 (1) 1. Chemie "Allgemeine und Anorganische Chemie"; "Physikalische und Analytische Chemie"

Module appears in

Bachelor' degree (1 major) Chemistry (2010) Bachelor' degree (1 major) Chemistry (2009) Bachelor' degree (1 major) FOKUS Chemistry (2011)

Bachelor's with 1 major Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 28 / 40
	reg. data record Bachelor (180 ECTS) Chemie - 2009	

Module title				Abbreviation	
Physical and	Theoretical Chemistry	: Symmetry and Quan	tum Chemistry	08-PC3-092-m01	
Module coord	inator		Module offered by		
				l an d The anotice I Ch	
ï	ture "Quantenchemie"			l and Theoretical Ch	emistry
	od of grading	Only after succ. con	ipl. of module(s)		
	rical grade				
Duration	Module level	Other prerequisites			
1 semester	undergraduate	Admission prerequi		•	
		(usually 70% of exe	•	• •	
		lar attendance of ex			-
		sed absence).	ercises (usually a m		
Contents	<u> </u>	sed absence).			
	liceuse of the fundament	tal principles of quant	um chamictry and a	mmotny in chamictr	.,
	liscusses the fundamer	ital principles of quant	um chemistry and s	minetry in chemistr	y.
	ning outcomes				
	e become familiar with t able to apply the know	•		emistry and symmetr	ry in che-
Courses (type	, number of weekly con	tact hours, language —	- if other than Germa	ın)	
V + Ü + V + Ü (no information on SWS	(weekly contact hours) and course langua	ge available)	
	sessment (type, scope, ion on whether module			ition offered — if not	every seme-
each; 3 writte tes) or c) oral	n examinations (1 writt n examinations: 60 min examination in groups	utes each) or b) oral ex	kamination of one ca		
Allocation of	places				
Additional inf	ormation				
Workload					
Teaching cycl	e				
Referred to in	LPO I (examination reg	ulations for teaching-o	degree programmes)		
Module appea	ars in				
	ree (1 major) Biochemis	try (2013)			
-	ree (1 major) Chemistry				
	Bachelor' degree (1 major) Chemistry (2009)				
Bachelor' degree (1 major) Mathematics (2012)					
Bachelor' degree (1 major) Mathematics (2013)					
-	ree (1 major) Computati		•		
-	ree (1 major) Computati				
-	ree (1 major) Computati		13)		
-	ree (1 major) FOKUS Ch	•			
	mination for the teaching				
	mination for the teachin mination for the teachin	,			
	jor Chemistry (2009)		rg • generated 26-Aug-2024	• exam.	page 29 / 40
			rd Bachelor (180 ECTS) Chen		



First state examination for the teaching degree Gymnasium Chemistry (2009) First state examination for the teaching degree Mittelschule Chemistry (2013)

Bachelor's with 1 major Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 30 / 40
	reg. data record Bachelor (180 ECTS) Chemie - 2009	

Module					Abbreviation			
Physic	al Cher	nistry 4: Statistical T	hermodynamics		08-PC4-092-m01			
Module coordinator				Module offered by				
lecturer of lecture "Statistische Thermodynamik"			ermodynamik"		sical and Theoretical Chemistry			
ECTS	1	od of grading		compl. of module(s)				
3	1	rical grade						
Duratio		Module level	Other prerequisit	es				
1 seme	ester	undergraduate	Admission prerect ses in the respect (usually 70% of e	quisite to assessme tive classes as spec xercises to be succ	nt: successful completion of exerci- ified at the beginning of the course essfully completed) as well as regu- a maximum of 2 incidents of unexcu			
Conten	nts							
This m	odule d	liscusses the fundam	ental principles of sta	tistical thermodyna	mics.			
Intend	ed lear	ning outcomes						
		e become familiar wit wledge they have dev	-	nciples of statistica	l thermodynamics and are able to			
Course	s (type	, number of weekly co	ontact hours, language	e — if other than Ge	rman)			
V + Ü (ı	no infoi	rmation on SWS (wee	kly contact hours) and	l course language a	vailable)			
			e, language — if other le can be chosen to ea		ination offered — if not every seme-			
or 90 n	ninutes	each; 3 written exam		ninutes each) or b)	written examinations: approx. 60 oral examination of one candidate rox. 30 minutes)			
Allocat	tion of _l	olaces						
Additio	onal inf	ormation						
Worklo	ad							
	_							
Teachi	ng cycl	e						
Referre	ed to in	LPOI (examination r	regulations for teachin	g-degree programm	ies)			
	e appea							
		ree (1 major) Chemist						
Bachelor' degree (1 major) Chemistry (2009) Bachelor' degree (1 major) FOKUS Chemistry (2011)								
				ula Chomistry (acar	2)			
			hing degree Grundsch hing degree Hauptsch					
			hing degree Realschul		7)			
)			
	ate exa		irst state examination for the teaching degree Gymnasium Chemistry (2009)					

Module	Module title Abbreviation				
Progra	mming	course for Chemistry Ma	jors		08-PKC-092-m01
Module	e coord	inator		Module offered by	
lecture	r of lec	ture "Programmierkurs fü	r Chemiker"		l and Theoretical Chemistry
ECTS	r	od of grading	Only after succ. con	· · ·	
5	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
		provides an introduction t d to problems in chemist		of a programming lar	nguage and discusses how they
Intende	ed lear	ning outcomes			
Studen chemis		able to describe the fund	amentals of the prog	ramming language a	nd to apply them to problems in
Course	s (type	, number of weekly conta	ct hours, language –	- if other than Germa	in)
V + Ü (r	no info	rmation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		sessment (type, scope, la ion on whether module ca			tion offered — if not every seme-
		nination: completion of p ime as specified at the be			on of algorithms used (length/ex-
Allocat	ion of _l	olaces			
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	ars in			
		ree (1 major) Chemistry (2	2009)		
	-	ree (1 major) Technology	-	als (2009)	
Bachel	or' deg	ree (1 major) Technology	of Functional Materia	als (2010)	

Module title					Abbreviation
Applie	d Spec	troscopy 3			08-PS3-092-m01
Module coordinator				Module offered by	
lecture	r of lec	ture "Praktische Spektros	skopie 3"	Institute of Physica	l and Theoretical Chemistry
ECTS		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	undergraduate			
Conten	ts				
practic	e and t		aphs. We will record		e of spectroscopic methods in fluorescence and vibration spec-
Intend	ed lear	ning outcomes			
		able to work with differen discussions.	t spectrometers and	to interpret the resu	lting spectra. They are able to
Course	s (type	, number of weekly conta	ict hours, language –	- if other than Germa	in)
V (no ir	nforma	tion on SWS (weekly cont	act hours) and cours	e language available	2)
ster, in 1 writte ten exa	format en exan aminati	ion on whether module can nination (approx. 90 minu	an be chosen to earn utes) or 2 written exa each) or oral examin	a bonus) minations (approx. 6 ation of one candida	tion offered — if not every seme- bo or 90 minutes each) or 3 writ- te each (approx. 20 minutes) or
Allocat				,	
		<u>.</u>			
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cvcl	e	·		
	3 2 9 8				
Referre	ed to in	LPOI (examination regu	lations for teaching-	degree programmes)	
Module	e appea	ars in			
		ree (1 major) Chemistry (2	2010)		
	-	ree (1 major) Chemistry (2			
	-	ee (1 major) Technology o			
	-	ee (1 major) Technology o		ls (2009)	
Master	's degr	ee (1 major) Functional M	aterials (2012)		

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	e title				Abbreviation	
Theoretical Models in Chemistry					08-TC-092-m01	
Module coordinator				Module offered by		
lecturer of lecture "Quantenchemie"			- 11	· · · · · ·	Land The exertical Chamietre	
	-				l and Theoretical Chemistry	
ECTS		od of grading	Only after succ. con	npl. of module(s)		
3		rical grade				
Duratio		Module level	Other prerequisites			
1 seme	ester	undergraduate			successful completion of exerci-	
			•	d at the beginning of the course		
					fully completed) as well as regu-	
			lar attendance of ex	kercises (usually a m	aximum of 2 incidents of unexcu	
			sed absence).			
Conter	nts		·			
This m	odule r	provides students wit	h deeper insights into ad	lvanced topics in qu	antum chemistry. It focuses on	
					ion energy, configuration interac	
			ppenheimer approximat			
Intend	led lear	ning outcomes				
Studer	nts are a	able to describe excit	ed states of molecules w	vith the help of key c	oncepts and models.	
			ontact hours, language –		•	
			ekly contact hours) and co			
					tion offered — if not every seme	
			lle can be chosen to earn	·		
					tten examinations: approx. 60	
					l examination of one candidate	
			al examination in groups		. 30 minutes)	
Allocat	tion of	places				
Additio	onal inf	ormation				
Worklo	oad					
Worklo	oad					
	oad ing cycl	e				
 Teachi 	ing cycl					
 Teachi 	ing cycl		regulations for teaching-	degree programmes)		
 Teachi 	ing cycl		regulations for teaching-	degree programmes)		
 Teachi Referre	ing cycl	LPOI (examination	regulations for teaching-	degree programmes)	 	
 Teachi Referre Module	ing cycl ed to in le appea	LPOI (examination		degree programmes)		
 Teachi Referre Module Bachel	ing cycl ed to in le appea lor' deg	LPOI (examination	try (2010)	degree programmes)	,	
 Teachi Referro Modulo Bachel Bachel	ing cycl ed to in e appea lor' deg lor' deg	LPOI (examination ars in gree (1 major) Chemis	try (2010) try (2009)	degree programmes)		
 Teachi Referro Modul Bachel Bachel Bachel	ing cycl ed to in e appea lor' deg lor' deg lor' deg	LPO I (examination ars in gree (1 major) Chemis gree (1 major) Chemis	try (2010) try (2009) natics (2012)	degree programmes))	
 Teachi Referro Bachel Bachel Bachel Bachel Bachel	ing cycl ed to in e appea lor' deg lor' deg lor' deg lor' deg	LPO I (examination ars in gree (1 major) Chemis gree (1 major) Chemis gree (1 major) Mathem gree (1 major) Mathem	try (2010) try (2009) natics (2012)			
 Teachi Referro Bachel Bachel Bachel Bachel Bachel Bachel	ed to in ed to in e appea lor' deg lor' deg lor' deg lor' deg lor' deg	LPO I (examination ars in gree (1 major) Chemis gree (1 major) Chemis gree (1 major) Mathen gree (1 major) Mathen gree (1 major) Comput	try (2010) try (2009) natics (2012) natics (2013)	09)		
 Teachi Referre Modul Bachel Bachel Bachel Bachel Bachel Bachel Bachel Bachel Bachel Bachel	ed to in ed to in e appea lor' deg lor' deg lor' deg lor' deg lor' deg lor' deg lor' deg	LPO I (examination ars in gree (1 major) Chemis gree (1 major) Chemis gree (1 major) Mathen gree (1 major) Mathen gree (1 major) Comput gree (1 major) Comput	try (2010) try (2009) natics (2012) natics (2013) rational Mathematics (20 rational Mathematics (20 rational Mathematics (20	109) 112)		

Bachelor's with 1	major Chemistry	(2009)
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Module title					Abbreviation	
Advanced chemical practical course					08-VP-092-m01	
Module coordinator				Module offered by		
head of the research group offering the module		e module	Faculty of Chemistr	v and Pharmacy		
ECTS		od of grading	Only after succ. con		· ·	
5	(not)	successfully completed		-		
Duratio	Duration Module level Other prerequisit		Other prerequisites	S		
1 seme	ster	undergraduate				
Conten	Its					
		vives students the opport ne in question.	unity to explore a res	earch topic and app	ly the methods commonly used	
Intend	ed lear	ning outcomes				
Studen oral pre			research topic and p	resent the results of	their work in a written report or	
Course	e s (type	, number of weekly conta	act hours, language –	- if other than Germa	n)	
P (no ir	nformat	tion on SWS (weekly cont	tact hours) and cours	e language available	2)	
		s essment (type, scope, la ion on whether module c			tion offered — if not every seme-	
talk (ap	oprox. 1	15 minutes)				
Allocat	ion of	places				
Additio	onal inf	ormation				
Worklo	ad					
Teachi	ng cvcl	e				
		-	-			
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
-		are in				
Module	e appea					

Mathe	e title				Abbreviation	
matriel	matics	for students of Chemistr	y and Biology (lecture	e and practice)	10-M-MCB-092-m01	
Module coordinator				Module offered by	1	
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathe	matics	
ECTS	1	od of grading	Only after succ. com	pl. of module(s)		
5		rical grade				
		Other prerequisites				
1 seme		undergraduate				
	onal relations in	n several variables, powe			e, curve sketching, differentiation systems of linear equations, basic	
Intend	ed lear	ning outcomes				
		able to recognise and p athematical methods to			ences as mathematical problems,	
Course	s (type	, number of weekly conta	act hours, language —	if other than Germ	an)	
• 1 Metho	.o-M-M .o-M-M d of ass	CB-2-092: Ü (no informat	ion on SWS (weekly c anguage — if other tha	ontact hours) and an German, examin	course language available) course language available) ation offered — if not every seme-	
low. Ur vidual	nless st assess	ated otherwise, success ments.	ful completion of the I	module will require	le components as specified be- successful completion of all indi-	
• 3 • v	3 ECTS, vritten o	Method of grading: nume examination (120 minute	erical grade s)		s in Chemistry and Biology	
	∕ ₂ECTS,	Method of grading: (not)	-	ses in Mathematic	s for students in Chemistry and	
	exercise	es (to be submitted on a				
• 2		es (to be submitted on a				
• 2 • e		es (to be submitted on a				
• 2 • e Allocat	ion of _l	es (to be submitted on a				
• 2 • e Allocat	ion of _l	es (to be submitted on a v blaces				
• 2 • e Allocat	tion of <u>p</u> onal inf	es (to be submitted on a v blaces				
• 2 • e Allocat Additio	tion of <u>p</u> onal inf	es (to be submitted on a v blaces				
• 2 • e Allocat Additio	ion of ponal inf	es (to be submitted on a solaces				
• 2 • e Allocat Additio Worklo 	ion of ponal inf	es (to be submitted on a solaces				
• 2 • e Allocat Additio Worklo Teachin 	tion of p pnal inf pad	es (to be submitted on a solaces	weekly basis, written	examination)	5)	
• 2 • e Allocat Additio Worklo Teachin 	tion of p onal inf oad ng cycl	es (to be submitted on a voltage of the submitted on a voltage of	weekly basis, written	examination)	5)	

Module	e title			Abbreviation		
Introdu	iction to Physics for Students o	f Non-physics-relate	d Minor Subjects	11-EFNF-072-m01		
Module coordinator			Module offered by			
Managi	ing Director of the Institute of A		Faculty of Physics a	and Astronomy		
ECTS	Method of grading	Only after succ. con	npl. of module(s)			
7	numerical grade					
Duration Module level Other prerequisi						
2 seme	ster undergraduate					
Conten	ts					
Mechai	nics, vibration theory, thermody	/namics, optics, scier	nce of electricity, Ato	mic and Nuclear Phy	vsics.	
	ed learning outcomes					
	dents have knowledge of the p	rinciples of Physics				
	s (type, number of weekly cont		if other than Corma			
	no information on SWS (weekly					
	d of assessment (type, scope, la			ition offered — if not	every seme-	
	formation on whether module o		a bonus)			
	examination (approx. 120 minu	utes)				
Allocat	ion of places					
Only as	part of pool of general key ski	ls (ASQ): 10 places. P	laces will be allocate	ed by lot.		
Additio	onal information					
Worklo	ad					
Teechi						
Teachin	ng cycle					
Referre	d to in LPO I (examination reg	ulations for teaching-	degree programmes)			
Module	e appears in					
Bachel	or' degree (1 major) Biochemist	ry (2011)				
Bachel	or' degree (1 major) Biochemist	ry (2013)				
	or' degree (1 major) Biochemist					
	or' degree (1 major) Biology (20					
	or' degree (1 major) Biology (20					
	Bachelor' degree (1 major) Biology (2010)					
	or' degree (1 major) Chemistry (
	Bachelor' degree (1 major) Chemistry (2008)					
	Bachelor' degree (1 major) Chemistry (2010)					
Bachelor' degree (1 major) Chemistry (2009)						
	Bachelor' degree (1 major) Geography (2007)					
Bachelor' degree (1 major) Geography (2008)						
	Bachelor' degree (1 major) Geography (2010)					
	or' degree (1 major) Computer S					
	or' degree (1 major) Computer S					
	or' degree (1 major) Computer S					
	or' degree (1 major) Food Chem					
	or' degree (1 major) Mathemati					
	or' degree (1 major) Mathemati					
Bachelor's	with 1 major Chemistry (2009)		rg • generated 26-Aug-2024 ord Bachelor (180 ECTS) Chem		page 37 / 40	
		10g. und 1000				

Julius-Maximilians-UNIVERSITÄT WÜRZBURG

Bachelor' degree (1 major) Mathematics (2012) Bachelor' degree (1 major) Mathematics (2013) Bachelor' degree (1 major) Mathematics (2007) Bachelor' degree (1 major) Biomedicine (2009) Bachelor' degree (1 major) Computational Mathematics (2009) Bachelor' degree (1 major) Computational Mathematics (2014) Bachelor' degree (1 major) Computational Mathematics (2012) Bachelor' degree (1 major) Computational Mathematics (2013) Bachelor' degree (1 major) Computational Mathematics (2013) Bachelor' degree (1 major) Computational Mathematics (2013) Bachelor' degree (1 major) FOKUS Chemistry (2011)

Module title				Abbreviation		
Practical Cou	rse Physics for Student	s of Non-physics-rela	ated Minor Subjects	11-PFNF-072-m01		
				,		
Module coord			Module offered by			
	ector of the Institute of	<u> </u>	Faculty of Physics a	and Astronomy		
	od of grading		ompl. of module(s)			
3 (not)	successfully completed					
Duration	Module level	Other prerequisite	es			
1 semester	undergraduate					
Contents						
Mechanics, v Physics.	ibration theory, thermo	dynamics, optics, X-ra	ays, nuclear magnetic	resonance, Atomic a	and Nuclear	
	ning outcomes					
	have knowledge of the	nrinciples of Dhysics				
				````		
	e, number of weekly cor			-		
P (no informa	tion on SWS (weekly co	ntact hours) and cou	rse language availabl	e)		
	sessment (type, scope,			ation offered — if not	every seme-	
•	ion on whether module					
a) oral test (a	pprox. 15 minutes) duri	ng experiment and b)	ungraded written exa	mination (approx. 9	o minutes)	
Allocation of	places					
Only as part o	of pool of general key sk	ills (ASQ): 10 places.	Places will be allocat	ed by lot.		
Additional in	formation			· ·		
Workload						
WUIKIDau						
Teaching cyc	le					
Referred to in	LPOI (examination re	gulations for teaching	g-degree programmes			
Module appe	ars in					
Bachelor' deg	gree (1 major) Biochemi	stry (2011)				
Bachelor' deg	gree (1 major) Biochemi	stry (2013)				
Bachelor' deg	gree (1 major) Biochemi	stry (2009)				
	Bachelor' degree (1 major) Biology (2011)					
-	gree (1 major) Biology (2					
Bachelor' degree (1 major) Biology (2010)						
-	Bachelor' degree (1 major) Chemistry (2007)					
Bachelor' degree (1 major) Chemistry (2008)						
-	Bachelor' degree (1 major) Chemistry (2010) Bachelor' degree (1 major) Chemistry (2010)					
Bachelor' degree (1 major) Chemistry (2009) Bachelor' degree (1 major) Geography (2007)						
Bachelor' degree (1 major) Geography (2007) Bachelor' degree (1 major) Geography (2008)						
Bachelor' degree (1 major) Geography (2008) Bachelor' degree (1 major) Geography (2010)						
-	gree (1 major) Computer					
-	gree (1 major) Computer					
-	gree (1 major) Computer					
	gree (1 major) Food Chei					
-	gree (1 major) Biomedic	• •				
Bachelor's with 1 ma	ajor Chemistry (2009)		burg • generated 26-Aug-2024		page 39 / 40	
		reg. data re	cord Bachelor (180 ECTS) Cher	nie - 2009		



Bachelor' degree (1 major) Biomedicine (2013) Bachelor' degree (1 major) FOKUS Chemistry (2011)

Bachelor's with 1 major Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 40 / 40
	reg. data record Bachelor (180 ECTS) Chemie - 2009	