

Subdivided Module Catalogue for the Subject

Chemistry

as vertieft studiertes Fach (studied with a focus on the scientific discipline) with the degree "Erste Staatsprüfung für das Lehramt an Gymnasien"

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

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:

LASPO2009

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

12-Jan-2012 (2011-105)

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.

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The subject is divided into

Abbreviation	Module title	ECTS credits	Method of grading	page
Scientific Discipline (92 E	CTS credits)		<u>.</u>	
Compulsory Courses (92	2 ECTS credits)			
08-AC1-LA-102-m01	Inorganic Chemistry 1 (teaching degree)	20	NUM	6
08-AC2-LAGY-102-m01	Inorganic Chemistry of the Elements (teaching degree for se- condary schools)	3	NUM	8
08-AS1-LAGY-102-m01	Chemistry of the elements	6	NUM	11
08-0C1-092-m01	Organic Chemistry 1	5	NUM	27
-	Organic Chemistry 2 (teaching degree for secondary schools)	6	NUM	29
o8-OC-Prakt-	Organic Chemistry - laboratory course (teaching degree for se-			
LAGY-092-m01	condary schools)	6	B/NB	32
-	Organic Chemistry 4 - advanced course	5	NUM	31
o8-OC-Spec-	Practical spectroscopy 1 (teaching degree for secondary			
LAGY-092-m01	schools)	3	NUM	33
08-PC-TKE-LAGY-092- m01	Thermodynamics, Kinetics, Electrochemistry	9	NUM	40
08-PC-0MS-LAGY-092-	Principles of quantum mechanics and spectroscopy	5	NUM	39
o8-PC-Prakt-	o8-PC-Prakt- Physical Chemistry lab (teaching degree for secondary		B/NB	38
LAGY-092-mo1 schools) 08-Forsch-LAGY-092- Practical Research Course for Grammar School Teachers		8	NUM	26
08-PC-VKM-LA-102- m01	Basic Mathematics (teaching degree)		B/NB	41
08-PH-Prakt- LAGY-092-m01	Physics lab (teaching degree for secondary schools)		B/NB	42
	Biochemistry (teaching degree for secondary schools)	3	NUM	12
	Exercises in Experimental Presentation, Intermediate School	5	B/NB	13
Teaching (10 ECTS credits		2	D/ND	15
-	Introduction in Planning and Methods	5	NUM	19
08-FD-CEx-092-m01	Chemistry Education, Part II		NUM	19
08-FD-SinKo-092-m01	Chemistry Education, Part III	3	B/NB	21
Freier Bereich (general as we Teaching degree students mu ject-specific electives) (Sectic To achieve the required numb Freier Bereich interdisciplin	It as subject-specific electives) Ist take modules worth a total of 15 ECTS credits in the area Freie on 9 LASPO (general academic and examination regulations for t per of ECTS credits, students may take any modules from the are ary: The interdisciplinary additional offer for a teaching degree of gen für den "Freien Bereich" im Rahmen des Studiums für ein Le	er Bereich (eaching-de as below. can be four	general as wel egree programr	I as sub nes)).
Chemistry				
08-AC2-PS-LA-102-m01	reier Bereich (general as well as subject-specific electives) subject specific) 08-AC2-PS-LA-102-m01 Practical spectroscopy 2 (teaching degree for secondary schools)		NUM	9
08-AC3-LA-102-m01	Elemental Organic Chemistry (teaching degree for secondary		NUM	10
08-TC-LA-092-m01	Theoretical Models in Chemistry (teaching degree for seconda- ry schools)	3	NUM	43

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08-Ch-HA-GY-092-m01

NUM

14

10

08-PC-ESS-092-m01 08-0C3-LA-102-m01 08-PC3-092-m01	Electronic structure and spectroscopy Organic Chemistry 3 (teaching degree for secondary schools) Physical and Theoretical Chemistry 3: Symmetry and Quantum Chemistry	3 6	NUM NUM	37 30		
08-PC3-092-m01	Physical and Theoretical Chemistry 3: Symmetry and Quantum	-	NUM	30		
		(1		
	chemistry	6	NUM	34		
08-PC4-092-m01	Physical Chemistry 4: Statistical Thermodynamics	3	NUM	36		
03-TR-072-m01	Toxicology and legal studies	3	NUM	5		
08-FBC2-PV-101-m01	Preparation of Exams Chemistry	5	B/NB	16		
Teaching (Freier Bereich (general as well as subject-specific electives) subject specific) 08-FD-WPF-WA-092-m01 Guidance in Self-reliant Scientific Work 2 B/NB 25						
08-FD-WPF-LLL-092-m01	Extracurricular Sites	4	B/NB B/NB	25 23		
08-FBC1-092-m01	08-FBC1-092-mo1 Instruction of pupils in making chemical experiments		B/NB	15		
08-FD-WP-102-m01	W- and P-Courses in Secondary Classes of Gymnasium	3	B/NB	22		
teaching-degree programme State Examination). In accol um may write this thesis in o scientific discipline) or in th	sarbeit (thesis) in accordance with the provisions of Section 29 Ll s) is a prerequisite for teaching degree students to be admitted to dance with the provisions of Section 29 LPO I, students studying one of the subjects they selected as vertieft studiertes Fach (subject e subject Erziehungswissenschaften (Educational Science). Pursu nay also choose to write an interdisciplinary thesis.	o the Erste for a teach ect studied	e Staatsprüfung ning degree Gyn I with a focus or	(First nnasi- n the		

Admission work (Chemistry for Grammar School Teachers)

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Module t	title			Abbreviation			
Toxicolo	Toxicology and legal studies 03-TR-072-m01						
			Module offered by				
r r	of lecture "Toxikologie und Re	Î.	Faculty of Medicine	2			
	Method of grading	Only after succ. compl. of module(s)					
-	numerical grade						
Duration		Other prerequisites					
1 semest	ter undergraduate						
Contents	5						
Basics of toxicolog	f legal regulations for chemist gy.	s (handling and trans	portation of hazardo	ous materials), funda	mentals of		
Intended	l learning outcomes						
The stud	ents master the basics of lega vell as the fundamentals of to		nists (handling and t	transport of hazardo	us substan-		
Courses	(type, number of weekly conta	act hours, language –	- if other than Germa	ın)			
	information on SWS (weekly						
· ·	of assessment (type, scope, la				avani como-		
ster, info	ormation on whether module of	an be chosen to earn			every seme-		
	xamination (approx. 90 minut	tes)					
Allocatio	on of places						
Addition	al information						
Workloa	d						
Teaching		-					
Teaching	s cycle						
Referred	to in LPO I (examination regu	ilations for teaching-o	legree programmes)				
	appears in						
	r' degree (1 major) Biochemist						
	r' degree (1 major) Biochemist						
	r' degree (1 major) Biochemist						
	r' degree (1 major) Chemistry (
	r' degree (1 major) Chemistry (
	r' degree (1 major) Chemistry (
	r' degree (1 major) Chemistry (r' degree (1 major) Food Chem	-					
	Bachelor' degree (1 major) Food Chemistry (2009)						
	Bachelor' degree (1 major) FOKUS Chemistry (2011) Master's degree (1 major) Chemistry (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)						
	e examination for the teaching	•	e Chemistry (2009)				
	e examination for the teachin						
	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)							
LA Gymnasier	n Chemistry (2009)		rg • generated 26-Aug-2024 rd Lehramt Gymnasien Cherr		page 5 / 43		

Module	e title				Abbreviation
Inorganic Chemistry 1 (teaching degree)			e)		08-AC1-LA-102-m01
Module coordinator Modu			Module offered by		
lecturer of lecture "Experimentalchemie" (Experimental Chemistry)		e" (Experimental	Institute of Inorganic Chemistry		
ECTS	Metho	od of grading	Only after succ. compl. of module(s)		
20	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate	By way of exception, additional prerequisites are listed in the section on		
			assessments.		
Conten	ts				

This module provides students with an overview of the fundamental principles of chemistry. It focuses on particles, metals, acid-base reactions, the periodic table, chemical equilibrium and complexometry. In addition, the module introduces fundamental models of chemistry and principles of inorganic chemistry. It includes practical exercises based on the lecture on experimental chemistry and its extension. After a safety briefing, the students autonomously conduct experiments in the laboratory. The course focuses on laboratory safety, simple lab techniques, the synthesis of simple substances and analyses of unknown substances. In addition, students have the opportunity to advance their laboratory knowledge.

Intended learning outcomes

Students are able to explain the principles of the periodic table and to extract information from it. They are able to explain basic models of the structure of matter. They have developed the ability to use the language of chemical formulas to describe chemical reactions and to interpret them by identifying the type of reaction. Students are able to describe the main quantitative and qualitative analytical methods and their application areas. They are able to identify fundamental problems in chemistry and perform experiments to solve them. They have developed the ability to perform the necessary stoichiometric calculations and describe the chemical processes in an appropriate manner, both in written and oral form.

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

This module comprises 3 module components. Information on courses will be listed separately for each module component.

- 08-AC1-1-102: V + V + Ü (no information on SWS (weekly contact hours) and course language available)
- 08-AC1-LA-2-102: P (no information on SWS (weekly contact hours) and course language available)
- 08-AC1-LA-3-102: 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 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-AC1-1-102: Principles of Inorganic Chemistry Principles of Inorganic Chemistry Principles of Inorganic Chemistry

- 10 ECTS, Method of grading: numerical grade
- a) 1 to 3 written examinations (1 written examination: approx. 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)
- 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-AC1-LA-2-102: Inorganic and Analytical Chemistry (lab) (teaching degree)

• 7 ECTS, Method of grading: (not) successfully completed

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- pre/post-experiment examination talks (Vor-/Nachtestate, approx. 15 minutes each), log (approx. 5 to 10 pages)
- Assessment offered: once a year, summer semester
- Language of assessment: German or English

Assessment in module component o8-AC1-LA-3-102: Inorganic Chemistry 1 (accompanying lecture) (teaching degree)

- 3 ECTS, Method of grading: numerical grade
- a) 1 to 3 written examinations (1 written examination: approx. 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)
- Language of assessment: German or English

Allocation of places

UNIVERSITÄT

WÜRZBURG

Additional information

Workload

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Teaching cycle

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

§ 42 (1) 1. Chemie "Allgemeine und Anorganische Chemie" und "Physikalische und Analytische Chemie"

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

Module appears in

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

First state examination for the teaching degree Grundschule Didactics in Chemistry (Primary School) (2009) First state examination for the teaching degree Hauptschule Chemistry (2009)

First state examination for the teaching degree Hauptschule Didactics in Chemistry (Secondary School) (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 Sonderpädagogik Didactics in Chemistry (Secondary School) (2009)

First state examination for the teaching degree Sonderpädagogik Didactics in Chemistry (Middle School) (2013) First state examination for the teaching degree Mittelschule Chemistry (2013)

First state examination for the teaching degree Mittelschule Didactics in Chemistry (Middle School) (2013)

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	reg. data record Lehramt Gymnasien Chemie - 2009	

Module title			_	Abbreviation		
Inorganic Ch	emistry of the Elements (teaching degree for s	secondary schools)	08-AC2-LAGY-102-m01		
Module coord	dinator		Module offered by			
lecturer of lea mistry)	cture "Festkörperchemie"	(Solid State Che-	Institute of Inorgan	ic Chemistry		
	od of grading	Only after succ. con	npl. of module(s)			
3 nume	erical grade					
Duration	Module level	Other prerequisites	;			
1 semester	undergraduate					
Contents						
	equips students with an a tures and properties, spe			l saline compounds. It focuses ical processes.		
Intended lea	rning outcomes					
	able to describe the struc r. They are able to system			saline compounds in an appro- and reactivity.		
Courses (type	e, number of weekly conta	act hours, language –	- if other than Germa	in)		
	ition on SWS (weekly con					
Method of as	sessment (type, scope, la	anguage — if other th	an German, examina	tion offered — if not every seme		
	tion on whether module c					
or 90 minute each (approx		tions: approx. 60 min amination in groups	nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)		
Allocation of	places					
Additional in	formation					
Workload						
Teaching cyc	le					
Referred to in	LPOI (examination regu	lations for teaching-	degree programmes)			
§ 62 (1) 1. Ch	emie "Allgemeine und An	organische Chemie";	"Physikalische und	Analytische Chemie"		
Module appe	ars in					
First state exa	amination for the teaching	g degree Grundschule	e Chemistry (2009)			
				stry (Primary School) (2009)		
	irst state examination for the teaching degree Hauptschule Chemistry (2009)					
	rst state examination for the teaching degree Hauptschule Didactics in Chemistry (Secondary School) (2009) rst state examination for the teaching degree Realschule Chemistry (2009)					
	amination for the teaching					
		,		nemistry (Secondary School)		
	amination for the teaching	g degree Sonderpäda	igogik Didactics in Cl	nemistry (Middle School) (2013)		
		,				
First state examination for the teaching degree Mittelschule Chemistry (2013) First state examination for the teaching degree Mittelschule Didactics in Chemistry (Middle School) (2013)						

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	reg. data record Lehramt Gymnasien Chemie - 2009	

Module title	9			Abbreviation
Practical spectroscopy 2 (teaching degree for secondary so			hools)	08-AC2-PS-LA-102-m01
Module coordinator			Module offered by	
lecturer of lecture "Praktische Spektroskopie 2"			Institute of Inorgan	ic Chemistry
ECTS Method of grading Only after succ. compl. of module(s)				
3 nun	nerical grade			
Duration	Module level	Other prerequisites		
1 semester	undergraduate			
Contents				
	e equips students with an a actures and properties, spe			d saline compounds. It focuses iical processes.
Intended le	arning outcomes			
priate manr		pic methods that car		saline compounds in an appro- uctural analysis of solids and can
Courses (ty	pe, number of weekly conta	ct hours, language —	if other than Germa	an)
V (no inform	nation on SWS (weekly cont	act hours) and cours	e language available	2)
	assessment (type, scope, la ation on whether module ca			tion offered — if not every seme-
or 90 minut each (appro		tions: approx. 60 min amination in groups (utes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)
Allocation of	of places			
	•			
Additional i	nformation			
Workload				
WUINIUau				
Teaching cy	cie			
Referred to	in LPO I (examination regu	lations for teaching-c	legree programmes)	
	•			
Module app				
	xamination for the teaching			
	xamination for the teaching			
	xamination for the teaching			
	xamination for the teaching	- ,		
THIST STALE E	xamination for the teaching		chemistry (2013)	

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	reg. data record Lehramt Gymnasien Chemie - 2009	1

Module	e title				Abbreviation
Elemer	ntal Org	ganic Chemistry (teach	ing degree for seconda	ry schools)	08-AC3-LA-102-m01
Module	e coord	linator		Module offered by	<u> </u>
lecture Organi		ture "Elementorganisch histry)	ne Chemie" (Elemental		ic Chemistry
ECTS	1	od of grading	Only after succ. com	pl. of module(s)	
4		erical grade			nly) and o8-OC3 (module compo-
			nent o8-OC3-2 only)		
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate	ses in the respective (usually 70% of exer	e classes as specifie rcises to be success	successful completion of exerci- d at the beginning of the course fully completed) as well as regu- aximum of 2 incidents of unexcu-
Conten	Its				
		equips students with ar pecial material classes,		-	It focuses on their structures and
Intend	ed lear	ning outcomes			
able to	syster		rise their structure and	reactivity. In additio	an appropriate manner. They are on, they are able to develop and
Course	s (type	, number of weekly cor	itact hours, language —	- if other than Germa	in)
V + Ü (I	no info	rmation on SWS (week	y contact hours) and co	ourse language avail	able)
		sessment (type, scope, ion on whether module			tion offered — if not every seme-
or 90 n each (a	ninutes approx.		nations: approx. 60 min examination in groups	nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)
Allocat	-				
		<u>.</u>			
Additio	onal inf	formation			
Worklo	ad				
Teachi	ng cycl	le			
Referre	ed to in	LPOI (examination re	gulations for teaching-o	degree programmes)	
Module	e appe	ars in			
		amination for the teachi			
		mination for the teachi	,		
		mination for the teaching			
		amination for the teachi amination for the teachi			
			na acarec mittersenute	(2013)	

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	reg. data record Lehramt Gymnasien Chemie - 2009	

Module title Abbreviation					
Chemistry of the elements 08-AS1-LAGY-102-m01					
Modul	e coord	linator		Module offered by	
		ture "Chemie der Haup y of Main-group Eleme		Institute of Inorgar	ic Chemistry
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)	
6	nume	erical grade	o8-AC1 (module co nent o8-OC3-2 onl		nly) and o8-OC3 (module compo-
Durati	on	Module level	Other prerequisite	95	
1 seme	ester	undergraduate			
Conte	nts				
ses on	bondi	ng conditions, trends i	n the periodic table an	d the description and	e and selected elements. It focu- l structure of elements. In additi- stry and complex chemistry.
Intend	led lear	ning outcomes			
reactiv how to	vity and	fabrication. They are a periodic table, an es	able to identify the coo sential tool for chemis	rdination of the atom ts.	ments in terms of their structure, s. In addition, they have learned
Course	es (type	e, number of weekly co	ntact hours, language	— if other than Germa	an)
V + V (no info	rmation on SWS (week	ly contact hours) and	course language avai	lable)
		sessment (type, scope ion on whether modul			ation offered — if not every seme-
or 90 i each (minutes approx		inations: approx. 60 m examination in group	inutes each) or b) ora	tten examinations: approx. 60 Il examination of one candidate K. 30 minutes)
	tion of				
		•			
Additi	onal in	formation			
Workl	oad				
Teachi	ing cyc	le			
Referr	ed to in	LPOI (examination re	egulations for teaching	-degree programmes)
§ 62 (1	ι) 1. Che	emie "Allgemeine und	Anorganische Chemie'	; "Physikalische und	Analytische Chemie"
Modul	le appe	ars in			
First state examination for the teaching degree Gymnasium Chemistry (2009)					

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Module title Abbreviation					Abbreviation	
Biochemistry (teaching degree for secondary schools)				08-BC-LAGY-092-m01		
Module	e coord	inator		Module offered by		
		Chair of Biochemistry		Chair of Biochemist	try	
ECTS		od of grading	Only after succ. com			
3	<u> </u>	rical grade				
Duratio		Module level	Other prerequisites			
1 seme		undergraduate	Admission prerequis	site to assessment:	successful completion of exerci- 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 sed absence).	ercises (usually a m	aximum of 2 incidents of unexcu-	
Conten	ts					
Compri mistry.	sing le	ctures and exercises, this	s module acquaints s	tudents with the fun	damental principles of bioche-	
Intende	ed learı	ning outcomes				
		e become familiar with th cal processes in cellular s		ples of biochemistry	r. They are able to describe the	
Course	s (type	, number of weekly conta	ct hours, language —	· if other than Germa	ın)	
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		essment (type, scope, la on on whether module ca			tion offered — if not every seme-	
or 90 m each (a	ninutes Ipprox.		tions: approx. 60 min amination in groups (utes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)	
Allocat						
Additio	nal info	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	d to in	LPO I (examination regu	lations for teaching-c	legree programmes)		
§ 62 (1)	§ 62 (1) 2. Chemie "Organische und Bioorganische Chemie"					
Module	e appea	in				
	-	ree (1 major) Physics (20:				
	-	ree (1 major) Nanostructu				
	-	ree (1 major) Nanostructu				
FIRST ST	First state examination for the teaching degree Gymnasium Chemistry (2009)					

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Module	Module title Abbreviation									
Exercises in Experimental Presentation, Intermediate School					08-Ch-Gy-ÜiV-092-m01					
Modul	Module coordinator Mo									
		e three lectures offered in	a this modulo	Module offered by	wand Dharmacy					
ECTS		od of grading	Only after succ. com	Faculty of Chemistr						
5		successfully completed								
Duratio		Module level	Other prerequisites							
1 seme		undergraduate								
Conten	ts									
		design, prepare and deliv nonstrations.	ver presentations on a	a range of topics in c	hemistry. Presentations will in-					
Intende	ed lear	ning outcomes								
nic and perime them. S	l physio nts on Studen	cal chemistry that are tail the topics in question tha ts will be expected to app	ored to the specific n at support particular bly both their chemist	eeds of their audien teaching goals as we ry knowledge and sl	given topics in inorganic, orga- ce. They are able to select ex- ell as to plan and safely perform kills and their teaching skills.					
		, number of weekly conta								
		tion on SWS (weekly cont								
		sessment (type, scope, la ion on whether module ca			tion offered — if not every seme-					
nutes e Assess	each) ment o	in the fields of inorganic, ffered: once a year, winte ssessment: German or Er	er semester	l chemistry including	g demonstrations (approx. 45 mi-					
Allocat	ion of	places								
Additio	onal inf	ormation								
Worklo	ad									
Teaching cycle										
-										
Referre	ed to in	LPO I (examination regu	lations for teaching-o	legree programmes)						
§ 62 (1) 5. Chemie "Übungen im Vortragen mit Demonstrationen"										
Module	e appea	ars in			Module appears in					
First state examination for the teaching degree Gymnasium Chemistry (2009)										

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 13 / 43
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module title				Abbreviation						
Admission w	ork (Chemistry for Gramm	nar School Teachers)		08-Ch-HA-GY-092-m01						
Module coordinator Module offered by										
			Module offered by							
	esearch group offering the	i de la companya de la	Faculty of Chemistr	y and Pharmacy						
	iod of grading erical grade	Only after succ. con		dule components as specified by						
		supervisor.	pecific modules/mo	dute components as specified by						
Duration	Module level	Other prerequisites								
1 semester	undergraduate	arbeit (thesis) accor for teaching-degree studied with a focus	ding to Section 29 L programmes) in the on the scientific dis d to complete modu	lents who are writing their Haus- PO I (examination regulations vertieft studiertes Fach (subject scipline) Chemie (Chemistry) are le o8-Forsch-LAGY directly before						
Contents	•									
in chemistry provisions of	or chemistry didactics the Section 29 LPO (examina	ey have agreed upon v	vith an authorised e	ly research and write on a topic xaminer in accordance with the rammes).						
Intended lea	rning outcomes									
and analyse sions, and of priate writter Courses (typ	a problem, conduct a liter fer approaches to the solu a account of the results of e, number of weekly conta	ature search, refer to ution of said problem their work.	relevant theories, in) be able to work t	rite an academic paper (define iterpret data, draw logical conclu- o deadlines prepare an appro- in)						
no courses a										
	ssessment (type, scope, la tion on whether module c			tion offered — if not every seme-						
Language of	s (Zulassungsarbeit, appr assessment: German, exc ree programmes)		e with Section 29 LP	O I (examination regulations for						
Allocation of	places									
Additional in	formation									
Workload										
Teaching cycle										
Referred to i	n LPO I (examination regu	llations for teaching-o	legree programmes)							
Module appe	ears in			Module appears in						
First state examination for the teaching degree Gymnasium Chemistry (2009)										

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	reg. data record Lehramt Gymnasien Chemie - 2009	

Module title Abbreviation						
Instruction of pupils in making chemical experiments 08-FBC1-092-mo1						
Modul	e coord	inator		Module offered by	ļ	
holder	ofthe	Professorship of Didactic	s of Chemistry	Institute of Inorgan	ic Chemistry	
ECTS	-	od of grading	Only after succ. con		·	
5	(not)	successfully completed				
Durati	on	Module level	Other prerequisites			
1 seme	ester	undergraduate				
Conter	nts					
	odule g perimer		unity to guide pupils	as they explore cher	nistry topics and perform chemi-	
Intend	ed lear	ning outcomes				
Studer ments.		e learned how to guide pu	upils as they explore	chemistry problems	and perform chemical experi-	
Course	es (type	, number of weekly conta	act hours, language –	- if other than Germa	ın)	
P (no i	nforma	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-	
assess	sment o	f practical performance a	ind final report (appro	ox. 8 pages)		
Allocat	tion of	places				
		aces: 30. Places will be al e number of subject seme			ect semesters. Among applicants	
Additio	onal inf	ormation				
Worklo	oad					
Teachi	ing cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Modul	e appea	ars in				
		mination for the teaching	g degree Gymnasium	Chemistry (2000)		

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 15 / 43
	reg. data record Lehramt Gymnasien Chemie - 2009	

Prepar	e title				Abbreviation
Preparation of Exams Chemistry					08-FBC2-PV-101-m01
Modul	e coord	inator		Module offered by	
lecturers Inorganic and Organische Chemie (Organic Che-			emie (Organic Che-	Faculty of Chemistr	y and Pharmacy
mistry)	-		· · ·	,	, ,
ECTS	1	od of grading	Only after succ. cor		
5	(not) s	successfully completed	08-OC2-GHR and ot LAGY	8-OC-Prakt-GHR or o	3-OC2-LAGY and o8-OC-Prakt-
Duratio		Module level	Other prerequisites	5	
1 seme	ester	undergraduate			
Conter	nts				
		vives students the opport the state examination a			anic chemistry that are likely to
Intend	ed lear	ning outcomes			
		able to solve selected qu n previous years.	lestions on organic a	nd inorganic chemist	ry that were asked in the state
Course	es (type	, number of weekly conta	act hours, language -	– if other than Germa	an)
compo • c	onent. 08-FBC2	2-PV-1-101: S (no informa	tion on SWS (weekly	contact hours) and c	sted separately for each module course language available) course language available)
		sessment (type, scope, la ion on whether module c			tion offered — if not every seme
	11622 21		ful complation of the	modulo will roquiro	e components as specified be- successful completion of all indi
Assess • 2 • 5 • 6	assess sment in 2 ECTS, success		-FBC2-PV-1-101: Prep) successfully comple orm of short presenta r, summer semester	aration of Exams Ino	successful completion of all indi rganic Chemistry
Assess • 2 • 4 • 4 • L Assess • 3	assess sment in 2 ECTS, success Assessr anguas sment in 3 ECTS,	ments. n module component o8 Method of grading: (not) ful participation in the fo nent offered: once a yea	-FBC2-PV-1-101: Prep) successfully completed orm of short presenta r, summer semester an or English -FBC2-PV-2-101: Prep) successfully completed	aration of Exams Ino eted tions on selected as paration of Exams Org eted	successful completion of all indi rganic Chemistry signments ganic Chemistry
Assess • 2 • 5 • 4 • 1 Assess • 3 • 9 • 4 • 2 • 2 • 2 • 2 • 2 • 2 • 2 • 2	assess sment in 2 ECTS, success Assessr anguag sment in 3 ECTS, success Assessr	ments. n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year	-FBC2-PV-1-101: Prep) successfully completed orm of short presenta r, summer semester an or English -FBC2-PV-2-101: Prep) successfully completed orm of short presenta r, summer semester	aration of Exams Ino eted tions on selected as paration of Exams Org eted	successful completion of all indi rganic Chemistry signments ganic Chemistry
Assess • 2 • 4 • L Assess • 4 • 2 • 4 • 4 • 4 • 4 • 4 • 4 • 4 • 4	assess sment in 2 ECTS, success Assessr angua 5 ment in 3 ECTS, success Assessr angua	ments. n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa	-FBC2-PV-1-101: Prep) successfully completed orm of short presenta r, summer semester an or English -FBC2-PV-2-101: Prep) successfully completed orm of short presenta r, summer semester	aration of Exams Ino eted tions on selected as paration of Exams Org eted	successful completion of all indi rganic Chemistry signments ganic Chemistry
Assess • 2 • 4 • L Assess • 4 • 2 • 4 • 4 • 4 • 4 • 4 • 4 • 4 • 4	assess sment in 2 ECTS, success Assessr anguag sment in 3 ECTS, success Assessr	ments. n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa	-FBC2-PV-1-101: Prep) successfully completed orm of short presenta r, summer semester an or English -FBC2-PV-2-101: Prep) successfully completed orm of short presenta r, summer semester	aration of Exams Ino eted tions on selected as paration of Exams Org eted	successful completion of all indi rganic Chemistry signments ganic Chemistry
Assess 2 3 4 4 4 5 5 6 7 5 6 7 6 1 7 7 7 7 7 7 7 7 7 7 7 7 7	assess ment in 2 ECTS, success Assess angua 3 ECTS, success Assess Assess angua tion of p	ments. n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa places	-FBC2-PV-1-101: Prep) successfully completed orm of short presenta r, summer semester an or English -FBC2-PV-2-101: Prep) successfully completed orm of short presenta r, summer semester	aration of Exams Ino eted tions on selected as paration of Exams Org eted	successful completion of all indi rganic Chemistry signments ganic Chemistry
Assess 2 3 4 4 4 5 5 6 7 5 6 7 6 1 7 7 7 7 7 7 7 7 7 7 7 7 7	assess ment in 2 ECTS, success Assess angua 3 ECTS, success Assess Assess angua tion of p	ments. n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa	-FBC2-PV-1-101: Prep) successfully completed orm of short presenta r, summer semester an or English -FBC2-PV-2-101: Prep) successfully completed orm of short presenta r, summer semester	aration of Exams Ino eted tions on selected as paration of Exams Org eted	successful completion of all indi rganic Chemistry signments ganic Chemistry
Assess • 2 • 5 • 4 • L Assess • 4 • L Allocat Additio	assess ment in 2 ECTS, success Assessr anguas 3 ECTS, success Assessr anguas tion of p	ments. n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa places	-FBC2-PV-1-101: Prep) successfully completed orm of short presenta r, summer semester an or English -FBC2-PV-2-101: Prep) successfully completed orm of short presenta r, summer semester	aration of Exams Ino eted tions on selected as paration of Exams Org eted	successful completion of all indi rganic Chemistry signments ganic Chemistry
Assess • 2 • 5 • 4 • L Assess • 4 • L Allocat Additic	assess ment in 2 ECTS, success Assessr anguas 3 ECTS, success Assessr anguas tion of p	ments. n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa places	-FBC2-PV-1-101: Prep) successfully completed orm of short presenta r, summer semester an or English -FBC2-PV-2-101: Prep) successfully completed orm of short presenta r, summer semester	aration of Exams Ino eted tions on selected as paration of Exams Org eted	successful completion of all indi rganic Chemistry signments ganic Chemistry
Assess • 2 • 5 • 4 • L Assess • 4 • L Allocat Additio Worklo	assess ment in 2 ECTS, success Assessr anguas 3 ECTS, success Assessr anguas tion of p	ments. n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa places	-FBC2-PV-1-101: Prep) successfully completed orm of short presenta r, summer semester an or English -FBC2-PV-2-101: Prep) successfully completed orm of short presenta r, summer semester	aration of Exams Ino eted tions on selected as paration of Exams Org eted	successful completion of all indi rganic Chemistry signments ganic Chemistry
Assess • 2 • 5 • 4 • L Assess • 4 • L Allocat Additio Worklo	assess sment in 2 ECTS, success Assessr anguas B ECTS, success Assessr anguas tion of p onal inf	ments. n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa places	-FBC2-PV-1-101: Prep) successfully completed orm of short presenta r, summer semester an or English -FBC2-PV-2-101: Prep) successfully completed orm of short presenta r, summer semester	aration of Exams Ino eted tions on selected as paration of Exams Org eted	successful completion of all indi rganic Chemistry signments ganic Chemistry
Assess • 2 • 5 • 4 • L Assess • 4 • 2 • 7 • 4 • L Allocat Additic Worklo	assess sment in 2 ECTS, success Assessr anguas B ECTS, success Assessr anguas tion of p onal inf pad	ments. n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa places	-FBC2-PV-1-101: Prep) successfully completed orm of short presentation r, summer semester an or English -FBC2-PV-2-101: Prep 0 successfully completed orm of short presentation r, summer semester an or English	aration of Exams Ino eted tions on selected as: paration of Exams Org eted tions on selected as:	successful completion of all indi rganic Chemistry signments ganic Chemistry signments
Assess • 2 • 5 • 4 • L Assess • 4 • L Allocat Additio Worklo Teachi Referre	assess sment in 2 ECTS, success Assessr anguas B ECTS, success Assessr anguas tion of p onal inf pad	ments. n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa n module component o8 Method of grading: (not) iful participation in the for nent offered: once a year ge of assessment: Germa places ormation e LPO I (examination regu	-FBC2-PV-1-101: Prep) successfully completed orm of short presentation r, summer semester an or English -FBC2-PV-2-101: Prep 0 successfully completed orm of short presentation r, summer semester an or English	aration of Exams Ino eted tions on selected as: paration of Exams Org eted tions on selected as:	successful completion of all indi rganic Chemistry signments ganic Chemistry signments

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)

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 17 / 43
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module title Abbreviation					
Chemis	stry Edu	ucation, Part II			08-FD-CEx-092-m01
Module	e coord	inator		Module offered by	
		Professorship of Didactic	s of Chemistry	Institute of Inorgan	ic Chemistry
ECTS		od of grading	Only after succ. com		
3		rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Selecti	on and	presentation of experime	ents for/in the chemi	stry classroom at Re	alschule/Gymnasium schools.
Intende	ed lear	ning outcomes			
		e learned some essential ave developed the ability			in Realschule and Gymnasium
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)
S (no ir	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	2)
		sessment (type, scope, la ion on whether module ca			tion offered — if not every seme-
written	exami	nation (approx. 60 minut	es)		
Allocat	ion of _l	olaces			
		ices: 25. Places will be al number of subject seme			ct semesters. Among applicants
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
§ 42 Chemie Fachdidaktik § 62 (1) 6. Chemie Didaktik					
Module appears in					
		mination for the teaching mination for the teaching			

			Abbreviation	
Introduction	in Planning and Methods			08-FD-Gru-G-092-m01
Module coor	rdinator		Module offered by	
holder of the	holder of the Professorship of Didactics of Chemistry		Institute of Inorgani	ic Chemistry
	hod of grading	Only after succ. com	pl. of module(s)	
5 num	erical grade			
Duration	Module level	Other prerequisites		
1 semester	undergraduate			
Contents				
This module	introduces students to the	e fundamentals of che	emistry didactics.	
Intended lea	rning outcomes			
and framewo				as well as with the objectives nowledge they have developed to
Courses (typ	e, number of weekly conta	ct hours, language —	if other than Germa	n)
component. • o8-FD-		ormation on SWS (wee	ekly contact hours) a	sted separately for each module nd course language available) ourse language available)
	ssessment (type, scope, la ation on whether module ca			tion offered — if not every seme-
low. Unless s vidual asses Assessment Education 2 ECTS Testat Langua Assessment 3 ECTS	stated otherwise, successf sments. in module component o8- G, Method of grading: (not) (exam, approx. 20 minutes age of assessment: German in module component o8- G, Method of grading: nume	ul completion of the FD-Gru-RSGy-2-092: successfully complet 5) n or English FD-Einf-1-092: Introd erical grade	module will require s Basics of Planning a ted	e components as specified be- successful completion of all indi- and Organization of Chemistry Education
	n examination (approx. 90 age of assessment: Germa			
Allocation of	-			
	i piaces			
 Additional ir	nformation			
Workload				
Worktoau				
Teaching cy				
Referred to in LPO I (examination regulations for teaching-degree programmes)				
§ 36 (1) 7. Di § 38 (1) 1. Di § 38 (1) 1. Di § 42 Chemie	daktik der Grundschule Ch daktik der Hauptschule Ch daktik der Mittelschule Ch Fachdidaktik hemie Didaktik	emie emie		

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 19 / 43
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Module appears in

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

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 20 / 43
	reg. data record Lehramt Gymnasien Chemie - 2009	1

Modul	Module title Abbreviation					
Chemis	stry Edu	ucation, Part III			08-FD-SinKo-092-m01	
Module	e coord	inator		Module offered by	<u> </u>	
holder	of the l	Professorship of Didactic	s of Chemistry	Institute of Inorgan	ic Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
2	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	Its					
Teachi	ng cher	nistry in a meaningful co	ntext.			
Intend	ed lear	ning outcomes				
		able to translate topics fr Symnasium schools.	om the relevant chem	nistry curriculum into	lessons for students in Sekun-	
Course	e s (type	, number of weekly conta	ict hours, language –	· if other than Germa	ın)	
S (no iı	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	e)	
		essment (type, scope, la on on whether module c			tion offered — if not every seme-	
		approx. 20 minutes) ssessment: German or E	nglish			
Allocat	ion of p	olaces				
Additic	onal inf	ormation				
Worklo	ad		-			
Teachi	ng cycl	e				
	-					
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
	§ 62 (1) 6. Chemie Didaktik					
	Module appears in					
		mination for the teaching	g degree Gymnasium	Chemistry (2009)		

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 21 / 43
	reg. data record Lehramt Gymnasien Chemie - 2009	

Modu	le title				Abbreviation
W- and	d P-Cou	rses in Secondary Classe	es of Gymnasium		08-FD-WP-102-m01
Modu	Module coordinator			Module offered by	Į
	rs of the s Teach	e Professorships of Chem ning	istry Teaching and	Institute of Inorgan	ic Chemistry
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)	
3	(not)	successfully completed			
Durati	on	Module level	Other prerequisites	5	
1 seme	ester	undergraduate		isite to assessment: on classes at a Gymn	regular participation in practical asium).
Conte	nts	•			
ers ad Obers minar.	vice an tufe stu	d project management in dents to good academic	the context of a P-Se	eminar; supervising s	es at a Gymnasium school; care- seminar papers and introducing esigning a W-Seminar and a P-Se-
		ning outcomes			
		able to independently de chools.	sign and teach W-Se	minars and P-Semina	ars for Oberstufe students at
Course	es (type	e, number of weekly conta	act hours, language -	– if other than Germa	an)
S + P ((no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)
		sessment (type, scope, la ion on whether module c			tion offered — if not every seme-
		ration (approx. 10 to 15 pa assessment: German or E		on (approx. 30 minut	res)
Alloca	tion of	places			
		aces: 12. Places will be al e number of subject seme			ct semesters. Among applicants
Additi	onal inf	formation			
Workl	oad				
Teach	ing cyc	le			
Referr	Referred to in LPO I (examination regulations for teaching-degree programmes)				
Modu	le appe	ars in			
First st	tate exa	mination for the teaching	g degree Gymnasium	Chemistry (2009)	

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 22 / 43
	reg. data record Lehramt Gymnasien Chemie - 2009	

			Abbreviation				
Extracu	ırricula	r Sites			08-FD-WPF-LLL-092	-m01	
Module	e coord	inator		Module offered by			
holder	of the F	Professorship of Didact	ics of Chemistry	Institute of Inorganic Chemistry			
ECTS		od of grading	Only after succ. con	npl. of module(s)			
4	(not) s	successfully completed	eted				
Duratio		Module level	Other prerequisites				
1 seme	1 semester undergraduate						
Conten	ts						
This mo	odule d	iscusses the opportun	ties and limitations of	out-of-classroom lea	rning in chemistry.		
Intende	ed learr	ning outcomes					
activitie	es in sc		essons that include ou their teaching goals. T ts.				
Course	s (type,	, number of weekly con	tact hours, language –	- if other than Germa	n)		
This mo	odule c	omprises 2 module coi	nponents. Information	on courses will be lis	sted separately for e	ach module	
compoi			·				
			ormation on SWS (wee ormation on SWS (wee				
			language — if other tha		tion offered — if not	every seme-	
ster, in	formati	on on whether module	can be chosen to earn	a bonus)			
	less st	ated otherwise, succes	s the assessments in t sful completion of the				
• 2 • p • L Assess • 2 • s	ECTS, resenta anguag ment ir ECTS, uccess	Method of grading: (no ation of a project (appr ge of assessment: Gern n module component o Method of grading: (no	nan or English 8-FD-WPF-LLL-2-092: S t) successfully comple riments in learn-teach-	ied School Lab ted	curricular Sites		
Allocat	ion of p	olaces					
Additio	nal info	ormation					
Worklo	ad						
Teachir	ng cycl	9					
Referre	d to in	LPOI (examination re	gulations for teaching-o	degree programmes)			
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
First state examination for the teaching degree Grundschule Chemistry (2009)							
First state examination for the teaching degree Grundschule Chemistry (2009) First state examination for the teaching degree Grundschule Didactics in Chemistry (Primary School) (2009)							
			ng degree Hauptschule		, , , , , , , , , , , , , , , , , , , ,	. "	
			ng degree Hauptschule		try (Secondary Scho	ool) (2009)	
LA Gymnasi	ien Chemi	stry (2009)		rg • generated 26-Aug-2024 • rd Lehramt Gymnasien Chemi		page 23 / 43	

Julius-Maximilians-UNIVERSITÄT WÜRZBURG

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 Sonderpädagogik Didactics in Chemistry (Secondary School) (2009)

First state examination for the teaching degree Sonderpädagogik Didactics in Chemistry (Middle School) (2013) First state examination for the teaching degree Mittelschule Chemistry (2013)

First state examination for the teaching degree Mittelschule Didactics in Chemistry (Middle School) (2013)

LA Gymnasien Chemistry (2009)	JMU Würzburg ● generated 26-Aug-2024 ● exam.	page 24 / 43
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module	e title				Abbreviation
Guidan	ce in S	elf-reliant Scientific Wor	k		08-FD-WPF-WA-092-m01
Module	e coord	inator		Module offered by	
holder	of the F	Professorship of Didactic	s of Chemistry	Institute of Inorgan	ic Chemistry
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	1 semester undergraduate				
Conten	ts				
This mo tics.	odule w	vill teach students how to	o independently resea	arch and write on se	lected topics in chemistry didac-
Intende	ed learı	ning outcomes			
					mistry didactics. They are able to o advance the discipline.
Course	s (type	, number of weekly conta	ict hours, language —	if other than Germa	in)
S (no ir	format	ion on SWS (weekly cont	act hours) and cours	e language available	<u>a</u>)
		essment (type, scope, la on on whether module ca			tion offered — if not every seme-
		approx. 30 minutes) ssessment: German or El	nglish		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachi	ng cycl	9			
Referre	d to in	LPOI (examination regu	lations for teaching-c	legree programmes)	
Module	e appea	irs in			
First sta	ate exa	mination for the teaching	g degree Grundschule	Chemistry (2009)	
					stry (Primary School) (2009)
		mination for the teaching			
					stry (Secondary School) (2009)
		mination for the teaching			
		mination for the teaching			
	ate exa	mination for the teaching	g degree Sonderpäda	gogik Didactics in Cl	nemistry (Secondary School)
(2009)					
					nemistry (Middle School) (2013)
First sta	ate exa	mination for the teaching	g degree Mittelschule	Chemistry (2013)	
11151 510			,		

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	reg. data record Lehramt Gymnasien Chemie - 2009	

Modul	e title				Abbreviation
Practic	Practical Research Course for Grammar School Teachers 08-Forsch-LAGY-092-m01				
Modul	e coord	inator		Module offered by	
lecture	er of the	respective research g	roup	Faculty of Chemisti	y and Pharmacy
ECTS	Methe	od of grading	Only after succ. cor	npl. of module(s)	
8	nume	rical grade			
Duratio	on	Module level	Other prerequisites	;	
1 seme	ester	undergraduate			
Conter	nts				
			ortunity to research and ey have learned during t		problem within a given time frame
Intend	ed lear	ning outcomes			
			ch on a defined probler of their work in written f		the principles of good scientific
Course	es (type	, number of weekly co	ntact hours, language –	- if other than Germa	an)
P (no ii	nformat	tion on SWS (weekly co	ontact hours) and cours	e language available	e)
			, language — if other th e can be chosen to earn		ation offered — if not every seme-
		(approx. 20 pages) ssessment: German o	r English		
Allocat	tion of _l	olaces			
Additio	onal inf	ormation			
Worklo	bad				
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination re	gulations for teaching-	degree programmes)	
§ 62 (1) 4. Che	emie "Forschungsorien	tiertes Laborpraktikum		
Modul	e appea	ars in			
First st	ate exa	mination for the teach	ing degree Gymnasium	Chemistry (2000)	

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	reg. data record Lehramt Gymnasien Chemie - 2009	1

Organic Chemistry 1 08-0C1-092-m01 Module coordinator Module offered by holder of the Professorship of Organic Chemistry Institute of Organic Chemistry ECTS Method of grading Only after succ. compl. of module(s) 5 numerical grade Duration Module level Other prerequisites 1 semester undergraduate Admission prerequisite to assessment: successful completion of ses in the respective classes as specified at the beginning of th (usually 70% of exercises to be successfully completed) as well lar attendance of exercises (usually a maximum of 2 incidents or sed absence). Contents This module provides students with an overview of the fundamental principles of organic chemistry. It es the bonding situation of carbon and introduces students to the nomenclature of simple and moderately organic compounds. The module also discusses the fundamental principles of stereochemistry, substit dition and elimination reactions as well as synthesis planning.	ne course l as regu- of unexcu- examines
holder of the Professorship of Organic Chemistry Institute of Organic Chemistry ECTS Method of grading Only after succ. compl. of module(s) 5 numerical grade Duration Module level Other prerequisites 1 semester undergraduate Admission prerequisite to assessment: successful completion of ses in the respective classes as specified at the beginning of th (usually 70% of exercises to be successfully completed) as well lar attendance of exercises (usually a maximum of 2 incidents or sed absence). Contents This module provides students with an overview of the fundamental principles of organic chemistry. It estimation of carbon and introduces students to the nomenclature of simple and moderately organic compounds. The module also discusses the fundamental principles of stereochemistry, substitiet	ne course l as regu- of unexcu- examines
holder of the Professorship of Organic Chemistry Institute of Organic Chemistry ECTS Method of grading Only after succ. compl. of module(s) 5 numerical grade Duration Module level Other prerequisites 1 semester undergraduate Admission prerequisite to assessment: successful completion of ses in the respective classes as specified at the beginning of th (usually 70% of exercises to be successfully completed) as well lar attendance of exercises (usually a maximum of 2 incidents or sed absence). Contents This module provides students with an overview of the fundamental principles of organic chemistry. It estimation of carbon and introduces students to the nomenclature of simple and moderately organic compounds. The module also discusses the fundamental principles of stereochemistry, substitiet	ne course l as regu- of unexcu- examines
ECTS Method of grading Only after succ. compl. of module(s) 5 numerical grade Duration Module level Other prerequisites 1 semester undergraduate Admission prerequisite to assessment: successful completion of ses in the respective classes as specified at the beginning of th (usually 70% of exercises to be successfully completed) as well lar attendance of exercises (usually a maximum of 2 incidents of sed absence). Contents This module provides students with an overview of the fundamental principles of organic chemistry. It of the bonding situation of carbon and introduces students to the nomenclature of simple and moderately organic compounds. The module also discusses the fundamental principles of stereochemistry, substitied	ne course l as regu- of unexcu- examines
5 numerical grade Duration Module level Other prerequisites 1 semester undergraduate Admission prerequisite to assessment: successful completion of ses in the respective classes as specified at the beginning of th (usually 70% of exercises to be successfully completed) as well lar attendance of exercises (usually a maximum of 2 incidents of sed absence). Contents This module provides students with an overview of the fundamental principles of organic chemistry. It estimation of carbon and introduces students to the nomenclature of simple and moderately organic compounds. The module also discusses the fundamental principles of stereochemistry, substitiet	ne course l as regu- of unexcu- examines
Duration Module level Other prerequisites 1 semester undergraduate Admission prerequisite to assessment: successful completion of ses in the respective classes as specified at the beginning of th (usually 70% of exercises to be successfully completed) as well lar attendance of exercises (usually a maximum of 2 incidents of sed absence). Contents This module provides students with an overview of the fundamental principles of organic chemistry. It estimation of carbon and introduces students to the nomenclature of simple and moderately organic compounds. The module also discusses the fundamental principles of stereochemistry, substitients of stereochemistry.	ne course l as regu- of unexcu- examines
1 semester undergraduate Admission prerequisite to assessment: successful completion of ses in the respective classes as specified at the beginning of th (usually 70% of exercises to be successfully completed) as well lar attendance of exercises (usually a maximum of 2 incidents or sed absence). Contents This module provides students with an overview of the fundamental principles of organic chemistry. It estimation of carbon and introduces students to the nomenclature of simple and moderately organic compounds. The module also discusses the fundamental principles of stereochemistry, substitied	ne course l as regu- of unexcu- examines
This module provides students with an overview of the fundamental principles of organic chemistry. It is the bonding situation of carbon and introduces students to the nomenclature of simple and moderately organic compounds. The module also discusses the fundamental principles of stereochemistry, substit	
the bonding situation of carbon and introduces students to the nomenclature of simple and moderately organic compounds. The module also discusses the fundamental principles of stereochemistry, substit	
ution and climination reactions as well as synthesis planning.	
Intended learning outcomes	
of nomenclature to determine simple substance names. Students are able to analyse the stereochemis lecules. They are able to describe and formulate some of the most important reactions in organic chemis that purpose, they can analyse and categorise the characteristic reaction conditions and can use them syntheses. Courses (type, number of weekly contact hours, language — if other than German) 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 ever ster, information on whether module can be chosen to earn a bonus)	istry. For for simple ery seme-
a) 1 to 3 written examinations (1 written examination: approx. 90 minutes; 2 written examinations: 60 o nutes each; 3 written examinations: 60 minutes each) or b) oral examination of one candidate each (ap 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)	
§ 62 (1) 2. Chemie "Organische und Bioorganische Chemie"	
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 (2010) Bachelor' degree (1 major) Chemistry (2009) Bachelor' degree (1 major) Mathematics (2012)	
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Julius-Maximilians-UNIVERSITÄT WÜRZBURG

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)

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module title Abbreviation					Abbreviation	
Organi	Organic Chemistry 2 (teaching degree for secondary scho			ls)	08-0C2-LAGY-102-m01	
Modul	Module coordinator Module offered by					
		Chair of Physically Organ	ic Chemistry	Institute of Organic	Chemistry	
ECTS		od of grading	Only after succ. con		chemistry	
6	1	rical grade		1		
Duratio	on	Module level	Other prerequisites			
1 semesterundergraduateAdmission prerequisite to assessment: successful completion of ses in the respective classes as specified at the beginning of the (usually 70% of exercises to be successfully completed) as well a lar attendance of exercises (usually a maximum of 2 incidents of usually a maximum of 2 incidents of usually a maximum of 2 incidents of						
	odule iı				ific reactions of aromatics. Using	
on read	ctions t				ostitution, elimination and additi- ation and reduction reactions as	
Intend	ed lear	ning outcomes				
unknov	wn reac			·	anisms and can transfer them to an)	
V + Ü (I	no infoi	mation on SWS (weekly	contact hours) and co	ourse language avail	able)	
		sessment (type, scope, la on on whether module c			ation offered — if not every seme-	
or 90 n each (a	ninutes approx.		tions: approx. 60 mir amination in groups	nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate 30 minutes)	
Allocat	tion of p	olaces				
Additio	onal inf	ormation				
Worklo	bad					
Teachi	ng cycl	e				
Referre	ed to in	LPOI (examination regu	llations for teaching-o	degree programmes)		
§ 62 (1) 2. Che	emie "Organische und Bi	oorganische Chemie"			
Module	e appea	ars in				

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	reg. data record Lehramt Gymnasien Chemie - 2009	

Module					Abbreviation
Organi	ic Cherr	iistry 3 (teaching de	gree for secondary scho	ols)	08-0C3-LA-102-m01
Module coordinator				Module offered b	<u>v</u>
holder of the Professorship of Organic Chemistry				Institute of Organ	•
ECTS	1	od of grading	Only after succ. co		
6					
Duratio	on	Module level	Other prerequisite	S	
1 semesterundergraduateAdmission prerequisite to ses in the respective class (usually 70% of exercises)				ve classes as specif ercises to be succes	t: successful completion of exerci- ied at the beginning of the course ssfully completed) as well as regu- maximum of 2 incidents of unexcu
Conten	nts	к			
radical	ls. It dis	•	ntal principles of stereo		c reactions, carbenes, nitriles and asymmetric catalysis, organome-
Intend	ed lear	ning outcomes			
asymm	netric ca				stereoselective syntheses and . They are able to conduct retrosyn
Course	es (type	, number of weekly c	ontact hours, language	— if other than Gern	nan)
v + Ü (ı	no info	rmation on SWS (wee	ekly contact hours) and	course language ava	ailable)
			oe, language — if other t ule can be chosen to ear		nation offered — if not every seme-
or 90 n each (a	ninutes approx.	each; 3 written exar	ninations: approx. 60 m al examination in groups	inutes each) or b) o	ritten examinations: approx. 60 ral examination of one candidate ox. 30 minutes)
	tion of		0		
Additic	nal inf	ormation			
Additio		ormation			
Worklo	had				
Toochi	ng cycl	0			
reaciii	ing cycl	e			
 Def:			very letter - front 1 t		
Referre	ea to in	LPUT (examination	regulations for teaching	-uegree programme	5)
	e appea		shing dogroe Crundeshu	la Chamistry (2222)	
			ching degree Grundschu ching degree Hauptschu		
			ching degree Realschule		
		mination for the tead			
11151 51	are ena	mination for the teat	uning degree Gymnasiun	n Chemistry (2009)	

		r
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	reg. data record Lehramt Gymnasien Chemie - 2009	

Modul					Abbreviation
Organi	c Cherr	iistry 4 - advanced co	ourse		08-0C4-LAGY-102-m01
Module coordinator				Module offered by	<u> </u>
holder	ofthe	Chair of Organic Che	nistry II	Institute of Organic	
ECTS	1	od of grading	Only after succ. con	· · ·	
5		rical grade	08-0C1 or 08-0C1-G		
Duratio		Module level	Other prerequisites	i	
1 seme	ester	undergraduate	ses in the respective (usually 70% of exe	e classes as specifie rcises to be success	successful completion of exercied at the beginning of the course fully completed) as well as reguaximum of 2 incidents of unexcu
Conten	nts				
	zardou				and syntheses, working with spe- rification methods and product
Intend	ed lear	ning outcomes			
able to	charad	terise and categoris	e dyes. Students are able	to describe the stru	actions and syntheses. They are cture and selective synthesis of ydrates, fats, terpenes and stero
Course	s (type	, number of weekly c	ontact hours, language –	- if other than Germa	an)
V + Ü (ı	no info	rmation on SWS (wee	ekly contact hours) and co	ourse language avai	lable)
			e, language — if other th lle can be chosen to earn		ation offered — if not every seme
or 90 n each (a	ninutes approx.	each; 3 written exar	ninations: approx. 60 mir al examination in groups	nutes each) or b) ora	tten examinations: approx. 6o Il examination of one candidate x. 30 minutes)
Allocat	tion of	olaces			
Additic	onal inf	ormation			
Worklo	ad				
	_				
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination	regulations for teaching-	degree programmes))
§ 62 (1) 2. Che	emie "Organische un	d Bioorganische Chemie"	I	
	e appea				
First st First st First st	ate exa ate exa ate exa	mination for the tead mination for the tead mination for the tead	ching degree Grundschule ching degree Hauptschule ching degree Realschule (ching degree Gymnasium	e Chemistry (2009) Chemistry (2009) Chemistry (2009)	
rirst st	ate exa	mination for the tead	ching degree Mittelschule	e Chemistry (2013)	

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	reg. data record Lehramt Gymnasien Chemie - 2009	

Module title Abbreviation					Abbreviation
-		nistry - laboratory course	(teaching degree for	secondary	08-OC-Prakt-LAGY-092-m01
schools)					
Module	e coord	linator		Module offered b	y
lecture	rs Orga	anische Chemie (Organic	Chemistry)	Institute of Organ	nic Chemistry
ECTS		od of grading	Only after succ. com	pl. of module(s)	
6	(not)	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
dition t their kr	to those nowled	e experiments, students v	will be expected to tak n the safe handling of	e oral tests and v hazardous subst	xperiments in the laboratory. In ad- write lab reports to demonstrate ances, simple experimental unit ysis of the products.
Intend	ed lear	ning outcomes			
error so in the l Course	ources. aborate s (type	They are able to connect ory. , number of weekly conta	the theoretical aspec	ts covered in the if other than Gerr	
P (no ir	nformat	tion on SWS (weekly cont	act hours) and course	language availat	ole)
		sessment (type, scope, la ion on whether module ca			nation offered — if not every seme-
Assess	ment o	eriment examination talks offered: once a year, sumr ussessment: German or Ei	mer semester	pprox. 15 minutes	s each), log (approx. 5 to 10 pages)
Allocat	ion of _l	places			
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regu	lations for teaching-d	egree programme	es)
§ 62 (1)) 2. Che	emie "Organische und Bio	oorganische Chemie"		
Module	e appea	ars in			
		mination for the teaching			

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	reg. data record Lehramt Gymnasien Chemie - 2009	

Module title				Abbreviation	
Practic	al spec	troscopy 1 (teaching de	gree for secondary sc	hools)	08-0C-Spec-LAGY-092-m01
Modul	Module coordinator			Module offered b	by
lecture	r of lec	ture "Organische Chemi	e 2"	Institute of Orgar	nic Chemistry
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
3	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	Its				
This m NMR s			e spectroscopic meth	ods of infrared sp	ectroscopy, mass spectrometry and
Intend	ed lear	ning outcomes			
		able to describe importa molecular structure.	nt spectroscopic metł	nods, to evaluate a	a spectrum and to draw conclusions
Course	s (type	, number of weekly cont	act hours, language –	- if other than Gerr	man)
V (no ii	nformat	ion on SWS (weekly con	tact hours) and cours	e language availal	ble)
		sessment (type, scope, l on on whether module of			nation offered — if not every seme-
or 90 n each (a Langua	ninutes approx. age of a	each; 3 written examina 20 minutes) or c) oral e ssessment: German or E	ations: approx. 60 mir xamination in groups	nutes each) or b) o	vritten examinations: approx. 60 oral examination of one candidate ox. 30 minutes)
Allocat	ion of p	olaces			
			_		
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination reg	ulations for teaching-	degree programme	es)
§ 62 (1) 2. Che	emie "Organische und Bi	oorganische Chemie"		
Module	e appea	ars in			
First st	ate exa	mination for the teachin	g degree Grundschule	Chemistry (2009))
		mination for the teachin	,)
		mination for the teachin			
First st	ate exa	mination for the teachin	g degree Gymnasium	Chemistry (2000)	
		mination for the teachin			

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	reg. data record Lehramt Gymnasien Chemie - 2009	

Physica	e title				Abbreviation					
-	al and 1	Theoretical Chemistry 3	: Symmetry and Quant	um Chemistry	08-PC3-092-m01					
Module coordinator				Module offered by						
lecturer of lecture "Quantenchemie"			•	l and Theoretical Ch	omictry					
ECTS		od of grading	Only after succ. com			ennstry				
6		rical grade		pr. of module(s)						
Duratio	·	Module level								
1 seme		undergraduate	Other prerequisites Admission prerequise	ito to accoccmont.	successful completi	on of overci-				
1 Seme	SICI	undergraduate	ses in the respective		•					
			(usually 70% of exer							
			lar attendance of exe			-				
			sed absence).							
Conten			joeu ubserree).							
		iscusses the fundamen	tal principles of quanti	im chemistry and s	mmetry in chemistr	у.				
Intende	ed learı	ning outcomes								
		become familiar with t			emistry and symmet	ry in che-				
	-	able to apply the know	·	•						
		, number of weekly cont								
V + Ü +	V + Ü (no information on SWS	(weekly contact hours)	and course langua	ge available)					
		essment (type, scope, l			ition offered — if not	t every seme-				
ster, in	formati	on on whether module	can be chosen to earn	a bonus)						
		n examinations (1 writte								
-		n examinations: 60 min			andidate each (appr	ox. 20 minu-				
		examination in groups (groups of 2, approx. 30	o minutes)						
Allocat	ion of p	olaces								
Additio	onal inf	ormation		Additional information						
<u> </u>										
Worklo	ad									
worklo	ad									
		e								
Worklo Teachin		e								
 Teachiı 	ng cycl		ulations for tooching d							
 Teachiı 	ng cycl	e LPOI (examination reg	ulations for teaching-d	egree programmes)						
 Teachin Referre 	ng cycle ed to in	LPOI (examination reg	ulations for teaching-d	egree programmes)						
 Teachin Referre Module	ng cycl ed to in e appea	LPO I (examination reg		egree programmes)						
 Teachin Referre Module Bachele	ng cycle ed to in e appea or' deg	LPO I (examination reg I rs in ree (1 major) Biochemis	try (2013)	egree programmes)						
 Teachin Referre Module Bachele Bachele	ng cycle ed to in e appea or' deg or' deg	LPO I (examination reg Irs in ree (1 major) Biochemis ree (1 major) Chemistry	try (2013) (2010)	egree programmes)						
 Teachin Referre Module Bachele Bachele	ng cycle ed to in e appea or' deg or' deg or' deg	LPO I (examination reg irs in ree (1 major) Biochemis ree (1 major) Chemistry ree (1 major) Chemistry	try (2013) (2010) (2009)	egree programmes)						
 Teachin Referre Bachele Bachele Bachele Bachele	ng cyclo ed to in e appea or' deg or' deg or' deg or' deg	LPO I (examination reg ars in ree (1 major) Biochemis ree (1 major) Chemistry ree (1 major) Chemistry ree (1 major) Mathemati	try (2013) (2010) (2009) ics (2012)	egree programmes)						
 Teachin Referre Bachele Bachele Bachele Bachele Bachele	ng cyclo ed to in e appea or' deg or' deg or' deg or' deg or' deg or' deg	LPO I (examination reg res in ree (1 major) Biochemis ree (1 major) Chemistry ree (1 major) Chemistry ree (1 major) Mathemati ree (1 major) Mathemati	try (2013) (2010) (2009) (cs (2012) (cs (2013)							
 Referre Module Bachele Bachele Bachele Bachele Bachele Bachele	ng cycle ed to in e appea or' deg or' deg or' deg or' deg or' deg or' deg or' deg	LPO I (examination reg res in ree (1 major) Biochemis ree (1 major) Chemistry ree (1 major) Chemistry ree (1 major) Mathemati ree (1 major) Mathemati ree (1 major) Computati	try (2013) (2010) (2009) ics (2012) ics (2013) onal Mathematics (200	99)						
 Referre Bachele Bachele Bachele Bachele Bachele Bachele Bachele	ng cycla ed to in e appea or' deg or' deg or' deg or' deg or' deg or' deg or' deg or' deg	LPO I (examination reg ars in ree (1 major) Biochemis ree (1 major) Chemistry ree (1 major) Chemistry ree (1 major) Mathemati ree (1 major) Mathemati ree (1 major) Computati ree (1 major) Computati	try (2013) (2010) (2009) ics (2012) ics (2013) onal Mathematics (200 onal Mathematics (201	99) 2)						
 Teachin Referre Module Bachele Bachele Bachele Bachele Bachele Bachele Bachele Bachele	ng cycle ed to in e appea or' deg or' deg or' deg or' deg or' deg or' deg or' deg or' deg or' deg or' deg	LPO I (examination reg res in ree (1 major) Biochemis ree (1 major) Chemistry ree (1 major) Chemistry ree (1 major) Mathemati ree (1 major) Mathemati ree (1 major) Computati	try (2013) (2010) (2009) ics (2012) ics (2013) onal Mathematics (201 onal Mathematics (201	99) 2)						
 Teachin Referren Module Bachele Bachele Bachele Bachele Bachele Bachele Bachele Bachele Bachele	ng cycle ed to in e appea or' deg or' deg	LPO I (examination reg res in ree (1 major) Biochemis ree (1 major) Chemistry ree (1 major) Chemistry ree (1 major) Mathemati ree (1 major) Computati ree (1 major) Computati ree (1 major) Computati	try (2013) (2010) (2009) (cs (2012) (cs (2013) onal Mathematics (201 onal Mathematics (201 onal Mathematics (201 emistry (2011)	99) 2) 3)						
 Referre Module Bachele	ng cycla ed to in e appea or' deg or' deg	LPO I (examination reg res in ree (1 major) Biochemis ree (1 major) Chemistry ree (1 major) Chemistry ree (1 major) Mathemati ree (1 major) Mathemati ree (1 major) Computati ree (1 major) Computati ree (1 major) Computati ree (1 major) Computati	try (2013) (2010) (2009) ics (2012) ics (2013) onal Mathematics (201 onal Mathematics (201 onal Mathematics (201 emistry (2011) ng degree Grundschule	99) 2) 3) Chemistry (2009)						
 Teachin Referre Module Bachele B	ng cycle ed to in e appea or' deg or' deg ate exa ate exa ate exa	LPO I (examination reg ars in ree (1 major) Biochemis ree (1 major) Chemistry ree (1 major) Chemistry ree (1 major) Mathemati ree (1 major) Mathemati ree (1 major) Computati ree (1 major) Computati ree (1 major) Computati ree (1 major) FOKUS Che mination for the teachir	try (2013) (2010) (2009) (cs (2012) onal Mathematics (201 onal Mathematics (201 onal Mathematics (201 onal Mathematics (201 emistry (2011) og degree Grundschule og degree Realschule C	09) 2) 3) Chemistry (2009) Chemistry (2009)						



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

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	reg. data record Lehramt Gymnasien Chemie - 2009	

Module					Abbreviation
Physic	al Cher	nistry 4: Statistical The	rmodynamics		08-PC4-092-m01
Module	e coord	inator		Module offered by	<u> </u>
lecturer of lecture "Statistische Thermodynamik"			nodynamik"		l and Theoretical Chemistry
ECTS		od of grading	Only after succ. con	· · · · ·	
3		rical grade			
<u>)</u> Duratio	ı	Module level	Other prerequisites		
1 seme		undergraduate			successful completion of exerci-
1 Seme	SICI				d at the beginning of the course
					fully completed) as well as regu
					aximum of 2 incidents of unexcu
			sed absence).		aximum of 2 merdents of anexed
Conten	+ c		jed absence).		
		liceucoo the fundament	to Invincintes of station	tion the sum a dum a set in	<u> </u>
		liscusses the fundamer	ital principles of statis	lical thermodynamic	5.
		ning outcomes			
		e become familiar with t wledge they have devel		ples of statistical th	ermodynamics and are able to
Course	s (type	, number of weekly con	tact hours, language –	- if other than Germa	in)
V + Ü (ı	no infoi	rmation on SWS (weekly	y contact hours) and co	ourse language avail	able)
		sessment (type, scope, ion on whether module			tion offered — if not every seme
a) 1 to [.]	3 writte	n examinations (1 writt	en examination: appro	x. 90 minutes; 2 wri	tten examinations: approx. 60
					l examination of one candidate
each (a	approx.	20 minutes) or c) oral e	examination in groups	(groups of 2, approx	. 30 minutes)
Allocat	ion of _l	olaces			
Additio	onal inf	ormation			
Worklo	ad				
Teachi		۵			
	ing cycl				
 Doferm		IDOI (overningstign	ulations for to a him	dograa neagear	
Referre		LPOI (examination reg	guiations for teaching-	uegree programmes)	
Module	e appea	ars in			
		ree (1 major) Chemistry	(2010)		
Bachelor' degree (1 major) Chemistry (2009)					
Bachel	or' deg	ree (1 major) FOKUS Ch	emistry (2011)		
First sta	ate exa	mination for the teaching	ng degree Grundschule	e Chemistry (2009)	
		mination for the teaching			
			ng degree Realschule (Chemistry (2009)	
First state examination for the teaching degree Realschule Chemistry (2009) First state examination for the teaching degree Gymnasium Chemistry (2009)					
		mination for the teachin mination for the teachin			

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	reg. data record Lehramt Gymnasien Chemie - 2009	

Module	e title				Abbreviation
Electro	onic stru	ucture and spectroscop	у		08-PC-ESS-092-m01
Madul	<u> </u>	instar		Madula offered by	
	Module coordinator			Module offered by	
	lecturer of lecture "Elektronische Struktur and Spektros pie" (Electronic Structure and Spectroscopy)				l and Theoretical Chemistry
ECTS		od of grading	Only after succ. con	pl. of module(s)	
3	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ester	undergraduate	ses in the respective (usually 70% of exe	e classes as specifie rcises to be success	successful completion of exerci- d at the beginning of the course fully completed) as well as regu- aximum of 2 incidents of unexcu-
Conten	nts				
Fundar	mentals	of atomic and molecul	ar structure as well as	spectroscopy.	
		ning outcomes			
		e learned the fundamen nowledge they have dev		ecular structure as w	vell as spectroscopy and are able
Course	es (type	, number of weekly con	tact hours, language –	- if other than Germa	n)
V + Ü (I	no info	mation on SWS (weekly	/ contact hours) and co	ourse language avail	able)
		sessment (type, scope, ion on whether module			tion offered — if not every seme-
or 90 n each (a	ninutes approx.		ations: approx. 60 mir examination in groups	nutes each) or b) oral	ten examinations: approx. 60 l examination of one candidate . 30 minutes)
Allocat	tion of _l	olaces			
Additio	onal inf	ormation			
Worklo	bad				
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination reg	gulations for teaching-o	degree programmes)	
Module	e appea	ars in			
		mination for the teaching	ng degree Grundschule	e Chemistry (2009)	
		mination for the teaching			
First st	ate exa	mination for the teachi	ng degree Realschule (Chemistry (2009)	
		mination for the teaching			
First st	ate exa	mination for the teaching	ng degree Mittelschule	Chemistry (2013)	

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	reg. data record Lehramt Gymnasien Chemie - 2009	

Modul	le title				Abbreviation
Physic	cal Che	mistry lab (teaching degr	ee for secondary sch	ools)	08-PC-Prakt-LAGY-092-m01
Module coordinator Module of			Module offered by		
lecture	ers Phys	sikalische Chemie (Physio	cal Chemistry)	Institute of Physica	ll and Theoretical Chemistry
ECTS	· · ·	od of grading	Only after succ. con	,	· · · ·
3	(not)	successfully completed	o8-PC-TKE-LAGY		
Durati	on	Module level	Other prerequisites		
1 seme	ester	undergraduate			
Conte	nts				
lated l dition their k	ecture(to thos nowled	s). After a safety briefing, e experiments, students ge.	the students autono	mously conduct exp	they have gained through the re- eriments in the laboratory. In ad- ite lab reports to demonstrate
		ning outcomes			
		able to connect the theor practical laboratory expe			etics, electrochemistry and spec- ulting measurements.
Course	es (type	, number of weekly conta	act hours, language –	- if other than Germa	an)
P (no i	informa	tion on SWS (weekly cont	tact hours) and cours	e language available	e)
		sessment (type, scope, la ion on whether module c			ation offered — if not every seme-
Asses	sment o	eriment examination talk: offered: once a year, winte assessment: German or E	er semester	approx. 15 minutes e	each), log (approx. 5 to 10 pages)
	tion of				
Additi	onal inf	ormation			
Workl	oad				
Teachi	ing cyc	e			
Referr	ed to in	LPOI (examination regu	llations for teaching-	degree programmes))
		emie "Allgemeine und An			
Modul	le appe	ars in			
		mination for the teaching	g degree Gymnasium	Chemistry (2009)	

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	reg. data record Lehramt Gymnasien Chemie - 2009	

mouul	e title				Abbreviation
Princip	Principles of quantum mechanics and spectroscopy				08-PC-QMS-LAGY-092-m01
Modul	e coord	inator		Module offered by	
lecturer of lecture "Grundlagen der Quantenmechanik and Spektroskopie" (Principles of Quantum Mechanics and Spectroscopy)				1	l and Theoretical Chemistry
ECTS	1	od of grading	Only after succ. con	npl. of module(s)	
5		rical grade		• •	
Duratio	on	Module level	Other prerequisites	i	
1 seme	ester	undergraduate	ses in the respective (usually 70% of exe	e classes as specifie rcises to be success	successful completion of exerci- ed at the beginning of the course fully completed) as well as regu- aximum of 2 incidents of unexcu
Conten	nts				
the bas the mo	sis of th dule fo	ne following models:	particle in a box, harmon	ic oscillator and rigi	chanics. It analyses molecules o d rotor. As regards spectroscopy ion, microwave spectroscopy an
Intend	ed lear	ning outcomes			
		able to explain key m rent spectroscopic m		anics and to apply th	em to molecules. They are able
Course	es (type	, number of weekly co	ontact hours, language –	- if other than Germa	an)
V + Ü (I	no info	rmation on SWS (wee	kly contact hours) and co	ourse language avai	able)
Matha	d of ase	sessment (type, scop	e language — if other th	an German, examina	ation offered — if not every seme
			le can be chosen to earn		
ster, in a) 1 to ; or 90 n each (a	iformati 3 writte ninutes approx.	ion on whether modu en examinations (1 wr each; 3 written exam 20 minutes) or c) ora	le can be chosen to earn itten examination: appro ninations: approx. 60 min al examination in groups	a bonus) x. 90 minutes; 2 wri nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate
ster, in a) 1 to j or 90 n each (a Langua	iformati 3 writte ninutes approx.	ion on whether modu en examinations (1 wr each; 3 written exam 20 minutes) or c) ora ssessment: German	le can be chosen to earn itten examination: appro ninations: approx. 60 min al examination in groups	a bonus) x. 90 minutes; 2 wri nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate
ster, in a) 1 to j or 90 n each (a Langua	format 3 writte ninutes approx. age of a	ion on whether modu en examinations (1 wr each; 3 written exam 20 minutes) or c) ora ssessment: German	le can be chosen to earn itten examination: appro ninations: approx. 60 min al examination in groups	a bonus) x. 90 minutes; 2 wri nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate
ster, in a) 1 to 1 or 90 n each (a Langua Allocat	formation 3 writte ninutes approx. age of a tion of p	ion on whether modu en examinations (1 wr each; 3 written exam 20 minutes) or c) ora ssessment: German	le can be chosen to earn itten examination: appro ninations: approx. 60 min al examination in groups	a bonus) x. 90 minutes; 2 wri nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate
ster, in a) 1 to 1 or 90 m each (a Langua Allocat	formation 3 writte ninutes approx. age of a tion of p	ion on whether modu en examinations (1 wr each; 3 written exam 20 minutes) or c) ora ssessment: German places	le can be chosen to earn itten examination: appro ninations: approx. 60 min al examination in groups	a bonus) x. 90 minutes; 2 wri nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate
ster, in a) 1 to 1 or 90 m each (a Langua Allocat	format 3 writte ninutes approx. age of a tion of p	ion on whether modu en examinations (1 wr each; 3 written exam 20 minutes) or c) ora ssessment: German places	le can be chosen to earn itten examination: appro ninations: approx. 60 min al examination in groups	a bonus) x. 90 minutes; 2 wri nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate
ster, in a) 1 to 1 or 90 n each (a Langua Allocat Additic	format 3 writte ninutes approx. age of a tion of p	ion on whether modu en examinations (1 wr each; 3 written exam 20 minutes) or c) ora ssessment: German places	le can be chosen to earn itten examination: appro ninations: approx. 60 min al examination in groups	a bonus) x. 90 minutes; 2 wri nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate
ster, in a) 1 to 1 or 90 n each (a Langua Allocat Additio Worklo	format 3 writte ninutes approx. age of a tion of p onal inf	ion on whether modu en examinations (1 wr each; 3 written exam 20 minutes) or c) ora ssessment: German places ormation	le can be chosen to earn itten examination: appro ninations: approx. 60 min al examination in groups	a bonus) x. 90 minutes; 2 wri nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate
ster, in a) 1 to 1 or 90 n each (a Langua Allocat Additio Worklo	format 3 writte ninutes approx. age of a tion of p onal inf	ion on whether modu en examinations (1 wr each; 3 written exam 20 minutes) or c) ora ssessment: German places ormation	le can be chosen to earn itten examination: appro ninations: approx. 60 min al examination in groups	a bonus) x. 90 minutes; 2 wri nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate
ster, in a) 1 to 1 or 90 n each (a Langua Allocat Morklo Teachin 	aformation 3 written ninutes approx. age of a tion of p onal inf oad	ion on whether modu en examinations (1 wr each; 3 written exam 20 minutes) or c) ora ssessment: German places ormation	le can be chosen to earn itten examination: appro ninations: approx. 60 min al examination in groups	a bonus) ix. 90 minutes; 2 wri nutes each) or b) ora (groups of 2, approx	tten examinations: approx. 60 l examination of one candidate a. 30 minutes)
ster, in a) 1 to 1 or 90 n each (a Langua Allocat Additic Worklo Teachin Referre	formation 3 written ninutes approx. age of a tion of p onal inf onal inf onal inf onal inf onal inf	ion on whether modu en examinations (1 wr each; 3 written exam 20 minutes) or c) ora issessment: German places ormation e LPOI (examination	le can be chosen to earn itten examination: appro ninations: approx. 60 min examination in groups or English	a bonus) x. 90 minutes; 2 wri nutes each) or b) ora (groups of 2, approx	tten examinations: approx. 60 l examination of one candidate 30 minutes)
ster, in a) 1 to 1 or 90 n each (a Langua Allocat Additio Worklo Teachin Referre § 62 (1	formation 3 written ninutes approx. age of a tion of p onal inf onal inf onal inf onal inf onal inf	ion on whether modu in examinations (1 wr each; 3 written exam 20 minutes) or c) ora ssessment: German places ormation e LPO I (examination in mie "Allgemeine und	le can be chosen to earn itten examination: appro ninations: approx. 60 min examination in groups or English	a bonus) x. 90 minutes; 2 wri nutes each) or b) ora (groups of 2, approx	tten examinations: approx. 60 l examination of one candidate 30 minutes)

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	reg. data record Lehramt Gymnasien Chemie - 2009	

Modul	e title				Abbreviation
Therm	odynan	nics, Kinetics, Electro	chemistry		08-PC-TKE-LAGY-092-m01
Modul	e coord	inator		Module offered by	,
lecture mie"	lecturer of lecture "Thermodynamik, Kinetik, Elektroche- mie"		k, Kinetik, Elektroche-	Institute of Physica	al and Theoretical Chemistry
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
9	nume	rical grade			
Durati	on	Module level	Other prerequisites		
1 seme	ester	undergraduate	ses in the respective (usually 70% of exe	e classes as specifie rcises to be success	successful completion of exerci- ed at the beginning of the course fully completed) as well as regu- aximum of 2 incidents of unexcu-
Conter	nts	I	I		
chemi	cal equi	ilibria, ideal and real		phases and electro	es on the laws of thermodynamics chemistry. In addition to thermo-
Intend	ed lear	ning outcomes			
solutio	ons, gas				ribe thermodynamic aspects of le to interpret the kinetic aspects
Course	es (type	, number of weekly co	ontact hours, language –	– if other than Germa	an)
V + Ü (no info	rmation on SWS (wee	kly contact hours) and co	ourse language avai	lable)
			e, language — if other th le can be chosen to earn		ation offered — if not every seme-
nutes	each; 3	written examinations		oral examination of	tten examinations: 60 or 90 mi- one candidate each (approx. 20
Allocat	tion of _l	places			
Additio	onal inf	ormation			
Worklo	oad				
Teachi	ing cycl	e			
Referre	ed to in	LPOI (examination	regulations for teaching-	degree programmes)
§ 62 (1) 1. Che	emie "Allgemeine und	Anorganische Chemie";	"Physikalische und	Analytische Chemie"
Modul	e appea	ars in			
First st	ate exa	mination for the teac	hing degree Gymnasium	Chemistry (2000)	

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	reg. data record Lehramt Gymnasien Chemie - 2009	

Module	title				Abbreviation
Basic N	Aathem	atics (teaching degree)			08-PC-VKM-LA-102-m01
Module	Module coordinator Module offered by				
lecturer of block course "Mathematik"			(Mathematics)		l and Theoretical Chemistry
ECTS					
2		successfully completed			
Duration Module level Other prerequisites					
1 semester undergraduate					
Conten	ts				
					sed in physical/theoretical che- n thermodynamics and kinetics.
Intende	ed learı	ning outcomes			
Studen mistry.	ts have	e been trained in mathem	natical methods. They	are able to apply th	ose methods to problems in che-
Course	s (type	, number of weekly conta	ct hours, language –	· if other than Germa	n)
V + Ü (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
		e ssment (type, scope, la on on whether module ca			tion offered — if not every seme-
		ork sheets) ssessment: German or Ei	nglish		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachi	ng cycl	9			
Referre	d to in	LPOI (examination regu	lations for teaching-o	legree programmes)	
Module	appea	rs in			
		mination for the teaching	g degree Grundschule	Chemistry (2009)	
					stry (Primary School) (2009)
		mination for the teaching			
					stry (Secondary School) (2009)
		mination for the teaching	-		
		mination for the teaching			
First sta (2009)	ate exa	mination for the teaching	g degree Sonderpäda	gogik Didactics in Cl	nemistry (Secondary School)
	ate exa	mination for the teaching	g degree Sonderpäda	gogik Didactics in Cl	nemistry (Middle School) (2013)
		mination for the teaching			
First sta			g degree milleischule	Chemistry (2013)	

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	reg. data record Lehramt Gymnasien Chemie - 2009	

Modul	e title				Abbreviation
Physic	s lab (t	eaching degree for secor	idary schools)		08-PH-Prakt-LAGY-092-m01
Module coordinator				Module offered by	<u> </u>
lecture	ers Phys	sikalische Chemie (Physic	al Chemistry)	Institute of Physica	l and Theoretical Chemistry
ECTS	Meth	od of grading	Only after succ. con		
3	(not)	successfully completed			
Duration Module level Other prerequisites					
1 seme	ester	undergraduate			
Conter	nts				
This m	odule d	overs key experiments in	physics.		
Intend	ed lear	ning outcomes			
Studer	nts are	able to plan, perform and	evaluate key experir	nents in physics.	
Course	es (type	, number of weekly conta	ict hours, language –	- if other than Germa	an)
P (no i	nforma	tion on SWS (weekly cont	act hours) and cours	e language available	2)
ster, in pre/po	oformat	ion on whether module c eriment examination talks	an be chosen to earn s (Vor-/Nachtestate, a	a bonus)	tion offered — if not every sem each), log (approx. 5 to 10 page
		ssessment: German or E	nglish		
Alloca	tion of	places			
Additio	onal inf	ormation			
	-				
Worklo	bad				
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regu	lations for teaching-	degree programmes)	
§ 62 (1	.) 3. Che	emie "Physik"			
Modul	e appea	ars in			
		mination for the teaching			

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	reg. data record Lehramt Gymnasien Chemie - 2009	

Module	e title				Abbreviation
		odels in Chemistry (teac	hing degree for seco	ndary schools)	08-TC-LA-092-m01
Module	e coord	inator		Module offered by	/
lecturer of lecture "Quantenchemie"		Institute of Physical and Theoretical Chemistry			
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
3	nume	rical grade			
Duration Module level Other prerequisites					
1 seme	ster	undergraduate	Admission prerequi	site to assessment:	successful completion of exerci-
			ses in the respective	e classes as specifi	ed at the beginning of the course
			(usually 70% of exe	rcises to be succes	sfully completed) as well as regu-
			lar attendance of ex	ercises (usually a n	naximum of 2 incidents of unexcu
			sed absence).		
Conten	ts				
spin, tł	ne Paul		inants, the Hartree-Fo	ock method, correla	uantum chemistry. It focuses on ation energy, configuration interac odels of H2+.
Intende	ed lear	ning outcomes			
Studen	ts are a	able to describe excited s	tates of molecules w	ith the help of key	concepts and models.
Course	s (type	, number of weekly conta	ict hours, language —	- if other than Germ	ian)
V + Ü (r	no infoi	mation on SWS (weekly	contact hours) and co	ourse language ava	ilable)
		essment (type, scope, la on on whether module ca			ation offered — if not every seme-
					itten examinations: approx. 60 al examination of one candidate
		20 minutes) or c) oral ex			
Allocat					
Additio	nal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	d to in	LPOI (examination regu	lations for teaching-o	degree programmes	5)
Module	e appea	ars in			
First sta	ate exa	mination for the teaching	g degree Grundschule	e Chemistry (2009)	
		mination for the teaching	/		
		mination for the teaching			
		mination for the teaching			
First sta	ate exa	mination for the teaching	g degree Mittelschule	Chemistry (2013)	

IA Cumposion Chemistry (2000)		
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	reg. data record Lehramt Gymnasien Chemie - 2009	