

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

Contents

The subject is divided into	3
Abbreviations used, Conventions, Notes, In accordance with	4
Scientific Discipline	5
Compulsory Courses	6
Inorganic Chemistry 1 (teaching degree)	7
Inorganic Chemistry of the Elements (teaching degree for secondary schools)	, 9
Chemistry of the elements	10
Organic Chemistry 1	11
Organic Chemistry 2 (teaching degree for secondary schools)	13
Organic Chemistry - laboratory course (teaching degree for secondary schools)	14
Organic Chemistry 4 - advanced course Practical spectroscopy 1 (teaching degree for secondary schools)	15 16
Thermodynamics, Kinetics, Electrochemistry	10
Principles of quantum mechanics and spectroscopy	18
Physical Chemistry lab (teaching degree for secondary schools)	19
Practical Research Course for Grammar School Teachers	20
Basic Mathematics (teaching degree)	21
Physics lab (teaching degree for secondary schools)	22
Biochemistry (teaching degree for secondary schools) Exercises in Experimental Presentation, Intermediate School	23
Teaching	24 25
Introduction in Planning and Methods	25 26
Chemistry Education, Part II	28
Chemistry Education, Part III	29
Freier Bereich (general as well as subject-specific electives)	30
Chemistry	31
Practical spectroscopy 2 (teaching degree for secondary schools)	32
Elemental Organic Chemistry (teaching degree for secondary schools)	33
Theoretical Models in Chemistry (teaching degree for secondary schools)	34
Electronic structure and spectroscopy	35
Organic Chemistry 3 (teaching degree for secondary schools)	36
Physical and Theoretical Chemistry 3: Symmetry and Quantum Chemistry	37
Physical Chemistry 4: Statistical Thermodynamics	39
Toxicology and legal studies Preparation of Exams Chemistry	40 42
Teaching	
Guidance in Self-reliant Scientific Work	44 45
Extracurricular Sites	45
Instruction of pupils in making chemical experiments	48
W- and P-Courses in Secondary Classes of Gymnasium	49
Thesis	50
Admission work (Chemistry for Grammar School Teachers)	51

		,
LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 2 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	



The subject is divided into

section / sub-section	ECTS credits	starting page
Scientific Discipline	92	5
Compulsory Courses	92	6
Teaching	10	25
Freier Bereich (general as well as subject-specific electives)		30
Chemistry		31
Teaching		44
Thesis	10	50

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 3 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	



Abbreviations used

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

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

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

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

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

Conventions

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

Notes

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

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

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

In accordance with

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

LASPO2009

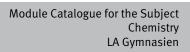
associated official publications (FSB (subject-specific provisions)/SFB (list of modules)):

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.

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 4 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	



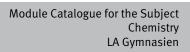


Scientific Discipline

(92 ECTS credits)

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 5 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	1





Compulsory Courses

(92 ECTS credits)

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 6 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Increa	Module title				Abbreviation	
Inorganic Chemistry 1 (teaching degree)				08-AC1-LA-102-m01	L	
Module coordinator			Module offered by			
lecturer of lecture "Experimentalchemie" (Experimental Chemistry)						
ECTS Method of grading Only after succ. compl. of module(s)						
20	nume	rical grade				
Duratio	on	Module level	level Other prerequisites			
1 seme	ster	undergraduate	By way of exception assessments.	ion, additional prerequisites are listed in the section o		
Conten	Its					
module exercis autono ques, t	e introc ses bas omously he syn	cid-base reactions, the luces fundamental mod ed on the lecture on exp y conduct experiments i thesis of simple substa o advance their laborate	els of chemistry and p perimental chemistry a n the laboratory. The c nces and analyses of u	rinciples of inorgani ind its extension. Aft ourse focuses on lat	c chemistry. It includ er a safety briefing, t poratory safety, simp	les practical he students lle lab techni
Intend	ed lear	ning outcomes				
are abl are abl loped t	e to de e to ide he abil	s to describe chemical a scribe the main quantit entify fundamental prob lity to perform the neces nanner, both in written a	ative and qualitative a lems in chemistry and sary stoichiometric ca	nalytical methods an perform experiment	nd their application a s to solve them. The	areas. They y have deve-
Course	S (type, 1	number of weekly contact hours	, language — if other than Ge	rman)		
compo • C • C	nent. 08-AC1- 08-AC1- 08-AC1-	omprises 3 module con 1-102: V + V + Ü (no info LA-2-102: P (no informa LA-3-102: V (no informa	rmation on SWS (weel tion on SWS (weekly c tion on SWS (weekly c	kly contact hours) an ontact hours) and co ontact hours) and co	d course language a ourse language avail ourse language avail	ivailable) able)
		sessment (type, scope, lang ole for bonus)	uage — if other than German,	examination offered — if no	t every semester, informat	
	nless st	n this module comprise		البلوم ومناونية والمرا		ion on whether
vidual	assess		sful completion of the	module will require		ecified be-
vidual a Assess mistry 1 1 a 9 ((1 C 0 rr c a Assess	ment i Princip o ECTS o minu approx anguas Other p espect comple absence sment i	ments. n module component of les of Inorganic Chemis , Method of grading: nu written examinations (utes each; 3 written exar . 20 minutes) or c) oral ge of assessment: Germ rerequisites: Admissior ive classes as specified ted) as well as regular a	B-AC1-1-102: Principles try merical grade a written examination: ninations: 60 minutes examination in groups an or English a prerequisite to asses at the beginning of the at the beginning of the sttendance of exercise	module will requires of Inorganic Chemis approx. 90 minutes; each) or b) oral exan (groups of 2, approx ssment: successful of course (usually 70% s (usually a maximu anic and Analytical C	successful completion stry Principles of Ino 2 written examination ination of one candio 30 minutes) completion of exercion of exercises to be su m of 2 incidents of u	ecified be- on of all indi- rganic Che- ons: 60 or idate each ses in the accessfully inexcused

- 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

--

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)

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 8 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	ĺ

Increa	e title				Abbreviation
Inorganic Chemistry of the Elements (teaching degree for secondary schools)					08-AC2-LAGY-102-m01
Module coordinator				Module offered by	
lecture mistry)		ure "Festkörperchemie"	' (Solid State Che-	Institute of Inorgan	ic Chemistry
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
3	nume	rical grade			
Duratio	<u> </u>	Module level Other prerequisites			
1 seme	ster	undergraduate	 		
Conten		understaddate	l		
This mo on thei	odule e ir struct	ures and properties, sp			d saline compounds. It focuses ical processes.
		ning outcomes			
		able to describe the stru . They are able to system			saline compounds in an appro- and reactivity.
Course	S (type, n	umber of weekly contact hours	, language — if other than Ge	rman)	
V (no ir	nformat	ion on SWS (weekly cor	ntact hours) and cours	e language available	e)
Metho	d of ass	sessment (type, scope, langu	lage — if other than German,	examination offered — if no	ot every semester, information on whether
		le for bonus)			
each (a	approx. age of a	20 minutes) or c) oral e ssessment: German or l	xamination in groups		l examination of one candidate . 30 minutes)
Additic	nalinf				
Auuitio	mat iiii	ormation	_		
		ormation			
		ormation			
 Worklo	ad	ormation			
 Teachi 	ng cycl		ns for teaching-degree progra	ammes)	
 Teachin Referre	ng cyclo ed to in	9			Analytische Chemie"
 Teachin Referre § 62 (1)	ng cyclo ed to in	e LPO I (examination regulatio mie "Allgemeine und At			Analytische Chemie"
 Teachin Referre § 62 (1) Module	ng cyclo ed to in) 1. Che e appea	e LPO I (examination regulatio mie "Allgemeine und At	norganische Chemie";	"Physikalische und	Analytische Chemie"
 Teachin § 62 (1) Module First sta First sta	ng cycle ed to in) 1. Che e appea ate exa ate exa	e LPO I (examination regulatio mie "Allgemeine und Ar Irs in mination for the teachir mination for the teachir	norganische Chemie"; ng degree Grundschule ng degree Grundschule	"Physikalische und e Chemistry (2009) e Didactics in Chemis	Analytische Chemie" stry (Primary School) (2009)
 Teachin <u>8 62 (1)</u> Module First sta First sta First sta	ng cyclo ed to in) 1. Che e appea ate exa ate exa ate exa	e LPO I (examination regulatio mie "Allgemeine und Ar Irs in mination for the teachir mination for the teachir mination for the teachir	norganische Chemie"; ng degree Grundschule ng degree Grundschule ng degree Hauptschule	"Physikalische und e Chemistry (2009) e Didactics in Chemis e Chemistry (2009)	stry (Primary School) (2009)
 Teachin Referre § 62 (1) Module First sta First sta First sta First sta	ng cyclo ed to in) 1. Che e appea ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation mie "Allgemeine und An Ins in mination for the teachir mination for the teachir mination for the teachir mination for the teachir mination for the teachir	norganische Chemie"; ng degree Grundschule ng degree Grundschule ng degree Hauptschule ng degree Hauptschule	"Physikalische und e Chemistry (2009) e Didactics in Chemis e Chemistry (2009) e Didactics in Chemis	
 Teachin Referre § 62 (1) Module First sta First sta First sta First sta First sta First sta	ng cyclo ed to in) 1. Che e appea ate exa ate exa ate exa ate exa ate exa ate exa	e LPO I (examination regulation mie "Allgemeine und Au rs in mination for the teachir mination for the teachir	norganische Chemie"; ng degree Grundschule ng degree Grundschule ng degree Hauptschule ng degree Hauptschule ng degree Realschule ("Physikalische und e Chemistry (2009) e Didactics in Chemis e Chemistry (2009) e Didactics in Chemis Chemistry (2009)	stry (Primary School) (2009)
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 Teachin Referren § 62 (1) Module First sta First sta	ng cyclo ed to in) 1. Che e appea ate exa ate exa ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation mie "Allgemeine und An Irs in mination for the teachir mination for the teachir	norganische Chemie"; ng degree Grundschule ng degree Grundschule ng degree Hauptschule ng degree Hauptschule ng degree Realschule (ng degree Gymnasium ng degree Sonderpäda	"Physikalische und e Chemistry (2009) e Didactics in Chemis e Chemistry (2009) e Didactics in Chemis Chemistry (2009) Chemistry (2009) agogik Didactics in Cl	stry (Primary School) (2009) stry (Secondary School) (2009) hemistry (Secondary School)
Teachin Referre § 62 (1) Module First sta	ng cycle ed to in) 1. Che e appea ate exa ate exa ate exa ate exa ate exa ate exa ate exa ate exa ate exa	e LPO I (examination regulation mie "Allgemeine und An irs in mination for the teachir mination for the teachir	norganische Chemie"; ng degree Grundschule ng degree Grundschule ng degree Hauptschule ng degree Hauptschule ng degree Realschule (ng degree Gymnasium ng degree Sonderpäda ng degree Sonderpäda ng degree Mittelschule	"Physikalische und e Chemistry (2009) e Didactics in Chemis e Chemistry (2009) e Didactics in Chemis Chemistry (2009) Chemistry (2009) agogik Didactics in Cl e Chemistry (2013)	stry (Primary School) (2009) stry (Secondary School) (2009)

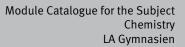
LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 9 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module	title				Abbreviation
Chemistry of the elements 08-AS1-LAGY-102-mo				08-AS1-LAGY-102-m01	
Module coordinator Module offered by					
		ture "Chemie der Hauptgi of Main-group Elements		Institute of Inorgani	ic Chemistry
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
6	nume	rical grade	o8-AC1 (module con nent o8-OC3-2 only)	o8-AC1 (module component o8-AC1-4 only) and o8-OC3 (module connected and the connect	
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
ses on	bondin	g conditions, trends in th	ne periodic table and	the description and	and selected elements. It focu- structure of elements. In additi- stry and complex chemistry.
Intende	ed lear	ning outcomes			
reactivi	ty and		e to identify the coord	lination of the atoms	ments in terms of their structure, 5. In addition, they have learned
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
V + V (r	io infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
or 90 m each (a	ninutes pprox.		tions: approx. 60 min amination in groups	utes each) or b) oral	ten examinations: approx. 60 examination of one candidate . 30 minutes)
Allocat					
			,		
Additio	nal inf	ormation			
Worklo	ad				
Teaching cycle					
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
§ 62 (1) 1. Chemie "Allgemeine und Anorganische Chemie"; "Physikalische und Analytische Chemie"					
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 10 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	
		h

Module title					Abbreviation	
Organic Chemistry 1				08-0C1-092-m01		
Module	e coord	inator		Module offered by	<u> </u>	
holder	of the l	Professorship of Organic	Chemistry	Institute of Organic	Chemistry	
ECTS	1	od of grading	Only after succ. co		chemistry	
5		rical grade				
Duratio	on	Module level	Other prerequisite			
1 seme	ster	undergraduate	ses in the respective (usually 70% of exe	isite to assessment: ve classes as specifie ercises to be success xercises (usually a m	d at the beginning o fully completed) as v	f the course vell as regu-
Conten	Its					
the boi organio	nding s c comp	provides students with a ituation of carbon and i ounds. The module also mination reactions as w	ntroduces students to discusses the funda	o the nomenclature o mental principles of s	f simple and modera	tely complex
Intend	ed lear	ning outcomes				
lecules	. They a repose,	ure to determine simple are able to describe and they can analyse and ca	l formulate some of th	ne most important rea	actions in organic ch	emistry. For
Course	S (type, r	number of weekly contact hours	, language — if other than G	erman)		
V + Ü (I	no infoi	rmation on SWS (weekly	contact hours) and c	course language avai	able)	
		Sessment (type, scope, langu le for bonus)	age — if other than German	, examination offered — if no	ot every semester, informati	on on whether
nutes e	each; 3	n examinations (1 writte written examinations: 6 oral examination in gro	o minutes each) or b) oral examination of		
	ion of p	-	_, _, , , , , , , , , , , , , , , , , ,			
Additic	nal inf	ormation				
			_			
Worklo	bad					
TOINU	au					
 Teash'		-	_			
reachi	ng cycl	e				
		LPO I (examination regulatio				
		emie "Organische und B	ioorganische Chemie			
	e appea					
	-	ree (1 major) Biochemis	,			
	-	ree (1 major) Biochemis	• -			
	-	ree (1 major) Biochemis ree (1 major) Chemistry				
	-	ree (1 major) Chemistry				
	-	ree (1 major) Chemistry ree (1 major) Mathemati				
	-	istry (2009)		ourg • generated 26-Aug-2024	• exam.	page 11 / 51
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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.	page 12 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module title					Abbreviation
Organi	c Cherr	iistry 2 (teaching degree	for secondary schoo	ls)	08-0C2-LAGY-102-m01
Module	e coord	inator		Module offered by	·
holder	ofthe	Chair of Physically Organ	ic Chemistry	Institute of Organic	Chemistry
ECTS	Meth	od of grading	Only after succ. com	npl. of module(s)	
6	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ester	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				
the exa on read	ample c ctions t	of carbonyl compounds, i	t extends the student	s' knowledge of sub	ific reactions of aromatics. Using stitution, elimination and additination and reduction reactions as
Intend	ed lear	ning outcomes			
unknov	wn read				anisms and can transfer them to
V + Ü (I	no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)
		s essment (type, scope, langua ile for bonus)	age — if other than German, e	examination offered — if no	ot every semester, information on whether
or 90 n each (a	ninutes approx.		tions: approx. 60 min amination in groups	nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)
Allocat	ion of	places			
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
		LPOI (examination regulation emie "Organische und Bi			
) 2. Che	emie "Organische und Bi			

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 13 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module	e title				Abbreviation
Organi school		iistry - laboratory course	(teaching degree for	secondary	08-OC-Prakt-LAGY-092-m01
Module	e coord	inator		Module offered	l by
lecture	rs Orga	nische Chemie (Organic	Chemistry)	Institute of Org	anic Chemistry
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s))
6	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
dition t their kr	o those nowled	e experiments, students v	will be expected to ta n the safe handling o	ke oral tests and f hazardous sub	experiments in the laboratory. In ad- d write lab reports to demonstrate stances, simple experimental unit alysis of the products.
Intend	ed lear	ning outcomes			
error so in the l	ources. aborate	They are able to connect ory.	the theoretical aspe	cts covered in th	the products and identify possible he lecture with practical experiments
		number of weekly contact hours, l			
P (no ir	format	tion on SWS (weekly cont	act hours) and cours	e language avail	lable)
		Sessment (type, scope, langua Ile for bonus)	ge — if other than German, e	examination offered –	 if not every semester, information on whether
Assess	ment o	eriment examination talks ffered: once a year, sumr ssessment: German or Er	ner semester	approx. 15 minut	tes each), log (approx. 5 to 10 pages)
Allocat					
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	mmes)	
§ 62 (1)) 2. Che	emie "Organische und Bio	oorganische Chemie"		
Module	e appea	ars in			
First sta	ate exa	mination for the teaching	, degree Gymnasium	Chamistry (2000	\

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 14 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module	e title				Abbreviation
Organi	c Chem	istry 4 - advanced cours	e		08-0C4-LAGY-102-m01
Module coordinator Module offered by					
holder	of the (Chair of Organic Chemist	y II	Institute of Organic	Chemistry
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5		rical grade	08-0C1 or 08-0C1-G		
Duratio		Module level	Other prerequisites		
1 seme	ster	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	Its				
	zardou				nd syntheses, working with spe- ification methods and product
Intend	ed lear	ning outcomes			
able to	charac	terise and categorise dye	es. Students are able	to describe the strue	actions and syntheses. They are cture and selective synthesis of ydrates, fats, terpenes and stero
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
v + Ü (r	no infoi	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
or 90 m each (a	ninutes approx.		tions: approx. 60 min amination in groups	utes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)
Allocat	ion of j	olaces			
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cvcl	e			
		-			
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
		emie "Organische und Bio			
Module					
		mination for the teaching	degree Grundschule	Chemistry (2000)	
		mination for the teaching			
First state examination for the teaching degree Realschule Chemistry (2009) First state examination for the teaching degree Gymnasium Chemistry (2009)					
First sta	ate exa	mination for the teaching	g degree Gymnasium	Chemistry (2009)	

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 15 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module title				Abbreviation
Practical spe	ctroscopy 1 (teaching deg	ree for secondary sc	hools)	08-OC-Spec-LAGY-092-m01
Module coordinator Module offered by				<u>I</u>
lecturer of lea	cture "Organische Chemie	2"	Institute of Organic	Chemistry
ECTS Meth	od of grading	Only after succ. con	npl. of module(s)	
3 nume	erical grade			
Duration	Module level	Other prerequisites		
1 semester	undergraduate			
Contents				
This module NMR spectros		e spectroscopic meth	ods of infrared spec	troscopy, mass spectrometry and
Intended lea	rning outcomes			
	able to describe importar molecular structure.	it spectroscopic meth	nods, to evaluate a s	pectrum and to draw conclusions
Courses (type,	number of weekly contact hours, I	anguage — if other than Gei	rman)	
V (no informa	ation on SWS (weekly cont	act hours) and cours	e language available	<u>e)</u>
Method of as module is credita		ge — if other than German,	examination offered — if no	ot every semester, information on whether
or 90 minute each (approx		tions: approx. 60 mir amination in groups	nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)
Allocation of				
Additional in	formation			
Workload				
Teaching cyc	le			
Referred to in	LPOI (examination regulation	s for teaching-degree progra	immes)	
§ 62 (1) 2. Ch	emie "Organische und Bio	oorganische Chemie"		
Module appe	ars in			
First state exa First state exa First state exa	amination for the teaching amination for the teaching amination for the teaching amination for the teaching	g degree Hauptschule g degree Realschule (g degree Gymnasium	e Chemistry (2009) Chemistry (2009) Chemistry (2009)	
First state exa	amination for the teaching	g degree Mittelschule	Chemistry (2013)	

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 16 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module title		,	Abbreviation	
Thermodynamics, Kinetics, Electrochemistry 08-PC-TKE-LAGY-092-				
Module coor	dinator		Module offered by	
lecturer of leo mie"	cture "Thermodynamik	, Kinetik, Elektroche-	Institute of Physica	l and Theoretical Chemistry
ECTS Meth	od of grading	Only after succ. con	npl. of module(s)	
9 num	erical grade			
Duration	Module level	Other prerequisites		
1 semester	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-
Contents				
chemical equ	uilibria, ideal and real g		phases and electroo	s on the laws of thermodynamics, chemistry. In addition to thermo-
Intended lea	rning outcomes			
	ses, mixed phases and			ribe thermodynamic aspects of le to interpret the kinetic aspects
Courses (type,	number of weekly contact hou	urs, language — if other than Ge	rman)	
V + Ü (no info	ormation on SWS (weel	kly contact hours) and co	ourse language avail	able)
Method of as module is credita		nguage — if other than German,	examination offered — if no	ot every semester, information on whether
nutes each;	3 written examinations		oral examination of	tten examinations: 60 or 90 mi- one candidate each (approx. 20
Allocation of			<u> </u>	
	•			
Additional in	formation			
Workload				
Teaching cyc	le			
	_			
	n LPO I (examination regula	tions for teaching-degree progra	ammes)	
Referred to in				
	emie "Allgemeine und	Anorganische Chemie";	"Physikalische und	Analytische Chemie"
		Anorganische Chemie";	"Physikalische und A	Analytische Chemie"

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

Modul	e title				Abbreviation
Princip	oles of o	quantum mechanics and	l spectroscopy		08-PC-QMS-LAGY-092-m01
Module	e coord	inator		Module offered by	I
Spektr	ecturer of lecture "Grundlagen der Quantenmechanik Spektroskopie" (Principles of Quantum Mechanics and Spectroscopy)			Institute of Physica	l and Theoretical Chemistry
ECTS			Only after succ. con	npl. of module(s)	
5	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				
the bas the mo	sis of th dule fo	ne following models: par	rticle 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 mod rent spectroscopic meth		nics and to apply th	em to molecules. They are able t
Course	S (type, r	number of weekly contact hours	, language — if other than Ger	rman)	
V + Ü (I	no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)
		Sessment (type, scope, langu le for bonus)	uage — if other than German,	examination offered — if no	ot every semester, information on whether
or 90 n each (a	ninutes approx.		ations: approx. 60 mir xamination in groups	nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)
	tion of				
Additio	onal inf	ormation			
Worklo	bad				
Teachi	ng cycl	e			
			_		
		LPO I (examination regulatio			
		emie "Allgemeine und Ar	norganische Chemie";	"Physikalische und	Analytische Chemie"
	e appea				
	ate exa	mination for the teachir	a dogroo Cumpacium	(homistry (2000)	

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 18 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module	e title				Abbreviation
Physic	al Chen	nistry lab (teaching degr	ee for secondary sch	ools)	08-PC-Prakt-LAGY-092-m01
Module	e coord	inator		Module offered by	
lecturers Physikalische Chemie (Physical Chemistry)		al Chemistry)	Institute of Physica	and Theoretical Chemistry	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)	
3	(not) s	successfully completed	o8-PC-TKE-LAGY		
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	Its				
lated le dition t	ecture(s	s). After a safety briefing, e experiments, students v	the students autono	mously conduct expe	hey have gained through the re- eriments in the laboratory. In ad- te lab reports to demonstrate
Intend	ed lear	ning outcomes			
		able to connect the theor practical laboratory expe			tics, electrochemistry and spec- Ilting measurements.
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
P (no ir	nformat	ion on SWS (weekly cont	act hours) and cours	e language available)
		eessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	t every semester, information on whether
Assess	ment o	riment examination talks ffered: once a year, winte ssessment: German or El	er semester	approx. 15 minutes e	ach), log (approx. 5 to 10 pages)
	ion of p		. –		
Additio	onal inf	ormation			
			-		
Worklo	ad				
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
§ 62 (1) 1. Che	mie "Allgemeine und And	organische Chemie";	"Physikalische und /	Analytische Chemie"
Module	e appea	urs in			
		mination for the teaching			

Modul	e title				Abbreviation
Practio	al Res	earch Course for Grai	nmar School Teachers		08-Forsch-LAGY-092-m01
Modul	e coord	inator		Module offered b	y
lecturer of the respective research group			group	Faculty of Chemis	try and Pharmacy
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
8	nume	rical grade			
Durati	Duration Module level Other prerequisites		;		
1 seme	ester	undergraduate			
Conter	nts	•			
			portunity to research and hey have learned during t		l problem within a given time frame
Intend	ed lear	ning outcomes			
			arch on a defined problen s of their work in written f		o the principles of good scientific
		· · ·	ours, language — if other than Ge		
			contact hours) and cours		ole)
		s essment (type, scope, la ble for bonus)	anguage — if other than German,	examination offered — if	not every semester, information on whether
		(approx. 20 pages) ssessment: German	or English		
Alloca	tion of	places			
Additio	onal inf	ormation			
Worklo	oad				
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regu	lations for teaching-degree progra	ammes)	
§ 62 (1) 4. Ch	emie "Forschungsorie	entiertes Laborpraktikum		
Modul	e appea	ars in			
Mouut					

Module	e title				Abbreviation
Basic M	Nathem	natics (teaching degree)			08-PC-VKM-LA-102-m01
Module	e coord	inator		Module offered by	
lecture	r of blo	ock course "Mathematik"	(Mathematics)	Institute of Physica	l and Theoretical Chemistry
ECTS Method of grading Only after succ. compl. of module(s)					
2		successfully completed		-	
Duratio		Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten			<u>I</u>		
This m	odule p				sed in physical/theoretical che hthermodynamics and kinetics.
Intend	ed lear	ning outcomes			
Studen mistry.	its have	e been trained in mathem	natical methods. They	/ are able to apply th	ose methods to problems in ch
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)	
V + Ü (ı	no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)
		sessment (type, scope, langua ole for bonus)	ge — if other than German, o	examination offered — if no	t every semester, information on whether
exercis	es (4 w	vork sheets)			
		ssessment: German or E	nglish		
Allocat	ion of _l	places			
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cvcl	e	-		
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	ummes)	
			00 Progra	/	
Module	appez	ars in			
		mination for the teaching	g degree Grundschule	Chemistry (2009)	
					stry (Primary School) (2009)
First sta	ate exa	mination for the teaching	g degree Hauptschule	e Chemistry (2009)	
		-			stry (Secondary School) (2009)
		mination for the teaching			
		mination for the teaching			nemistry (Secondary School)
First st	ato ava		s degree Sonderpada	SUSIN DIUALIUS III UI	iemistry (Secondary School)
First sta First sta	ate exa				
First sta First sta (2009)			g degree Sonderpäda	gogik Didactics in Cł	nemistry (Middle School) (2013)
First sta First sta (2009) First sta First sta	ate exa ate exa	mination for the teaching mination for the teaching	g degree Mittelschule	Chemistry (2013)	nemistry (Middle School) (2013) try (Middle School) (2013)

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 21 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module	e title				Abbreviation
Physic	s lab (t	eaching degree for secor	ndary schools)		08-PH-Prakt-LAGY-092-m01
Module	e coord	inator		Module offered by	
lecture				Institute of Physica	l and Theoretical Chemistry
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
3	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
This mo	odule c	overs key experiments in	physics.		
Intend	ed lear	ning outcomes			
Studen	ts are a	able to plan, perform and	evaluate key experir	nents in physics.	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Gei	rman)	
P (no ir	format	tion on SWS (weekly cont	act hours) and cours	e language available)
		Sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	t every semester, information on whether
• •	•	eriment examination talk: ssessment: German or E		approx. 15 minutes e	ach), 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 regulation	s for teaching-degree progra	mmes)	
§ 62 (1)) 3. Che	emie "Physik"			
Module	e appea	ars in			
First st	ate exa	mination for the teaching	degree Gymnasium	Chamister (acce)	

Module title					Abbreviation	
Bioche	mistry	(teaching degree for se	condary schools)		08-BC-LAGY-092-m01	
Module	e coord	linator		Module offered by		
holder	ofthe	Chair of Biochemistry		Chair of Biochemis	try	
ECTS	Meth	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	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	ts					
Compri mistry.	ising le	ctures and exercises, th	is module acquaints s	tudents with the fur	ndamental principles of bioche-	
Intend	ed lear	ning outcomes				
		e become familiar with t cal processes in cellular		ples of biochemistry	y. They are able to describe the	
Course	S (type, 1	number of weekly contact hours	, language — if other than Gei	rman)		
		rmation on SWS (weekly			lable)	
Metho	d of as				ot every semester, information on whether	
or 90 n each (a	ninutes approx.		ations: approx. 60 mir xamination in groups	nutes each) or b) ora	tten examinations: approx. 60 I examination of one candidate a. 30 minutes)	
Allocat						
Additio	onal inf	ormation				
		-				
Worklo	ad					
Teachi	ng cvcl	e				
Referre	ed to in	LPO I (examination regulation	ns for teaching-degree progra	mmes)		
		emie "Organische und B				
Module						
		ree (1 major) Physics (2	010)			
		ree (1 major) Nanostruc)		
	-	ree (1 major) Nanostruc				
First sta	ate exa	mination for the teaching	ng degree Gymnasium	Chemistry (2009)		

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 23 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module	e title				Abbreviation
Exercis	ses in E	xperimental Presentation	n, Intermediate Scho	ol	08-Ch-Gy-ÜiV-092-m01
Module	e coord	inator		Module offered by	
lecturers of the three lectures offered in this module			n this module	Faculty of Chemistr	y and Pharmacy
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	(not)	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ester	undergraduate			
Conten	nts	~	·		
		design, prepare and deliv nonstrations.	ver presentations on	a range of topics in c	hemistry. Presentations will in-
Intend	ed lear	ning outcomes			
nic and perime	d physio ents on	cal chemistry that are tail the topics in question tha	ored to the specific n at support particular	eeds of their audien teaching goals as we	given topics in inorganic, orga- ce. They are able to select ex- ell as to plan and safely perform kills and their teaching skills.
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
Ü (no iı	nforma	tion on SWS (weekly cont	tact hours) and cours	e language available	e)
		sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	t every semester, information on whether
nutes e Assess	each) sment o	in the fields of inorganic, ffered: once a year, winte ssessment: German or El	er semester	l chemistry including	g demonstrations (approx. 45 mi-
Allocat					
Additio	onal inf	ormation			
			-		
Worklo	ad				
Teachi	ng cycl	e	-		
	•				
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
§ 62 (1) 5. Che	emie "Übungen im Vortrag	gen mit Demonstratio	onen"	
	e appea	-			
		mination for the teaching	g degree Gymnasium	Chemistry (2009)	

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 24 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	





Teaching (10 ECTS credits)

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 25 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	1

Module title			Abbreviation	
Introduction in Planning and Method	5		08-FD-Gru-G-092-m	01
Module coordinator Module offe				
holder of the Professorship of Didacti	cs of Chemistry	Institute of Inorgani	ic Chemistry	
ECTS Method of grading	Only after succ. compl. of module(s)			
5 numerical grade				
Duration Module level	Other prerequisites	i		
1 semester undergraduate				
Contents				
This module introduces students to the	ne fundamentals of ch	emistry didactics.		
Intended learning outcomes				
Students have become familiar with t and framework conditions of chemist application in the classroom.				
Courses (type, number of weekly contact hours	, language — if other than Ge	rman)		
This module comprises 2 module com component. • 08-FD-Gru-RSGy-2-092: S (no in • 08-FD-Einf-1-092: V (no informa	formation on SWS (we	ekly contact hours) a	nd course language	available)
Method of assessment (type, scope, langumodule is creditable for bonus)	age — if other than German,	examination offered — if no	t every semester, informati	on on whether
Assessment in this module comprises low. Unless stated otherwise, success vidual assessments. Assessment in module component of Education • 2 ECTS, Method of grading: (not • Testat (exam, approx. 20 minut • Language of assessment: Germ Assessment in module component of • 3 ECTS, Method of grading: num • written examination (approx. 90 • Language of assessment: Germ	sful completion of the B-FD-Gru-RSGy-2-092:) successfully comple es) an or English B-FD-Einf-1-092: Introd perical grade o minutes)	module will require s Basics of Planning a ted	successful completion	on of all indi-
Allocation of places				
 Additional information 				
Workload				
	_			
Teaching cycle				
	_			
Referred to in LPO I (examination regulatio		ammes)		
 § 36 (1) 7. Didaktik der Grundschule C § 38 (1) 1. Didaktik der Hauptschule C § 38 (1) 1. Didaktik der Mittelschule C § 42 Chemie Fachdidaktik § 62 (1) 6. Chemie Didaktik 	hemie			
LA Gymnasien Chemistry (2009)		rrg • generated 26-Aug-2024 ord Lehramt Gymnasien Chem		page 26 / 51

Module appears in

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	

Modul	e title				Abbreviation	
Chemi	stry Edu	ucation, Part II			08-FD-CEx-092-m01	
Modul	e coord	inator		Module offered by	l.	
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)		
3	nume	rical grade		· · · · · · · · · · · · · · · · · · ·		
Duratio	on	Module level	Other prerequisites	sites		
1 seme	ester	undergraduate				
Conter	nts					
Selecti	on and	presentation of experime	ents for/in the chemi	stry classroom at Re	alschule/Gymnasium schools.	
Intend	ed lear	ning outcomes				
		e learned some essential ave developed the ability	•		in Realschule and Gymnasium	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)		
S (no i	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	2)	
		Sessment (type, scope, langua Ile for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
written	exami	nation (approx. 60 minut	es)			
Allocat	tion of j	olaces				
		ices: 25. Places will be al number of subject seme			ct semesters. Among applicants	
		ormation	, · · ·			
Worklo	ad					
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
		achdidaktik emie Didaktik				
Modul	e appea	ars in				
		mination for the teaching mination for the teaching				

Modul	e title				Abbreviation	
Chemi	stry Ed	ucation, Part III			08-FD-SinKo-092-m01	
Module	e coord	linator		Module offered by	1	
holder	ofthe	Professorship of Didactic	s of Chemistry	Institute of Inorgan	ic Chemistry	
ECTS	Meth	od of grading	Only after succ. con	pl. of module(s)		
2	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	Its	• •	·			
Teachi	ng chei	mistry in a meaningful co	ntext.			
Intend	ed lear	ning outcomes				
		able to translate topics fr Gymnasium schools.	om the relevant chem	nistry curriculum inte	o lessons for students in Sekun	
Course	S (type, 1	number of weekly contact hours, l	anguage — if other than Ger	man)		
S (no iı	nforma	tion on SWS (weekly cont	act hours) and cours	e language availabl	e)	
		sessment (type, scope, langua ble for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
		approx. 20 minutes) assessment: German or Ei	nglish			
Allocat	ion of	places				
Additio	onal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
§ 62 (1) 6. Ch	emie Didaktik				
-						
Module	e appea	ars in				

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



Freier Bereich (general as well as subject-specific electives)

(ECTS credits)

Teaching degree students must take modules worth a total of 15 ECTS credits in the area Freier Bereich (general as well as subject-specific electives) (Section 9 LASPO (general academic and examination regulations for teaching-degree programmes)). To achieve the required number of ECTS credits, students may take any modules from the areas below.

Freier Bereich -- interdisciplinary: The interdisciplinary additional offer for a teaching degree can be found in the respective Annex "Ergänzende Bestimmungen für den "Freien Bereich" im Rahmen des Studiums für ein Lehramt".

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





Chemistry (ECTS credits)

(Freier Bereich (general as well as subject-specific electives) -- subject specific)

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 31 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Modul	e title				Abbreviation
Practic	al spec	ctroscopy 2 (teaching	degree for secondary se	chools)	08-AC2-PS-LA-102-m01
Modul	e coord	inator		Module offered by	
lecture	er of lec	ture "Praktische Spek	troskopie 2"	Institute of Inorgan	ic Chemistry
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)	
3	nume	rical grade			
Duratio	on	Module level	Other prerequisites	5	
1 seme	ester	undergraduate			
Conter	nts				
			an advanced knowledge special material classes		d saline compounds. It focuses nical processes.
Intend	ed lear	ning outcomes			
priate	manne		scopic methods that ca		saline compounds in an appro- uctural analysis of solids and ca
Course	es (type, i	number of weekly contact ho	urs, language — if other than Ge	rman)	
V (no i	nforma	tion on SWS (weekly o	contact hours) and cours	se language availabl	e)
		Sessment (type, scope, lan ole for bonus)	nguage — if other than German,	examination offered — if n	ot every semester, information on whether
or 90 n each (a	ninutes approx.	each; 3 written exam	inations: approx. 60 mi l examination in groups	nutes each) or b) ora	tten examinations: approx. 6o l examination of one candidate x. 30 minutes)
Allocat	tion of	places			
Additio	onal inf	ormation			
Markle	her				
WORKIG	Jau				
		e			
Worklo Teachi 	ng cycl	e			
 Teachi 	ng cycl		tions for teaching-degree progr	ammes)	
 Teachi 	ng cycl		tions for teaching-degree progr	ammes)	
 Teachi Referre	ng cycl ed to in	LPOI (examination regula	tions for teaching-degree progr	ammes)	
 Teachi Referre Modul	ng cycl ed to in e appea	LPO I (examination regula			
 Teachi Referro Modulo First st	ed to in ed to in e appea ate exa	LPOI (examination regula ars in mination for the teach	tions for teaching-degree progra ning degree Grundschul ning degree Hauptschul	e Chemistry (2009)	
 Teachi Referro Modulo First st First st	ng cycl ed to in e appea ate exa ate exa	LPOI (examination regula ars in mination for the teach mination for the teach	ning degree Grundschul	e Chemistry (2009) e Chemistry (2009)	
 Teachi Referro Modulo First st First st First st	ng cycl ed to in e appea ate exa ate exa ate exa	LPOI (examination regula ars in mination for the teach mination for the teach mination for the teach	ning degree Grundschul ning degree Hauptschul	e Chemistry (2009) e Chemistry (2009) Chemistry (2009)	

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LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 32 / 51
		103,5
	reg. data record Lehramt Gymnasien Chemie - 2009	1

Module title				Abbreviation		
Elemental Organic Chemistry (teaching degree for secondary scho			ry schools)	08-AC3-LA-102-m01		
Module coordinator				Module offered by	dule offered by	
	lecturer of lecture "Elementorganische Chemie" (Elementa Organic Chemistry)			Institute of Inorgan	ic Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
4	nume	erical grade	08-AC1 (module con nent 08-OC3-2 only)	component o8-AC1-4 only) and o8-OC3 (module comp		
Durati	ion	Module level	Other prerequisites	i		
1 seme	ester	undergraduate	ses in the respective (usually 70% of exe	isite to assessment: successful completion of exercive classes as specified at the beginning of the course ercises to be successfully completed) as well as regular regular ercises (usually a maximum of 2 incidents of unexcertion)		
Conte	nts					
			n advanced knowledge reactivity and technica		It focuses on their structures and	
Intend	ded lea	ning outcomes				
able to explai	o syste n princ	mise them and characte iples for the synthesis o	erise their structure and of elementary organic co	l reactivity. In addition pounds.	an appropriate manner. They are on, they are able to develop and	
Course	es (type,	number of weekly contact hour	rs, language — if other than Ger	rman)		
V + Ü ((no info	ormation on SWS (week	ly contact hours) and co	ourse language avai	lable)	
		sessment (type, scope, lang ble for bonus)	guage — if other than German, o	examination offered — if no	ot every semester, information on whether	
or 90 i each (minute: (approx	s each; 3 written exami	nations: approx. 60 mir examination in groups	nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate 30 minutes)	
Alloca	tion of	places				
Additi	onal in	formation				
		formation				
Additio		formation				
 Workle	oad					
 Workle						
 Workle Teachi 	oad ing cyc	le				
 Workle Teachi 	oad ing cyc	le	ions for teaching-degree progra	ummes)		
 Workle Teachi 	oad ing cyc	le	ions for teaching-degree progra	ımmes)		
 Workle Teachi Referr Modul	oad ing cyc red to ir le appe	le 1 LPO I (examination regulat ars in				
 Worklo Teachi Referr First st	oad ing cyc red to ir le appe tate exa	le LPO I (examination regulat ars in amination for the teach	ing degree Grundschule	e Chemistry (2009)		
 Workle Teachi Referr First st First st	oad ing cyc red to ir le appe tate exa tate exa	le LPO I (examination regulat ars in amination for the teach amination for the teach	ing degree Grundschule ing degree Hauptschule	e Chemistry (2009) e Chemistry (2009)		
 Workle Teachi Referr Modul First st First st First st	oad ing cyc red to ir le appe tate exa tate exa tate exa	le LPO I (examination regulat ars in amination for the teach amination for the teach amination for the teach	ing degree Grundschule	e Chemistry (2009) e Chemistry (2009) Chemistry (2009)		

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 33 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module title				Abbreviation	
Theore	etical M	odels in Chemistry (teac	hing degree for seco	ndary schools)	08-TC-LA-092-m01
Module	e coord	inator		Module offered by	
lecture	r of lec	ture "Quantenchemie"	_	Institute of Physica	ll and Theoretical Chemistry
ECTS	Meth	od of grading	Only after succ. con	npl. 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 exercied at the beginning of the course fully completed) as well as reguaximum of 2 incidents of unexcu-
Conten	nts		-		
spin, tł	he Paul		inants, the Hartree-Fo	ock method, correlat	antum chemistry. It focuses on tion energy, configuration interac- dels of H2+.
Intend	ed lear	ning outcomes			
Studer	nts are	able to describe excited s	states of molecules w	ith the help of key c	oncepts and models.
Course	S (type, I	number of weekly contact hours,	language — if other than Ger	rman)	
V + Ü (I	no info	rmation on SWS (weekly	contact hours) and co	ourse language avai	lable)
		S essment (type, scope, langua ole for bonus)	age — if other than German, o	examination offered — if no	ot every semester, information on whether
or 90 n	ninutes		tions: approx. 60 mir	nutes each) or b) ora	tten examinations: approx. 60 I examination of one candidate a. 30 minutes)
Allocat	tion of	places			
Additio	onal inf	ormation			
Worklo	ad				
	_				
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	immes)	
Modul	e appe	ars in			
First st First st First st First st	ate exa ate exa ate exa ate exa	mination for the teaching mination for the teaching mination for the teaching mination for the teaching	g degree Hauptschule g degree Realschule (g degree Gymnasium	e Chemistry (2009) Chemistry (2009) Chemistry (2009)	
FIIST ST	ale exa	mination for the teaching		chemistry (2013)	

page 34 / 51	Chemistry (2009)	LA Gymnasie
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Module title					Abbreviation
Electro	onic stri	ucture and spectroscopy	/		08-PC-ESS-092-m01
Module coordinator				Module offered by	l
lecturer of lecture "Elektronische Struktur and Spektrosk pie" (Electronic Structure and Spectroscopy)		•	Institute of Physica	l and Theoretical Chemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
3	nume	rical grade			
Durati	ion	Module level	Other prerequisites		
1 semester		undergraduate	Admission prerequisite to assessment: successful completion of exerci- ses in the respective classes as specified at the beginning of the course (usually 70% of exercises to be successfully completed) as well as regu- lar attendance of exercises (usually a maximum of 2 incidents of unexcu sed absence).		
Conte	nts				
Funda	mentals	of atomic and molecula	ar structure as well as	spectroscopy.	
Intend	led lear	ning outcomes			
		e learned the fundament nowledge they have dev		ecular structure as v	vell as spectroscopy and are able
Cours	es (type, r	number of weekly contact hours,	, language — if other than Ger	rman)	
V + Ü ((no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)
		Sessment (type, scope, langu ole for bonus)	age — if other than German, o	examination offered — if no	ot every semester, information on whether
or 90 i each (minutes (approx.		ations: approx. 60 mir xamination in groups	nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)
	tion of				
Additi	onal inf	ormation			
Workl	oad				
Teach	ing cycl	e			
Referr	ed to in	LPO I (examination regulatio	ns for teaching-degree progra	mmes)	
Modu	le appea	ars in			
		mination for the teachin	ig degree Grundschule	e Chemistry (2009)	
		mination for the teachin			
		mination for the teachin			
	tate eva	mination for the teaching			
		mination for the teachin	ig degree Gymnasium		

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 35 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Modul	e title				Abbreviation
Organic Chemistry 3 (teaching degree for secondary schools) 08-0C3-LA-102-m01			08-0C3-LA-102-m01		
Module	odule coordinator Module offered by			l	
holder	of the l	Professorship of Organic	Chemistry	Institute of Organic	Chemistry
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
6	1	rical grade	08-0C1 or 08-0C1-G	• • • •	
Duratio		Module level	Other prerequisites		
1 seme	ester	undergraduate	Admission prerequis 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				
radical	s. It dis				eactions, carbenes, nitriles and symmetric catalysis, organome-
Intend	ed lear	ning outcomes			
asymm	netric ca				tereoselective syntheses and They are able to conduct retrosyn
Course	S (type, r	number of weekly contact hours, I	anguage — if other than Ger	man)	
V + Ü (I	no infoi	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)
		Sessment (type, scope, langua ile for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether
or 90 n each (a	ninutes approx.		tions: approx. 60 min amination in groups	utes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)
	tion of p				
٨٩٩:+:-	nal inf	ormation			
Auuitit	indt IIII		-		
 Worklo					
	au				
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
Module	e appea	ars in			
		mination for the teaching	g degree Grundschule	Chemistry (2009)	
		mination for the teaching			
First state examination for the teaching degree Realschule Chemistry (2009)					
First st	ate exa	mination for the teaching	g degree Gymnasium	Chemistry (2009)	
	-+	mination for the teaching			

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 36 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module	title				Abbreviation	
Physica	al and 1	Theoretical Chemistry	3: Symmetry and Quan	tum Chemistry	08-PC3-092-m01	
Module	Module coordinator			Module offered by		
lecturer of lecture "Quantenchemie"				Institute of Physica	al and Theoretical Ch	emistry
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
6		rical grade				
Duratio		Module level	Other prerequisites			
1 seme		undergraduate		site to assessment.	successful completion	on of exerci-
i sente.		undergraduate	ses in the respective (usually 70% of exer	e classes as specific rcises to be success	ed at the beginning o sfully completed) as v naximum of 2 inciden	f the course vell as regu-
Conten	ts					
This mo	odule d	iscusses the fundamer	ntal principles of quant	um chemistry and s	ymmetry in chemistr	у.
		ning outcomes		,		,
Studen	ts have	e become familiar with	the fundamental princi vledge they have devel		emistry and symmetr	y in che-
Course	S (type, n	umber of weekly contact hour	s, language — if other than Ger	man)		
V + Ü +	V + Ü (no information on SWS	(weekly contact hours)) and course langua	ige available)	
		essment (type, scope, lang le for bonus)	uage — if other than German, e	examination offered — if n	ot every semester, informati	ion on whether
each; 3	writter	n examinations: 60 mir	en examination: 90 min nutes each) or b) oral ex (groups of 2, approx. 30	kamination of one c		
Allocat	ion of p	olaces				
Additio	nal info	ormation				
Worklo						
WORKIO	<u>au</u>					
 T	1	-				
Teachir	ig cycl	8				
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)		
Module	e appea	rs in				
Bachel	or' deg	ree (1 major) Biochemis	stry (2013)			
	-	ree (1 major) Chemistry				
	-	ree (1 major) Chemistry	•			
Bachelor' degree (1 major) Mathematics (2012)						
	-	ree (1 major) Mathemat	-			
	-		ional Mathematics (200 ional Mathematics (202	-		
	-		ional Mathematics (202			
	-	ree (1 major) FOKUS Ch		<i>\C</i>		
	-	-	ng degree Grundschule	Chemistry (2000)		
			ng degree Hauptschule			
LA Gymnasi	ien Chemi	stry (2009)	JMU Würzbu reg. data reco	rg • generated 26-Aug-2024	• exam.	page 37 / 51





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 38 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module title					Abbreviation
Physic	Physical Chemistry 4: Statistical Thermodynamics				08-PC4-092-m01
Module coordinator				Module offered by	
lecture	r of lec	ture "Statistische Thermo	odynamik"	Institute of Physica	l and Theoretical Chemistry
ECTS	TS Method of grading Only after succ. compl. of module(s)				
3		rical grade		, ,,	
Duratio		Module level	Other prerequisites		
1 seme	ester	undergraduate	Admission prerequi ses in the respective (usually 70% of exe	site to assessment: 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	•			
This m	odule c	liscusses the fundamenta	al principles of statis	tical thermodynamic	S.
		ning outcomes			
Studer	nts have			ples of statistical the	ermodynamics and are able to
Course	S (type, 1	number of weekly contact hours, l	anguage — if other than Ger	rman)	
V + Ü (ı	no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)
		s essment (type, scope, langua ble for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
or 90 n	ninutes		tions: approx. 60 mir	nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)
Allocat	<u></u>				<u> </u>
Additic	onal inf	ormation			
Worklo	nad				
Teachi	ng cycl	0			
reatin	ing cycl	C			
Deferme			- Courte and the state		
Keterre	ea to in	LPO I (examination regulation	s for teaching-degree progra	immes)	
Module	e anne:	ars in			
			2010)		
Bachelor' degree (1 major) Chemistry (2010) Bachelor' degree (1 major) Chemistry (2009)					
	-	ree (1 major) FOKUS Cher	-		
	-	mination for the teaching		e Chemistry (2009)	
First state examination for the teaching degree Hauptschule Chemistry (2009) First state examination for the teaching degree Realschule Chemistry (2009)					
First st	First state examination for the teaching degree Realschule Ch First state examination for the teaching degree Gymnasium Ch				

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 39 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module	title				Abbreviation	
Toxicology and legal studies					03-TR-072-m01	
Module coordinator				Module offered by		
lecturer	lecturer of lecture "Toxikologie und Rechtskunde"			Faculty of Medicine		
ECTS		od of grading	Only after succ. con			
3				.p		
Duratio		Module level	Other prerequisites			
1 semes	ster	undergraduate				
Conten	ts		1			
	of lega	l regulations for chemist	s (handling and trans	portation of hazardo	ous materials), funda	mentals of
		ning outcomes				
The stu ces) as	dents i well as	master the basics of lega the fundamentals of to	xicology.		ransport of hazardo	us substan-
		number of weekly contact hours,				
V + V (n	io infor	mation on SWS (weekly	contact hours) and co	ourse language avail	able)	
		sessment (type, scope, langu le for bonus)	age — if other than German, o	examination offered — if no	t every semester, informat	ion on whether
written	exami	nation (approx. 90 minu	tes)			
Allocati						
	nalinf	ormation				
Additio	natini	ormation				
Worklo	ad		_			
Teachir	ng cycl	e				
Referre	d to in	LPO I (examination regulation	ns for teaching-degree progra	mmes)		
Module	appea	ars in				
		ree (1 major) Biochemist	rv (2011)			
	-	ree (1 major) Biochemist				
		ree (1 major) Biochemist				
	-	ree (1 major) Chemistry (
		ree (1 major) Chemistry (
	-	ree (1 major) Chemistry (
	-	ree (1 major) Chemistry (
	-	ree (1 major) Food Chem				
	-	ree (1 major) FOKUS Che ee (1 major) Chemistry (2				
	-	ee (1 major) Chemistry (2 ee (1 major) Chemistry (2				
	-	ee (1 major) Chemistry (2				
	-	mination for the teachin		Chemistry (2009)		
		mination for the teachin				
First sta	ate exa	mination for the teachin	g degree Realschule (hemistry (2009)		
First sta	ate exa	mination for the teachin	g degree Gymnasium	Chemistry (2009)		
LA Gymnasi	ien Chemi	stry (2009)		rg • generated 26-Aug-2024 rd Lehramt Gymnasien Chem		page 40 / 51



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

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 41 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module	e title			Abbreviation
Prepara	ation of Exams Chemistry			08-FBC2-PV-101-m01
Module coordinator			Module offered by	<u> </u>
lecturers Inorganic and Organische Chemie (Organic Che- mistry)			Faculty of Chemistr	y and Pharmacy
ECTS Method of grading Only after succ. compl. of module(npl. of module(s)	
5 (not) successfully completed 08-OC2-GHR and 08-OC-Prakt-GHR or 08-OC2-LAGY and 08-OC LAGY			3-OC2-LAGY and o8-OC-Prakt-	
Duratio	on Module level	Other prerequisites	5	
1 seme	ster undergraduate			
be cove Intende	ered on the state examinatio ed learning outcomes	n and try exam papers f	rom previous years.	anic chemistry that are likely to
examin	ation in previous years.	·		ry that were asked in the state
This mo	•			sted separately for each module
	nent. 18-FBC2-PV-1-101: S (no infor 18-FBC2-PV-2-101: S (no infor			
Methor	d of according the second law			
^{module is} Assess low. Un	reditable for bonus) ment in this module compris lless stated otherwise, succe	es the assessments in t	the individual modul	ot every semester, information on whether e components as specified be- successful completion of all indi
module is Assess low. Un vidual a • 2 • 3 • A • L Assess • 3 • 3 • 5 • A • L	s creditable for bonus) ment in this module comprise aless stated otherwise, succe assessments. ment in module component ECTS, Method of grading: (r uccessful participation in th ssessment offered: once a y anguage of assessment: Ger ment in module component ECTS, Method of grading: (r uccessful participation in th ssessment offered: once a y anguage of assessment: Ger	es the assessments in t essful completion of the o8-FBC2-PV-1-101: Prep ot) successfully complete form of short presenta ear, summer semester man or English o8-FBC2-PV-2-101: Prep ot) successfully complete form of short presenta ear, summer semester	the individual modul module will require aration of Exams Ino ted tions on selected as paration of Exams Org	e components as specified be- successful completion of all indi rganic Chemistry signments ganic Chemistry
module is Assess low. Un vidual a • 2 • s • A • L Assess • 3 • S • A • L	ment in this module comprise alless stated otherwise, succe assessments. ECTS, Method of grading: (r uccessful participation in th sessment offered: once a y anguage of assessment: Ger ment in module component ECTS, Method of grading: (r uccessful participation in th sessment offered: once a y	es the assessments in t essful completion of the o8-FBC2-PV-1-101: Prep ot) successfully complete form of short presenta ear, summer semester man or English o8-FBC2-PV-2-101: Prep ot) successfully complete form of short presenta ear, summer semester	the individual modul module will require aration of Exams Ino ted tions on selected as paration of Exams Org	e components as specified be- successful completion of all indi rganic Chemistry signments ganic Chemistry
module is Assess low. Un vidual a • 2 • 3 • A • L Assess • 3 • 5 • A • L Allocat	ment in this module comprise assessments. ment in module component eccessful participation in the assessment offered: once a y anguage of assessment: Ger ment in module component ECTS, Method of grading: (r uccessful participation in the assessment offered: once a y anguage of assessment: Ger ment in module component ECTS, Method of grading: (r uccessful participation in the assessment offered: once a y anguage of assessment: Ger ion of places	es the assessments in t essful completion of the o8-FBC2-PV-1-101: Prep ot) successfully complete form of short presenta ear, summer semester man or English o8-FBC2-PV-2-101: Prep ot) successfully complete form of short presenta ear, summer semester	the individual modul module will require aration of Exams Ino ted tions on selected as paration of Exams Org	e components as specified be- successful completion of all indi rganic Chemistry signments ganic Chemistry
module is Assess low. Un vidual a Assess • A • L Assess • A • L Allocat Additio	s creditable for bonus) ment in this module comprise aless stated otherwise, succe assessments. ment in module component ECTS, Method of grading: (r uccessful participation in th ssessment offered: once a y anguage of assessment: Ger ment in module component ECTS, Method of grading: (r uccessful participation in th ssessment offered: once a y anguage of assessment: Ger	es the assessments in t essful completion of the o8-FBC2-PV-1-101: Prep ot) successfully complete form of short presenta ear, summer semester man or English o8-FBC2-PV-2-101: Prep ot) successfully complete form of short presenta ear, summer semester	the individual modul module will require aration of Exams Ino ted tions on selected as paration of Exams Org	e components as specified be- successful completion of all indi rganic Chemistry signments ganic Chemistry
module is Assess low. Un vidual a • 2 • 3 • A • L Assess • 3 • s • A • L Allocat Additio	ment in this module comprise assessments. ment in module component assessments. ECTS, Method of grading: (r uccessful participation in th assessment offered: once a y anguage of assessment: Ger ment in module component ECTS, Method of grading: (r uccessful participation in th assessment offered: once a y anguage of assessment: Ger ment in module component ECTS, Method of grading: (r uccessful participation in th assessment offered: once a y anguage of assessment: Ger ion of places	es the assessments in t essful completion of the o8-FBC2-PV-1-101: Prep ot) successfully complete form of short presenta ear, summer semester man or English o8-FBC2-PV-2-101: Prep ot) successfully complete form of short presenta ear, summer semester	the individual modul module will require aration of Exams Ino ted tions on selected as paration of Exams Org	e components as specified be- successful completion of all indi rganic Chemistry signments ganic Chemistry
module is Assess low. Un vidual a • 2 • 3 • A • L Assess • 3 • s • A • L Allocat Additio	ment in this module comprise assessments. ment in module component assessments. ECTS, Method of grading: (r uccessful participation in th assessment offered: once a y anguage of assessment: Ger ment in module component ECTS, Method of grading: (r uccessful participation in th assessment offered: once a y anguage of assessment: Ger ment in module component ECTS, Method of grading: (r uccessful participation in th assessment offered: once a y anguage of assessment: Ger ion of places	es the assessments in t essful completion of the o8-FBC2-PV-1-101: Prep ot) successfully complete form of short presenta ear, summer semester man or English o8-FBC2-PV-2-101: Prep ot) successfully complete form of short presenta ear, summer semester	the individual modul module will require aration of Exams Ino ted tions on selected as paration of Exams Org	e components as specified be- successful completion of all indi rganic Chemistry signments ganic Chemistry
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Module appears in

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 43 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	





Teaching (ECTS credits)

(Freier Bereich (general as well as subject-specific electives) -- subject specific)

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 44 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module	e title				Abbreviation
Guidance in Self-reliant Scientific Work					08-FD-WPF-WA-092-m01
Module	e coord	linator		Module offered by	
holder of the Professorship of Didactics of Chemistry			s of Chemistry	Institute of Inorgan	ic Chemistry
ECTS	rs Method of grading Only after succ. co		Only after succ. con	pl. of module(s)	
2 (not) successfully completed					
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts	•			
This mo tics.	odule v	vill teach students how to	independently resea	arch and write on sel	ected topics in chemistry didac
Intende	ed lear	ning outcomes			
Studen	ts are a	able to independently res	earch and write on s	elected topics in che	mistry didactics. They are able t
		count of the current state			
Course	S (type, 1	number of weekly contact hours, l	anguage — if other than Ger	rman)	
S (no ir	nforma	tion on SWS (weekly cont	act hours) and cours	e language available	e)
Metho	d of as	sessment (type, scope, langua	ge — if other than German, o	examination offered — if no	t every semester, information on whether
module is	s creditat	ole for bonus)			
		(approx. 30 minutes)			
	-	ssessment: German or E	nglish		
Allocat	ion of	places			
Additio	nal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
	_				
Module	e appea	ars in			
First sta	ate exa	mination for the teaching	g degree Grundschule	e Chemistry (2009)	
First sta	ate exa	mination for the teaching	g degree Grundschule	Didactics in Chemis	stry (Primary School) (2009)
		mination for the teaching			
					stry (Secondary School) (2009)
		mination for the teaching	-		
First state examination for the teaching degree Gymnasium Chemistry (2009) First state examination for the teaching degree Sonderpädagogik Didactics in Chemistry (Secondary School)					
Firct ct-		מהוות היות היות היות היות היות היות היות	Succice Sonucipaud		icinistry (Secondary School)
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(2009) First sta		mination for the teaching mination for the teaching			nemistry (Middle School) (2013)

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 45 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Extracuricular Sites @8-FD-WPF-LLL-092-m01 Module correlation Module offered by Institute of Inorganic Chemistry Institute of Inorganic Chemistry ECTS Method of grading Only after succ. compl. of module(s) 4 (not) successfully completed Duration Module level Other prerequisites 1 semester undergraduate Contents This module discusses the opportunities and limitations of out-of-classroom learning activities and, in particular, activities in school labs that support their teaching goals. They are able to put not bace plans into practice and guide pupils as they perform experiments. Courses (ype, number of weekly contact hours, language – if other finant Geman) This module comprises 2 module components. Information on courses will be listed separately for each module component. - 08-FD-WPF-LLL-2-092: P (no information on SWS (weekly contact hours) and course language available) Method of grading: (not) successfully completed - 08-FD-WPF-LLL-2-092: P (no information on SWS (weekly contact hours) and course language available) Method of grading: (not) successfully completed - 08-FD-WPF-LL2-092: P (no information on SWS (weekly contact hours) and course language available) Method of grading: (not) successfully completed - 08-FD-WPF-LL2-092: S (no information on SWS (weekly contact hours) and course	Module title				Abbreviation		
holder of the Professorship of Didactics of Chemistry Institute of Inorganic Chemistry ECTS Method of grading Only after succ. compl. of module(s) 4 (not) successfully completed Duration Module level Other prerequisites 1 semester undergraduate Contents This module discusses the opportunities and limitations of out-of-classroom learning in chemistry.						08-FD-WPF-LLL-092	-mo1
ECTS Method of grading Only after succ. compl. of module(s) 4 (not) successfully completed	Module coordinator				Module offered by		
4 (not) successfully completed Duration Module level Other prerequisites 1 semester undergraduate Contents This module discusses the opportunities and limitations of out-of-classroom learning in chemistry. Intended learning outcomes Students are able to plan chemistry lessons that include out-of-classroom learning activities in achiol labs that support their teaching goals. They are able to put those plans into practice and guide pupils as they perform experiments. Courses (spee, number of weekly contact hours, language – if other than German) This module comprises 2 module components. Information on courses will be listed separately for each module component. • 08-FD-WPF-LL1-0-92: S (no information on SWS (weekly contact hours) and course language available) Method of assessment type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for brus) Assessment in this module component of SFD-WPF-LL1-092: Opportunities of Extracurricular Sites - • 2 ECTS, Method of grading: (not) successfully completed - • presentation of a project (approx, 30 minutes) - • Language of assessment: In learn-teach-lab - Language of assessment: German or English -	holder of the Professorship of Didactics of Chemistry		cs of Chemistry	Institute of Inorgani	ic Chemistry		
Duration Module level Other prerequisites 1 semester undergraduate Contents This module discusses the opportunities and limitations of out-of-classroom learning in chemistry. Intended learning outcomes Students are able to plan chemistry lessons that include out-of-classroom learning activities and, in particular, activities in school labs that support their teaching goals. They are able to put those plans into practice and guide pupils as they perform experiments. Courses (type, number of weekly contact hours, language if other than German) This module comprises 2 module components. Information on SWS (weekly contact hours) and course language available) Method of assessment (type, scope, language if other than German, examination offered if not every semester, information on whether module is contrable for bouny)	ECTS	ECTS Method of grading Only after succ. o		Only after succ. con	npl. of module(s)		
1 semester undergraduate Contents Contents This module discusses the opportunities and limitations of out-of-classroom learning in chemistry. Intended learning outcomes Students are able to plan chemistry lessons that include out-of-classroom learning activities and, in particular, activities in school labs that support their teaching goals. They are able to put hose plans into practice and guide pupils as they perform experiments. Courses (type, number of weeky contact hours, language – if other than German) This module comprises 2 module components. Information on courses will be listed separately for each module component. Ourses (type, number of weeky contact hours, language – if other than German) This module comprises 2 module components. Information on courses will be listed separately for each module component. Ourses (type, number of weeky contact hours, language – if other than German) This module component (type, scope, language – if other than German, examination offered – if not every semester, information on SWS (weekly contact hours) and course language available) Outless stated otherwise, successful completion of the module will require successful completion of all individual assessments. Assessment in module component 08-FD-WPF-LLL-1-092: Opportunities of Extracurricular Sites 2 ECTS, Method of grading: (not) successfully completed 9 presentation of a project (approx. 30 minutes) 1 Language of assessment: German or English Assessment in module component 08-FD-WPF-LLL-2-092: School Lab 2 act CS, Method of grading: (not) successfully completed 2 successful supervision of experiments in learn-teach-Lab 2 Language of assessment: German or English Allocation of places	4	(not) su	ccessfully completed				
Contents This module discusses the opportunities and limitations of out-of-classroom learning in chemistry. Intendel learning outcomes Students are able to plan chemistry lessons that include out-of-classroom learning activities and, in particular, activities in school labs that support their teaching goals. They are able to put those plans into practice and guide pupils as they perform experiments. Courses (type, number of weekly contact hours, language – If other than German) This module comprises 2 module components. Information on courses will be listed separately for each module component. • 08-FD-WPF-LLL-10-92: S (no information on SWS (weekly contact hours) and course language available) Method of assessment (type, scope, language – If other than German, examination offered – if not every senseter, information on whether module is creditable for bonus) Assessment in this module component 08-FD-WPF-LL1-102: Opportunities of Extracurricular Sites • 2 ECTS, Method of grading: (not) successfully completed • presentation of a project (approx. 30 minutes) • a ECTS, Method of grading: (not) successfully completed • successful supervision of experiments in learn-teach-lab • Language of assessment: German or English Assessment in module component 08-FD-WPF-LL1-092: School Lab • 2 ECTS, Method of grading: (not) successfully completed • successful supervision of experiments in learn-teach-lab Language of assessment: G	Duratio	on 🛛	Nodule level	Other prerequisites	i i		
This module discusses the opportunities and limitations of out-of-classroom learning in chemistry. Intended learning outcomes Students are able to plan chemistry lessons that include out-of-classroom learning activities and, in particular, activities in school labs that support their teaching goals. They are able to put those plans into practice and gui- de pupils as they perform experiments. Courses (type, number of weekly contact hours, language – if other than German) This module comprises 2 module components. Information on courses will be listed separately for each module component	1 seme	ester u	Indergraduate				
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activities in school labs that support their teaching goals. They are able to put those plans into practice and gui- de pupils as they perform experiments. Courses (type, number of weekly contact hours, language – if other than German) This module comprises 2 module components. Information on courses will be listed separately for each module component. • 08-FD-WPF-LLL-1-092: S (no information on SWS (weekly contact hours) and course language available) • 08-FD-WPF-LLL-2-092: P (no information on SWS (weekly contact hours) and course language available) Method of assessment (type, scope, language – if other than German, examination offered – if not every senester, information on whether module is creditable for bonus) Assessment in this module comprises the assessments in the individual module components as specified be- low. Unless stated otherwise, successful completion of the module will require successful completion of all indi- vidual assessments. Assessment in module component 08-FD-WPF-LLL-1-092: Opportunities of Extracurricular Sites • 2 ECTS, Method of grading: (not) successfully completed • presentation of a project (approx. 30 minutes) • Language of assessment: German or English Assessment in module component 08-FD-WPF-LLL-2-092: School Lab • 2 ECTS, Method of grading: (not) successfully completed • successful supervision of experiments in learn-teach-lab • Language of assessment: German or English Alditional information 	Intend	ed learni	ng outcomes				
This module comprises 2 module components. Information on courses will be listed separately for each module component. • 08-FD-WPF-LLL-1-092: S (no information on SWS (weekly contact hours) and course language available) • 08-FD-WPF-LLL-2-092: P (no information on SWS (weekly contact hours) and course language available) Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus) Assessment in this module component os 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-FD-WPF-LLL-1-092: Opportunities of Extracurricular Sites • 2 ECTS, Method of grading; (not) successfully completed • presentation of a project (approx. 30 minutes) Language of assessment: German or English Assessment in module component o8-FD-WPF-LLL-2-092: School Lab • 2 ECTS, Method of grading; (not) successfully completed • successful supervision of experiments in learn-teach-lab • Language of assessment: German or English Allocation of places	activiti	es in sch	ool labs that support t	heir teaching goals. T			
component. Os-FD-WPF-LLL-1-092: S (no information on SWS (weekly contact hours) and course language available) os-FD-WPF-LLL-2-092: P (no information on SWS (weekly contact hours) and course language available) Method of assessment (type, scope, language – if other than German, examination offered – if not every senester, information on whether module is creditable for bonus) Assessment in this module comporises the assessments in the individual module components as specified be- low. Unless stated otherwise, successful completion of the module will require successful completion of all indi- vidual assessments. Assessment in module component o8-FD-WPF-LLL-1-092: Opportunities of Extracurricular Sites a ECT5, Method of grading; (not) successfully completed presentation of a project (approx. 30 minutes) Language of assessment: German or English Assessment in module component o8-FD-WPF-LLL-2-092: School Lab a ECT5, Method of grading; (not) successfully completed successful supervision of experiments in learn-teach-lab Language of assessment: German or English Allocation of places Morkload Teaching cycle Referred to In LPO 1 (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) Adymnasien Chemistry (2009)	Course	S (type, nur	mber of weekly contact hours,	language — if other than Ge	rman)		
module is creditable for bonus) Assessment in this module comprises the assessments in the individual module components as specified be- low. Unless stated otherwise, successful completion of the module will require successful completion of all indi- vidual assessments. Assessment in module component o8-FD-WPF-LLL-1-o92: Opportunities of Extracurricular Sites a ECTS, Method of grading: (not) successfully completed presentation of a project (approx. 30 minutes) Language of assessment: German or English Assessment in module component o8-FD-WPF-LLL-2-o92: School Lab a 2 ECTS, Method of grading: (not) successfully completed successful supervision of experiments in learn-teach-lab Language of assessment: German or English Allocation of places Additional information Teaching cycle Referred to in LPO 1 (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 Chemistry (2009) 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 Chemistry (2009)	compo • c	nent. 08-FD-WP	F-LLL-1-092: S (no info	rmation on SWS (wee	kly contact hours) ar	nd course language a	available)
low. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments. Assessment in module component o8-FD-WPF-LLL-1-092: Opportunities of Extracurricular Sites 2 ECTS, Method of grading: (not) successfully completed presentation of a project (approx. 30 minutes) Language of assessment: German or English Assessment in module component o8-FD-WPF-LLL-2-092: School Lab 2 ECTS, Method of grading: (not) successfully completed 3 successful supervision of experiments in learn-teach-lab 4 Language of assessment: German or English Allocation of places Additional information Teaching cycle 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) A Symnasien Chemistry (2009) MU Wurzburg*generated 26-Aug-2024 * exam.				age — if other than German,	examination offered — if no	t every semester, informat	ion on whether
Additional information	low. Ur vidual Assess 2 p L Assess 2 2 s	 low. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments. Assessment in module component o8-FD-WPF-LLL-1-o92: Opportunities of Extracurricular Sites 2 ECTS, Method of grading: (not) successfully completed presentation of a project (approx. 30 minutes) Language of assessment: German or English Assessment in module component o8-FD-WPF-LLL-2-o92: School Lab 2 ECTS, Method of grading: (not) successfully completed successful supervision of experiments in learn-teach-lab 					
Workload Teaching cycle 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 Didactics in Chemistry (Primary School) (2009) First state examination for the teaching degree Hauptschule Chemistry (2009) A Gymnasien Chemistry (2009) MUWürzburg • generated 26-Aug-2024 • exam. page 46 / 51	Allocat	tion of pla	aces				
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) IA Gymnasien Chemistry (2009) JMU Würzburg • generated 26-Aug-2024 • exam. page 46 / 51	 Workload 						
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) IA Gymnasien Chemistry (2009) JMU Würzburg • generated 26-Aug-2024 • exam. page 46 / 51							
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) IA Gymnasien Chemistry (2009) JMU Würzburg • generated 26-Aug-2024 • exam. page 46 / 51	Referred to in LPO I (examination regulations for teaching-degree programmes)						
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)JMU Würzburg • generated 26-Aug-2024 • exam.page 46 / 51			(
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)JMU Würzburg • generated 26-Aug-2024 • exam.page 46 / 51	Module	e appears	s in				
	First sta First sta	ate exam ate exam	ination for the teachin ination for the teachin	g degree Grundschule	e Didactics in Chemis	stry (Primary School)	(2009)
	LA Gymnas	sien Chemisti	ry (2009)				page 46 / 51

Julius-Maximilians-UNIVERSITÄT WÜRZBURG

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)

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 47 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module	e title				Abbreviation
Instruc	tion of	pupils in making chemic	al experiments		08-FBC1-092-m01
Modul	e coord	inator		Module offered by	<u>I</u>
holder	ofthe	Professorship of Didactic	s of Chemistry	Institute of Inorgan	ic Chemistry
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	(not)	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	its				
This m cal exp	-	• • •	unity to guide pupils	as they explore che	mistry topics and perform chemi-
Intend	ed lear	ning outcomes			
Studer ments.		e learned how to guide p	upils as they explore	chemistry problems	and perform chemical experi-
Course	S (type, 1	number of weekly contact hours,	anguage — if other than Ger	rman)	
P (no ir	nforma	tion on SWS (weekly cont	act hours) and cours	e language available	e)
		Sessment (type, scope, langua ole for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
assess	ment o	f practical performance a	nd final report (appro	ox. 8 pages)	
Allocat	ion of	places			
		aces: 30. Places will be al e number of subject seme			ect semesters. Among applicants
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	immes)	
Module	e appea	ars in			
First st	ate exa	mination for the teaching	g degree Gymnasium	Chemistry (2009)	

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 48 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module	e title				Abbreviation	
W- and	P-Cou	rses in Secondary Classe	s of Gymnasium		08-FD-WP-102-m01	
Module coordinator Module offered by						
holders Physics		Professorships of Cheming	istry Teaching and	Institute of Inorgan	ic Chemistry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
3	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate		site to assessment: ı on classes at a Gymn	regular participation in practical asium).	
Conten	ts					
ers adv Oberst minar.	vice and ufe stu	d project management in dents to good academic	the context of a P-Se	minar; supervising s	es at a Gymnasium school; care- seminar papers and introducing esigning a W-Seminar and a P-Se-	
		ning outcomes				
Studen Gymna			sign and teach W-Ser	ninars and P-Semina	ars for Oberstufe students at	
Course	S (type, r	number of weekly contact hours, I	anguage — if other than Gei	rman)		
S + P (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)	
		sessment (type, scope, langua ıle for bonus)	ge — if other than German,	examination offered — if no	t every semester, information on whether	
		ation (approx. 10 to 15 pa ssessment: German or E		on (approx. 30 minut	es)	
Allocat	ion of j	olaces				
		ices: 12. Places will be al number of subject seme			ct semesters. Among applicants	
Additio	onal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	ars in				
First sta	ate exa	mination for the teaching	g degree Gymnasium	Chemistry (2009)		

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 49 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	





Thesis

(10 ECTS credits)

Preparation of a written Hausarbeit (thesis) in accordance with the provisions of Section 29 LPO I (examination regulations for teaching-degree programmes) is a prerequisite for teaching degree students to be admitted to the Erste Staatsprüfung (First State Examination). In accordance with the provisions of Section 29 LPO I, students studying for a teaching degree Gymnasium may write this thesis in one of the subjects they selected as vertieft studiertes Fach (subject studied with a focus on the scientific discipline) or in the subject Erziehungswissenschaften (Educational Science). Pursuant to Section 29 Subsection 1 Sentence 2 LPO I, students may also choose to write an interdisciplinary thesis.

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 50 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	

Module title					Abbreviation
Admis	sion w	ork (Chemistry for Gra	ammar School Teachers)		08-Ch-HA-GY-092-m01
Module coordinator				Module offered by	
head o	of the re	esearch group offering	g the module	Faculty of Chemistr	y and Pharmacy
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
10	nume	erical grade	Where applicable, s supervisor.	pecific modules/mo	odule components as specified by
Duratio	on	Module level	Other prerequisites		
1 semester undergraduate		arbeit (thesis) accor for teaching-degree studied with a focus highly recommende	Depending on their choice of topic, students who are writing their Haus- arbeit (thesis) according to Section 29 LPO I (examination regulations for teaching-degree programmes) in the vertieft studiertes Fach (subject studied with a focus on the scientific discipline) Chemie (Chemistry) are highly recommended to complete module o8-Forsch-LAGY directly before completing module o8-Ch-HA-GY.		
Conter	nts				
in cher	nistry (or chemistry didactics		with an authorised e	tly research and write on a topic xaminer in accordance with the rrammes).
Intend	ed lear	rning outcomes			
sions, priate	and of written	fer approaches to the account of the result	solution of said problem) be able to work t	nterpret data, draw logical conclu- o deadlines prepare an appro-
no cou	rses as	ssigned			
		sessment (type, scope, la ble for bonus)	anguage — if other than German,	examination offered — if no	ot every semester, information on whether
Langua	age of a	s (Zulassungsarbeit, a assessment: German, ree programmes)		e with Section 29 LF	PO I (examination regulations for
Allocat	tion of	places			
Additio	onal in	formation			
Worklo	oad				
Teachi	ng cyc	le			
Referre	ed to ir	LPOI (examination regu	lations for teaching-degree progra	immes)	
Modul	e appe	ars in			
	ate exa				

LA Gymnasien Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam.	page 51 / 51
	reg. data record Lehramt Gymnasien Chemie - 2009	