

## Subdivided Module Catalogue for the Subject

# Chemistry

as Unterrichtsfach with the degree "Erste Staatsprüfung für das Lehramt an Grundschulen"

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

JMU Würzburg • generated 26-Aug-2024 • exam. reg. data record L1|032|-|-|H|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)):

#### 11-Jan-2012 (2011-102)

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 Grundschulen	Chemistry (2009)
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## The subject is divided into

08-OC-Prakt-GHR-092-		credits	grading	page
08-PC-GHR-102-m01 08-OC-Prakt-GHR-092-	CTS credits)			
08-OC-Prakt-GHR-092-	ECTS credits)			
-	Physical Chemistry (teaching degree for secondary schools)	4	NUM	38
m01	Organic Chemistry - laboratory course (teaching degree for se- condary schools)	5	B/NB	32
08-PC-VKM-LA-102- m01	Basic Mathematics (teaching degree)	2	B/NB	39
08-Ch-GH-ÜiV-092- m01	Exercises in Experimental Presentation	6	B/NB	12
08-0C1-GHR-092-m01	Organic Chemistry 1 (teaching degree for secondary schools)	6	NUM	26
08-0C2-GHR-092-m01	Organic Chemistry 2 (teaching degree for secondary schools)	7	NUM	28
	Biochemistry (teaching degree for secondary schools)	4	NUM	11
,	Inorganic Chemistry 1 (teaching degree)	20	NUM	6
Teaching (12 ECTS credits)		<u> </u>		
Teaching Compulsory co				-1
	Experiments in Chemical Education	5	NUM	19
08-FD-Ch-BM-092-m01	Chemistry Education: Educational Theory and Models of Tea- ching Concepts	4	NUM	17
o8-FD-Schu-	Concepts of Teaching Chemistry	3	NUM	21
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08-FD-WPF-LLL-092-m01	Extracurricular Sites	4	B/NB	22
08-PC-ESS-092-m01	Electronic structure and spectroscopy	3	NUM	37
08-TC-LA-092-m01	Theoretical Models in Chemistry (teaching degree for seconda- ry schools)	3	NUM	40
08-0C3-LA-102-m01	Organic Chemistry 3 (teaching degree for secondary schools)	6	NUM	30
teaching-degree programmes State Examination). In accord le may write this thesis in the terrichtsfach (subject studied	arbeit (thesis) in accordance with the provisions of Section 29 Ll s) is a prerequisite for teaching degree students to be admitted to dance with the provisions of Section 29 LPO I, students studying e subject Didaktik der Grundschule (Didactics of Grundschule), ir d with a focus on the scientific discipline) or in the subject Erzieh stion 29 Subsection 1 Sentence 2 LPO I, students may also choos	o the Erste for a teach 1 the subje ungswisse	Staatsprüfung ing degree Gru ct they selectee enschaften (Edu	(First ndschu- d as Un- ıcatio-

thesis.				
08-Ch-HA-UF-GS-092-m01	Admission work (Chemistry for Primary School Teachers)	10	NUM	14

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	cord Lehramt Grundschulen (Unterrichtsfach) Chemie - 2009	

Og-TR-072-m01         Module corretator       Module offered by         Module offered by         Reculty of Medicine         Reculty of Medicine         Reculty of Medicine         Toxikologie und Review       Faculty of Medicine         Contents         Module level       Only after succ. compl. of module(s)         1         Module level       Only after succ. compl. of module(s)         1         Module level       Only after succ. compl. of module(s)         1         Module level       Only after succ. compl. of module(s)         Module level       Other prerequisites         Undergraduate
lecturer of lecture "Toxikologie und Rechtskunde"       Faculty of Medicine         ECTS       Method of grading       Only after succ. compl. of module(s)         3       numerical grade          Duration       Module level       Other prerequisites         1 semester       undergraduate          Contents       module level       Other prerequisites         Basics of legal regulations for chemists (handling and transportation of hazardous materials), fundamentals of toxicology.       Intended learning outcomes         The students master the basics of legal regulations for chemists (handling and transport of hazardous substances) as well as the fundamentals of toxicology.       If other than German)         V + V (no information on SWS (weekly contact hours) and course language available)       Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)         written examination (approx.go minutes)       Allocation of places             Mothod allocation of places                  Mothod allocation of places                  Mothod for assessment (type, scope, language – if other than German, examination offered – if not every
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Teaching syste
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<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)
Module appears in
Bachelor' degree (1 major) Biochemistry (2011)
Bachelor' degree (1 major) Biochemistry (2013)
Bachelor' degree (1 major) Biochemistry (2009)
Bachelor' degree (1 major) Chemistry (2007)
Bachelor' degree (1 major) Chemistry (2008)
Bachelor' degree (1 major) Chemistry (2010)
Bachelor' degree (1 major) Chemistry (2009)
Bachelor' degree (1 major) Food Chemistry (2009)
Bachelor' degree (1 major) FOKUS Chemistry (2011)
Master's degree (1 major) Chemistry (2013)
Master's degree (1 major) Chemistry (2010)
Master's degree (1 major) Chemistry (2014)
First state examination for the teaching degree Grundschule Chemistry (2009)
First state examination for the teaching degree Hauptschule Chemistry (2009)
First state examination for the teaching degree Realschule Chemistry (2009)
First state examination for the teaching degree Gymnasium Chemistry (2009)
First state examination for the teaching degree Mittelschule Chemistry (2013)
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Modul	e title				Abbreviation
Inorga	nic Che	mistry 1 (teaching degr	ee)		08-AC1-LA-102-m01
Modul	e coord	inator		Module offered by	· · · · · · · · · · · · · · · · · · ·
lecture Chemi		ture "Experimentalchem	ie" (Experimental	Institute of Inorgan	ic Chemistry
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)	
20	nume	rical grade			
Durati	on	Module level	Other prerequisites	i	
1 seme	ester	undergraduate	By way of exception	, additional prerequ	isites are listed in the section on
			assessments.		
Contor	te		•		

#### Contents

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

#### Intended learning outcomes

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

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

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

- 08-AC1-1-102: V + V + Ü (no information on SWS (weekly contact hours) and course language available)
- 08-AC1-LA-2-102: P (no information on SWS (weekly contact hours) and course language available)
- o8-AC1-LA-3-102: V (no information on SWS (weekly contact hours) and course language available)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

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

**Assessment in module component o8-AC1-1-102:** Principles of Inorganic Chemistry Principles of Inorganic Chemistry Principles of Inorganic Chemistry

- 10 ECTS, Method of grading: numerical grade
- a) 1 to 3 written examinations (1 written examination: approx. 90 minutes; 2 written examinations: 60 or 90 minutes each; 3 written examinations: 60 minutes each) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes)
- Language of assessment: German or English
- Other prerequisites: Admission prerequisite to assessment: successful completion of exercises in the respective classes as specified at the beginning of the course (usually 70% of exercises to be successfully completed) as well as regular attendance of exercises (usually a maximum of 2 incidents of unexcused absence).

Assessment in module component o8-AC1-LA-2-102: Inorganic and Analytical Chemistry (lab) (teaching degree)

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

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

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

- 3 ECTS, Method of grading: numerical grade
- a) 1 to 3 written examinations (1 written examination: approx. 90 minutes; 2 written examinations: 60 or 90 minutes each; 3 written examinations: 60 minutes each) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes)
- Language of assessment: German or English

#### Allocation of places

UNIVERSITÄT

WÜRZBURG

#### Additional information

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Workload

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Teaching cycle

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

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

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

#### Module appears in

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

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

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

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

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

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

LA Grundschulen Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-	Γ
	cord Lehramt Grundschulen (Unterrichtsfach) Chemie - 2009	

Module	e title				Abbreviation
Inorga	nic Che	mistry of the Elements (1	eaching degree for s	econdary schools)	08-AC2-LAGY-102-m01
Module	e coord	inator		Module offered by	
lecture	r of lect	ture "Festkörperchemie"	(Solid State Che-	Institute of Inorgani	ic Chemistry
mistry)					· · · · · · · · · · · · · · · · · · ·
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
3	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
		quins students with an a	dvanced knowledge	of metals allovs and	I saline compounds. It focuses
		ures and properties, spe			
		ning outcomes		,	,
	-		ture and properties o	fmetals allovs and	saline compounds in an appro-
		They are able to system			
		, number of weekly conta			*
		ion on SWS (weekly cont			
			,		
		on on whether module c			tion offered — if not every seme
					ten examinations: approx. 60
					examination of one candidate
		20 minutes) or c) oral ex ssessment: German or E		(groups of 2, approx	. 30 minutes)
Allocat		Diaces			
 A J J 1 4 1 4					
Additio	nal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	d to in	LPOI (examination regu	lations for teaching-o	degree programmes)	
		mie "Allgemeine und An			Analytische Chemie"
<u>Module</u>			inguiniserre errenne ;	Thyshkatisene and /	
		mination for the teaching	r dogroo Grundschuld	Chamistry (2000)	
					stry (Primary School) (2009)
		mination for the teaching			(2009) (2009)
		-	,		stry (Secondary School) (2009)
		mination for the teaching			, (2009)
		mination for the teaching			
					nemistry (Secondary School)
(2009)	-				
	ato ova				
First sta		mination for the teachinន	g degree Sonderpäda	gogik Didactics in Cl	nemistry (Middle School) (2013)
		mination for the teaching mination for the teaching			nemistry (Middle School) (2013)

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	cord Lehramt Grundschulen (Unterrichtsfach) Chemie - 2009	

	e title				Abbreviation
Practic	al spec	troscopy 2 (teaching dea	gree for secondary so	hools)	08-AC2-PS-LA-102-m01
Module	e coord	inator		Module offered by	*
lecture	r of lec	ture "Praktische Spektros	skopie 2"	Institute of Inorgan	ic Chemistry
ECTS		od of grading	Only after succ. con	npl. of module(s)	
3	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
		quips students with an a ures and properties, spe			d saline compounds. It focuses nical processes.
Intende	ed lear	ning outcomes			
priate r	mannei		opic methods that ca		saline compounds in an appro- uctural analysis of solids and can
Course	<b>s</b> (type	, number of weekly conta	act hours, language –	- if other than Germa	an)
V (no ir	nformat	tion on SWS (weekly cont	tact hours) and cours	e language availabl	e)
					ation offered — if not every seme-
5001, 111	Torritat	ion on whether module c	an be chosen to earn	a bonus)	
a) 1 to 3 or 90 m each (a Langua	3 writte ninutes approx. age of a	n examinations (1 writter each; 3 written examina 20 minutes) or c) oral ex ssessment: German or E	n examination: appro tions: approx. 60 mir amination in groups	x. 90 minutes; 2 wri nutes each) or b) ora	tten examinations: approx. 60 Il examination of one candidate x. 30 minutes)
a) 1 to <u>3</u> or 90 m each (a	3 writte ninutes approx. age of a	n examinations (1 writter each; 3 written examina 20 minutes) or c) oral ex ssessment: German or E	n examination: appro tions: approx. 60 mir amination in groups	x. 90 minutes; 2 wri nutes each) or b) ora	l examination of one candidate
a) 1 to 3 or 90 m each (a Langua	3 writte ninutes approx. age of a	n examinations (1 writter each; 3 written examina 20 minutes) or c) oral ex ssessment: German or E	n examination: appro tions: approx. 60 mir amination in groups	x. 90 minutes; 2 wri nutes each) or b) ora	l examination of one candidate
a) 1 to 3 or 90 m each (a Langua Allocat	3 written ninutes approx. age of a <b>cion of j</b>	n examinations (1 writter each; 3 written examina 20 minutes) or c) oral ex ssessment: German or E	n examination: appro tions: approx. 60 mir amination in groups	x. 90 minutes; 2 wri nutes each) or b) ora	l examination of one candidate
a) 1 to 3 or 90 m each (a Langua Allocat	3 written ninutes approx. age of a <b>cion of j</b>	n examinations (1 writter each; 3 written examina 20 minutes) or c) oral ex ssessment: German or E <b>blaces</b>	n examination: appro tions: approx. 60 mir amination in groups	x. 90 minutes; 2 wri nutes each) or b) ora	l examination of one candidate
a) 1 to 3 or 90 m each (a Langua Allocat	3 written ninutes approx. age of a <b>ion of p</b> <b>onal inf</b>	n examinations (1 writter each; 3 written examina 20 minutes) or c) oral ex ssessment: German or E <b>blaces</b>	n examination: appro tions: approx. 60 mir amination in groups	x. 90 minutes; 2 wri nutes each) or b) ora	l examination of one candidate
a) 1 to 3 or 90 m each (a Langua Allocat  Additio	3 written ninutes approx. age of a <b>ion of p</b> <b>onal inf</b>	n examinations (1 writter each; 3 written examina 20 minutes) or c) oral ex ssessment: German or E <b>blaces</b>	n examination: appro tions: approx. 60 mir amination in groups	x. 90 minutes; 2 wri nutes each) or b) ora	l examination of one candidate
a) 1 to 3 or 90 m each (a Langua Allocat  Additio	3 written ninutes approx. age of a <b>ion of</b> p <b>onal inf</b>	n examinations (1 writter each; 3 written examina 20 minutes) or c) oral ex ssessment: German or E <b>blaces</b> ormation	n examination: appro tions: approx. 60 mir amination in groups	x. 90 minutes; 2 wri nutes each) or b) ora	l examination of one candidate
a) 1 to 3 or 90 m each (a Langua Allocat  Additio  Worklo	3 written ninutes approx. age of a <b>ion of</b> p <b>onal inf</b>	n examinations (1 writter each; 3 written examina 20 minutes) or c) oral ex ssessment: German or E <b>blaces</b> ormation	n examination: appro tions: approx. 60 mir amination in groups	x. 90 minutes; 2 wri nutes each) or b) ora	l examination of one candidate
a) 1 to 3 or 90 m each (a Langua Allocat  Additio  Worklo  Teachin 	3 written ninutes approx. age of a <b>ion of p</b> <b>onal inf</b> <b>onal inf</b>	n examinations (1 writter each; 3 written examina 20 minutes) or c) oral ex ssessment: German or E <b>blaces</b> ormation	n examination: appro tions: approx. 60 mir amination in groups nglish	x. 90 minutes; 2 wri nutes each) or b) ora (groups of 2, approx	Il examination of one candidate 30 minutes)
a) 1 to 3 or 90 m each (a Langua Allocat  Additio  Worklo  Teachin 	3 written ninutes approx. age of a <b>ion of p</b> <b>onal inf</b> <b>onal inf</b>	n examinations (1 writter each; 3 written examina 20 minutes) or c) oral ex ssessment: German or E <b>blaces</b> ormation	n examination: appro tions: approx. 60 mir amination in groups nglish	x. 90 minutes; 2 wri nutes each) or b) ora (groups of 2, approx	Il examination of one candidate 30 minutes)
a) 1 to 3 or 90 m each (a Langua Allocat  Additio  Worklo  Teachin  Referre	3 written ninutes approx. age of a ion of p onal inf pad	e En examinations (1 writter each; 3 written examina 20 minutes) or c) oral ex ssessment: German or En places ormation e LPOI (examination regu	n examination: appro tions: approx. 60 mir amination in groups nglish	x. 90 minutes; 2 wri nutes each) or b) ora (groups of 2, approx	Il examination of one candidate 30 minutes)
a) 1 to 2 or 90 m each (a Langua Allocat  Morklo  Teachin  Referre  Module	3 written ninutes approx. age of a ion of p onal inf onal inf onal inf ead	n examinations (1 writter each; 3 written examina 20 minutes) or c) oral ex ssessment: German or E olaces ormation e LPOI (examination regu	n examination: appro tions: approx. 60 mir amination in groups nglish	x. 90 minutes; 2 wri nutes each) or b) ora (groups of 2, approx	Il examination of one candidate 30 minutes)
a) 1 to 3 or 90 m each (a Langua Allocat  Worklo  Teachin  Referre  First sta	3 written ninutes approx. age of a ion of p onal inf onal inf onal inf ed to in ed to in e appea ate exa	n examinations (1 writter each; 3 written examina 20 minutes) or c) oral ex ssessment: German or E olaces ormation e LPOI (examination regu	n examination: appro tions: approx. 60 mir amination in groups nglish lations for teaching-o	x. 90 minutes; 2 wrinutes each) or b) ora (groups of 2, approximation of 2, approximat	Il examination of one candidate 30 minutes)
a) 1 to 3 or 90 m each (a Langua Allocat  Additio  Worklo  Teachin  Referre First sta First sta	3 written ninutes approx. age of a ion of p onal inf onal inf onal inf e appea ate exa ate exa	e each; 3 written examina 20 minutes) or c) oral ex ssessment: German or E olaces ormation e LPOI (examination regu	n examination: appro tions: approx. 60 mir amination in groups nglish ulations for teaching-o g degree Grundschule	x. 90 minutes; 2 wrinutes each) or b) ora (groups of 2, approximation (groups of 2, approximation) degree programmes e Chemistry (2009) e Chemistry (2009)	Il examination of one candidate 30 minutes)
a) 1 to 3 or 90 m each (a Langua Allocat  Additio  Worklo  Teachin  Referre  First sta First sta First sta	3 written ninutes approx. age of a ion of p onal inf pad ng cycl ed to in e appea ate exa ate exa ate exa ate exa	e En examinations (1 writter each; 3 written examina 20 minutes) or c) oral ex ssessment: German or En- places ormation e LPOI (examination regunation regunation ers in mination for the teaching mination for the teaching	n examination: appro tions: approx. 60 mir amination in groups nglish ilations for teaching-o g degree Grundschule g degree Hauptschule g degree Realschule (	x. 90 minutes; 2 wrinutes each) or b) ora (groups of 2, approximate) (groups of 2, approximate) (group	Il examination of one candidate 30 minutes)

Module t	itle			Abbreviation
Elementa	l Organic Chemistry (teachin	g degree for seconda	ry schools)	08-AC3-LA-102-m01
Modulo c	oordinator		Module offered by	
	f lecture "Elementorganische	Chamia" (Elamontal		ic Chamistry
	hemistry)	Chenne (Elenientai	institute of morgan	ic chemistry
ECTS N	Nethod of grading			
4 n	umerical grade		•	nly) and o8-OC3 (module compo-
		nent o8-OC3-2 only)		
Duration	Module level	Other prerequisites	•	
1 semest	er 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-
Contents	·	• •		
	ule equips students with an a s, special material classes, re			It focuses on their structures and
Intended	learning outcomes			
explain p Courses ( V + Ü (no Method c ster, info a) 1 to 3 v	rinciples for the synthesis of (type, number of weekly conta information on SWS (weekly of assessment (type, scope, la rmation on whether module c written examinations (1 written	elementary organic co act hours, language — contact hours) and co anguage — if other tha an be chosen to earn n examination: appro.	ompounds. if other than Germa ourse language avail an German, examina a bonus) x. 90 minutes; 2 writ	able) tion offered — if not every seme- tten examinations: approx. 60
each (app	utes each; 3 written examina prox. 20 minutes) or c) oral ex e of assessment: German, Eng	amination in groups		l examination of one candidate . 30 minutes)
Allocatio	n of places			
Additiona	al information			
Workload				
 Teaching	cvcle			
	-,			
Referred	to in LPO I (examination regu	llations for teaching-c	legree programmes)	
			<u> </u>	
Module a	ppears in			
	e examination for the teaching	g degree Grundschule	Chemistry (2009)	
First state First state	e examination for the teaching e examination for the teaching e examination for the teaching	g degree Hauptschule g degree Realschule C	Chemistry (2009) hemistry (2009)	
	e examination for the teaching			

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	cord Lehramt Grundschulen (Unterrichtsfach) Chemie - 2009	

Modul	e title				Abbreviation		
Bioche	emistry	(teaching degree for so	econdary schools)		08-BC-GHR-092-mc	01	
Modul	e coord	inator		Module offered by			
holder	of the (	Chair of Biochemistry		Chair of Biochemis	trv		
ECTS		od of grading	Only after succ. cor		- )		
4	-i	rical grade					
Duration Module level			Other prerequisites	2			
1 seme		undergraduate			successful completio	on of exerci-	
2 0 0				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-				
			, ,	kercises (usually a m		-	
			sed absence).				
Conter	ntc						
				- to all and the state of the s		- <b>C b :</b> - <b>c b</b> -	
mistry.	-	ctures and exercises, t	his module acquaints s	students with the fun	damental principles	of bloche-	
		ing outcomes					
		ning outcomes			<b>T</b> I II	.1 .1	
		a become familiar with cal processes in cellula	the fundamental princ r systems.	iples of biochemistry	. They are able to de	scribe the	
Course	<b>es</b> (type	, number of weekly cor	itact hours, language –	– if other than Germa	in)		
V + Ü (	no infor	mation on SWS (weekl	y contact hours) and c	ourse language avail	able)		
			language — if other th can be chosen to earn		tion offered — if not	every seme-	
				-			
			en examination: appro 60 minutes each) or b)				
			oups (groups of 2, app		one candidate each	(appiox, 20	
		ssessment: German or		,			
Alloca	tion of p	olaces					
۵dditi	onal inf	ormation					
Additio							
Workle							
Teachi	ing cycl	9					
Referre	ed to in	LPO I (examination re	gulations for teaching-	degree programmes)			
§ 42 (1	l) 2. Che	mie "Organische und E	Bioorganische Chemie'	I			
Modul	e appea	irs in					
			ng degree Grundschul	e Chemistry (2009)			
			ng degree Grundschul		stry (Primary School)	(2009)	
First st	tate exa	mination for the teachi	ng degree Hauptschule	e Chemistry (2009)			
First st	tate exa	mination for the teachi	ng degree Hauptschule	e Didactics in Chemis	stry (Secondary Scho	ool) (2009)	
			ng degree Realschule				
First st (2009)		mination for the teachi	ng degree Sonderpäda	agogik Didactics in Cl	nemistry (Secondary	School)	
-		mination for the teachi	ng degree Sonderpäda	agogik Didactics in Cl	nemistry (Middle Sch	100l) (2013)	
			ng degree Mittelschule			-	
First st	tate exa	mination for the teachi	ng degree Mittelschule	e Didactics in Chemis	stry (Middle School)	(2013)	
A Grunds	chulen Che	emistry (2009)		enerated 26-Aug-2024 • exan ndschulen (Unterrichtsfach) (		page 11 / 40	
			cora centamit Gru	nuschuten (onternentsläch) (	eime - 2009		

Module title Abbreviation						
Exercis	ses in E	xperimental Presentat	ion		08-Ch-GH-ÜiV-092-	·m01
Module	e coord	inator		Module offered by		
lecture	rs of th	e three lectures offered	l in this module	Faculty of Chemistr	y and Pharmacy	
ECTS		od of grading	Only after succ. cor	npl. of module(s)		
6	(not) s	successfully completed	1			
Duratio		Module level	Other prerequisites	5		
1 seme	ster	undergraduate				
Conten	ts					
	Students will design, prepare and deliver presentations on a range of topics in chemistry. Presentations will in- clude live demonstrations.					
Intend	ed lear	ning outcomes				
the spe particu chemis	ecific ne llar teac stry kno	eeds of their audience. hing goal as well as to wledge and skills and		t experiments on the m them. Students wi	topic in question th Il be expected to ap	at support a
Course	<b>s</b> (type	, number of weekly cor	itact hours, language -	– if other than Germa	n)	
compo • c • c	• o8-Ch-LA-ÜiV-2-092: Ü (no information on SWS (weekly contact hours) and course language available)					
ster, in	formati	on on whether module	language — if other th can be chosen to earr	i a bonus)		
low. Ur		ated otherwise, succes	es the assessments in t ssful completion of the			
mistry)			<b>8-Ch-LA-ÜiV-1-092:</b> Ex ot) successfully comple	·	tal Presentation (Inc	organic Che-
• t	alk with	n demonstrations (app	rox. 45 minutes)			
		nent offered: once a ye				
		ge of assessment: Gerr	nan or English <b>8-Ch-LA-ÜiV-2-092:</b> Ex	ercises in Experimen	tal Presentation (Or	ganic Che-
mistry)		i modute component d	0-CII-LA-010-2-092. L/			same ene
• 2	2 ECTS,		ot) successfully comple	eted		
		n demonstrations (app nent offered: once a ye				
		ge of assessment: Gerr				
			8-Ch-GH-ÜiV-3-092: E	xercises in Experimer	ntal Presentation (Pł	nysical Che-
		-	Idary Public School Tea			
		Method of grading: (no i demonstrations (app	ot) successfully comple	ted		
		nent offered: once a ye				
		ge of assessment: Gerr				
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
LA Grundso	chulen Che	emistry (2009)		enerated 26-Aug-2024 • exam ndschulen (Unterrichtsfach) C	-	page 12 / 40

#### Workload

#### Teaching cycle

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

§ 42 (1) 3. Chemie "Übungen im Vortragen mit Demonstrationen"

#### 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 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)

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	cord Lehramt Grundschulen (Unterrichtsfach) Chemie - 2009	

Module	e title				Abbreviation
Admiss	sion wo	ork (Chemistry for Prin	nary School Teachers)		08-Ch-HA-UF-GS-092-m01
Module	e coord	linator		Module offered by	<u> </u>
head o	f the re	search group offering	the module	Faculty of Chemist	ry and Pharmacy
ECTS		od of grading	Only after succ. cor	· · ·	, , ,
10				odule components as specified by	
Duration Module level Other prerequisites					
1 seme	ester	undergraduate			
Conten	nts				
in cher	nistry o	or chemistry didactics		with an authorised e	tly research and write on a topic examiner in accordance with the grammes).
Intend	ed lear	ning outcomes			
sions, a an app	and off ropriat	er approaches to the s e written account of th	solution of said problem ne results of their work.	n) be able to work t	nterpret data, draw logical conclu- to deadlines be able to prepare
Course	es (type	, number of weekly co	ntact hours, language –	– if other than Germa	an)
no cou					
			e, language — if other th e can be chosen to earn		ation offered — if not every seme-
Langua	age of a	(Zulassungsarbeit, ap assessment: German, e ee programmes)		ce with Section 29 LF	PO I (examination regulations for
Allocat	tion of	places			
Additic	onal inf	ormation			
Worklo	bad				
 Teachi	ng cycl	e			
 Teachi	ng cycl	e			
			egulations for teaching-	degree programmes	)
			egulations for teaching-	degree programmes	)
	ed to in	LPOI (examination re	egulations for teaching-	degree programmes)	)

-	e title				Abbreviation
	ation of Exa	ms Chemistry			08-FBC2-PV-101-m01
Modul	e coordinate	or		Module offered by	<u> </u>
lecture mistry)	-	and Organische Ch	emie (Organic Che-	Faculty of Chemistr	y and Pharmacy
ECTS	Method of	grading	Only after succ. con	npl. of module(s)	
5		essfully completed	· · · ·		3-OC2-LAGY and o8-OC-Prakt-
Duratio	on Mo	dule level	Other prerequisites	5	
1 seme	ester und	ergraduate			
Conten	nts				
			tunity to revise topics and try exam papers fi		anic chemistry that are likely to
Intend	ed learning	outcomes			
		to solve selected qu vious years.	lestions on organic ar	nd inorganic chemist	ry that were asked in the state
Course	<b>es</b> (type, nur	nber of weekly cont	act hours, language –	– if other than Germa	in)
compo • c	onent. 08-FBC2-PV-	1-101: S (no informa	tion on SWS (weekly	contact hours) and c	sted separately for each module ourse language available) course language available)
Metho	d of assessi	<b>ment</b> (type, scope, l	· · ·	an German, examina	tion offered — if not every seme
Assess • 2 • s	2 ECTS, Meth successful p Assessment Language of	<b>dule component o8</b> nod of grading: (not) articipation in the fo	- <b>FBC2-PV-1-101:</b> Prep ) successfully comple prm of short presenta	ted	
• L Assess • 3 • s • A	3 ECTS, Meth successful p Assessment	nod of grading: (not) articipation in the fo	an or English - <b>FBC2-PV-2-101:</b> Prep ) successfully comple orm of short presenta r, summer semester	ted	
• L Assess • 3 • s • A • L	3 ECTS, Meth successful p Assessment	assessment: Germa dule component o8 nod of grading: (not) articipation in the fo offered: once a yea assessment: Germa	an or English - <b>FBC2-PV-2-101:</b> Prep ) successfully comple orm of short presenta r, summer semester	ted	
<ul> <li>L</li> <li>Assess</li> <li>3</li> <li>5</li> <li>4</li> <li>L</li> <li>Allocat</li> <li></li> </ul>	3 ECTS, Meth successful p Assessment anguage of	assessment: Germa dule component o8 nod of grading: (not) articipation in the fo offered: once a yea assessment: Germa	an or English - <b>FBC2-PV-2-101:</b> Prep ) successfully comple orm of short presenta r, summer semester	ted	
<ul> <li>L</li> <li>Assess</li> <li>3</li> <li>5</li> <li>4</li> <li>L</li> <li>Allocat</li> <li></li> </ul>	3 ECTS, Meth successful p Assessment anguage of tion of place	assessment: Germa dule component o8 nod of grading: (not) articipation in the fo offered: once a yea assessment: Germa	an or English - <b>FBC2-PV-2-101:</b> Prep ) successfully comple orm of short presenta r, summer semester	ted	
<ul> <li>L</li> <li>Assess</li> <li>S</li> <li>A</li> <li>L</li> <li>Allocat</li> <li></li> <li>Addition</li> <li></li> <li>Worklow</li> <li></li> </ul>	3 ECTS, Meth successful p Assessment anguage of tion of place	assessment: Germa dule component o8 nod of grading: (not) articipation in the fo offered: once a yea assessment: Germa	an or English - <b>FBC2-PV-2-101:</b> Prep ) successfully comple orm of short presenta r, summer semester	ted	
<ul> <li>L</li> <li>Assess</li> <li>S</li> <li>A</li> <li>L</li> <li>Allocat</li> <li></li> <li>Additic</li> <li></li> <li>Worklo</li> <li></li> <li>Teachi</li> <li></li> </ul>	3 ECTS, Meth successful p Assessment anguage of tion of place onal informa	assessment: Germa dule component o8 nod of grading: (not) articipation in the for offered: once a yea assessment: Germa ss	an or English - <b>FBC2-PV-2-101:</b> Prep ) successfully comple orm of short presenta r, summer semester	ited tions on selected as	signments
<ul> <li>L</li> <li>Assess</li> <li>S</li> <li>A</li> <li>L</li> <li>Allocat</li> <li></li> <li>Additic</li> <li></li> <li>Worklo</li> <li></li> <li>Teachi</li> <li></li> <li>Referre</li> <li></li> </ul>	3 ECTS, Meth successful p Assessment anguage of tion of place onal informa	assessment: Germa dule component o8 nod of grading: (not) articipation in the fr offered: once a yea assessment: Germa ss tion	an or English - <b>FBC2-PV-2-101:</b> Prep ) successfully comple orm of short presenta r, summer semester an or English	ited tions on selected as	signments

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

LA Grundschulen Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-	page 16 / 40
	cord Lehramt Grundschulen (Unterrichtsfach) Chemie - 2009	

4       numerical grade          Duration       Module level       Other prerequisites         1 semester       undergraduate          Contents           This module introduces students to the fundamentals of chemistry didactics.          Intended learning outcomes          Students have become familiar with theories and models for teaching chemistry as well as with the objectives and framework conditions of chemistry lessons.         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 modul component.         • 08-FD-Einf-1-092: V (no information on SWS (weekly contact hours) and course language available)         • 08-FD-Ch-BM-2-092: S (no information on SWS (weekly contact hours) and course language available)         • 08-FD-Ch-BM-2-092: S (no information on SWS (weekly contact hours) and course language available)         • 08-FD-Ch-BM-2-092: 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 sem ster, information on whether module can be chosen to earn a bonus)         Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all in ovidual assessments. <th>Module</th> <th>e title</th> <th></th> <th></th> <th></th> <th>Abbreviation</th> <th></th>	Module	e title				Abbreviation	
noider of the Professorship of Didactics of Chemistry       Institute of Inorganic Chemistry         CTS       Method of grading       Only after succ. compl. of module(s)         4       numerical grade       -         0 Duration       Module level       Other prerequisites         1 semester       undergraduate       -         Contents       This module introduces students to the fundamentals of chemistry didactics.         Interded learning outcomes       Students have become familiar with theories and models for teaching chemistry as well as with the objectives and framework conditions of chemistry lessons.         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 modul component.         • 08 FD-Ch-BM-2092: S (no information on SWS (weekly contact hours) and course language available)       • 08 FD-Ch-BM-2092: S (no information on SWS (weekly contact hours) and course language available)         Wethod of grading: numerical grade       - if not every sem ster, information on whether module can be chosen to earn a bonus)         Assessment in this module component 08-FD-EinF1-092: Introduction in Chemistry Education       9 ECTS, Method of grading: numerical grade         • written examination (approx. 90 minutes)       - Language of assessment: German or English         Allocation of places       -         • 1 ECTS, Method of grading: (not) successfully comple	Chemi	stry Edu	ucation: Educational Th	eory and Models of Te	aching Concepts	08-FD-Ch-BM-092-	m01
noider of the Professorship of Didactics of Chemistry       Institute of Inorganic Chemistry         CTS       Method of grading       Only after succ. compl. of module(s)         4       numerical grade       -         0 Duration       Module level       Other prerequisites         1 semester       undergraduate       -         Contents       This module introduces students to the fundamentals of chemistry didactics.         Interded learning outcomes       Students have become familiar with theories and models for teaching chemistry as well as with the objectives and framework conditions of chemistry lessons.         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 modul component.         • 08 FD-Ch-BM-2092: S (no information on SWS (weekly contact hours) and course language available)       • 08 FD-Ch-BM-2092: S (no information on SWS (weekly contact hours) and course language available)         Wethod of grading: numerical grade       - if not every sem ster, information on whether module can be chosen to earn a bonus)         Assessment in this module component 08-FD-EinF1-092: Introduction in Chemistry Education       9 ECTS, Method of grading: numerical grade         • written examination (approx. 90 minutes)       - Language of assessment: German or English         Allocation of places       -         • 1 ECTS, Method of grading: (not) successfully comple	Module	e coord	inator		Module offered by	<u> </u>	
ECTS         Method of grading         Only after succ. compl. of module(s)           4				ics of Chemistry	· · ·	ic Chemistry	
q       numerical grade          Duration       Module level       Other prerequisites         is semester       undergraduate          Contents           This module introduces students to the fundamentals of chemistry didactics.          Intended learning outcomes          Students have become familiar with theories and models for teaching chemistry as well as with the objectives and framework conditions of chemistry lessons.         Coursers(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 modul component.         • 08-FD-Ch-BM-2-092: V (no information on SWS (weekly contact hours) and course language available)         Method of assessment (type, scope, language – if other than German, examination offered – if not every sem ster, information on whether module can be chosen to earn a bonus)         Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all invidual assessment.         Assessment in module component 08-FD-Ch-DM-2-092: Introduction in Chemistry Education (accompanying sminar)         • a SECTS, Method of grading: numerical grade         • written examination (approx. 20 minutes)         • Language of assessment: German or English         Abl	ECTS			,	-		
1 semester       undergraduate         Contents         This module introduces students to the fundamentals of chemistry didactics.         Intended learning outcomes         Students have become familiar with theories and models for teaching chemistry as well as with the objectives and framework conditions of chemistry lessons.         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 modul component.         • 08-FD-Ch-BM-2-092: S (no information on SWS (weekly contact hours) and course language available)         Method of assessment (type, scope, language — if other than German)         Method of assessment (type, scope, language — if other than German, examination offered — if not every sem ster, information on whether module can be chosen to earn a bonus)         Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all in vidual assessments.         Assessment in module component o8-FD-EinF1-10-22: Introduction in Chemistry Education         • 3 ECTS, Method of grading: numerical grade         • written examination (approx. 20 minutes)         • Language of assessment: German or English         Assessment in module component o8-FD-Ch-BM-2-092: Introduction in Chemistry Education (accompanying sminar)         • 1 ECTS, Method of grading: (not) succesfully completed	4						
Contents         This module introduces students to the fundamentals of chemistry didactics.         Intended learning outcomes         Students have become familiar with theories and models for teaching chemistry as well as with the objectives and framework conditions of chemistry lessons.         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 modul component.         • 08-FD-Einf-1-092: V (no information on SWS (weekly contact hours) and course language available)         Wethod of assessment (type, scope, language — if other than German, examination offered — if not every sem ster, information on whether module can be chosen to earn a bonus)         Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.         Assessment in module component 08-FD-Einf-1-092: Introduction in Chemistry Education         • 3 ECTS, Method of grading: (not) successful y completed         • minait)         • Language of assessment: German or English         Assessment in module component 08-FD-Ch-BM-2-092: Introduction in Chemistry Education (accompanying s minait)         • Language of assessment: German or English         Assessment in module component 08-FD-Ch-BM-2-092: Introduction in Chemistry Education (accompanying s minait)         • Language of assessment: German or	Duratio	on	Module level	Other prerequisites	6		
This module introduces students to the fundamentals of chemistry didactics. Intended learning outcomes Students have become familiar with theories and models for teaching chemistry as well as with the objectives and framework conditions of chemistry lessons. 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 modul component.  • 08-PD-Einf-1-092: V (no information on SWS (weekly contact hours) and course language available) • 08-PD-Ein-BM-2-092: S (no information on SWS (weekly contact hours) and course language available) • 08-PD-Ch-BM-2-092: 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 sem ster, information on whether module can be chosen to earn a bonus) Assessment in this module comprises the assessments in the individual module components as specified be- low. Unless stated otherwise, successful completion of the module will require successful completion of all inc vidual assessments.  Assessment in module component 08-FD-Einf-1-092: Introduction in Chemistry Education • 3 ECTS, Method of grading: numerical grade • written examination (approx, 90 minutes) • Language of assessment: German or English Assessment in module component 08-FD-EinFD-092: Introduction in Chemistry Education (accompanying s minar) • 1 ECTS, Method of grading: (not) successfully completed • presentation (approx, 20 minutes) • Language of assessment: German or English Allocation of places	1 seme	ester	undergraduate				
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and framework conditions of chemistry lessons. 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 modul component.  • 08-FD-EinF-1-092: V (no information on SWS (weekly contact hours) and course language available) • 08-FD-Ch-BM-2-092: 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 sem ster, information on whether module can be chosen to earn a bonus) Assessment in this module component o8-FD-EinF-1-092: Introduction in Chemistry Education • 3 ECTS, Method of grading: numerical grade • written examination (approx. 90 minutes) • Language of assessment: German or English Assessment in module component 08-FD-Ch-BM-2-092: Introduction in Chemistry Education (accompanying s minar) • 1 ECTS, Method of grading: (not) successfull completed • presentation (approx. 20 minutes) • Language of assessment: German or English Atlocation of places • • • • • • • • • • • • • • • • • • •	Intend	ed lear	ning outcomes				
This module comprises 2 module components. Information on courses will be listed separately for each modul component.  • 08-FD-EinF1-092: V (no information on SWS (weekly contact hours) and course language available) • 08-FD-Ch-BM-2-092: 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 sem ster, information on whether module can be chosen to earn a bonus) Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.  Assessment in module component 08-FD-EinF1-092: Introduction in Chemistry Education • 3 ECTS, Method of grading: numerical grade • written examination (approx. 90 minutes) Language of assessment: Germa or English Assessment in module component 08-FD-Ch-BM-2-092: Introduction in Chemistry Education (accompanying sminar) • 1 ECTS, Method of grading: (not) successfully completed • presentation (approx. 20 minutes) • Language of assessment: Germa nor English Allocation of places					or teaching chemistry	y as well as with the	objectives
component. <ul> <li>o8-FD-EinF-1-092: V (no information on SWS (weekly contact hours) and course language available)</li> <li>o8-FD-Ch-BM-2-092: S (no information on SWS (weekly contact hours) and course language available)</li> </ul> Method of assessment (type, scope, language — if other than German, examination offered — if not every sem ster, information on whether module can be chosen to earn a bonus)           Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.           Assessment in module component o8-FD-Einf-1-092: Introduction in Chemistry Education           • 3 ECTS, Method of grading: numerical grade           • written examination (approx. 90 minutes)           Language of assessment: Germa or English           Assessment in module component o8-FD-Ch-BM-2-092: Introduction in Chemistry Education (accompanying sminai)           • 1 ECTS, Method of grading: (not) successfully completed           • presentation (approx. 20 minutes)           • Language of assessment: German or English           Atditional information           •           • Morkload           •           •           • Additional information           •           •           • CTS, Method of grading: not set technig-degree programmes)           § 36 (1)	Course	<b>es</b> (type	, number of weekly cor	itact hours, language –	– if other than Germa	an)	
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Allocation of places Additional information Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) § 36 (1) 7. Didaktik der Grundschule Chemie § 38 (1) 1. Didaktik der Grundschule Chemie § 38 (1) 1. Didaktik der Hauptschule Chemie § 38 (1) 1. Didaktik der Mittelschule Chemie § 38 (1) 1. Didaktik der Mittelschule Chemie § 36 (1) 6. Chemie Didaktik Module appears in A Grundschulen Chemistry (2009) MU Würzburg • generated 26-Aug-2024 • exam. reg. data re- page 17 / 4-	<ul> <li>L</li> <li>Assess</li> <li>minar)</li> <li>1</li> <li>F</li> </ul>	Languas <b>sment i</b> 1 ECTS, present	ge of assessment: Gern n module component o Method of grading: (no ation (approx. 20 minu	nan or English <b>8-FD-Ch-BM-2-092:</b> Inf t) successfully comple tes)		try Education (acco	mpanying se
Additional information				nan or English			
Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) § 36 (1) 7. Didaktik der Grundschule Chemie § 38 (1) 1. Didaktik der Hauptschule Chemie § 38 (1) 1. Didaktik der Mittelschule Chemie § 42 Chemie Fachdidaktik § 62 (1) 6. Chemie Didaktik Module appears in A Grundschulen Chemistry (2009) MU Würzburg • generated 26-Aug-2024 • exam. reg. data re- page 17 / 4	Allocat	tion of j	olaces				
Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) § 36 (1) 7. Didaktik der Grundschule Chemie § 38 (1) 1. Didaktik der Hauptschule Chemie § 38 (1) 1. Didaktik der Mittelschule Chemie § 42 Chemie Fachdidaktik § 62 (1) 6. Chemie Didaktik Module appears in A Grundschulen Chemistry (2009) MU Würzburg • generated 26-Aug-2024 • exam. reg. data re- page 17 / 4			<b>49</b>				
Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) § 36 (1) 7. Didaktik der Grundschule Chemie § 38 (1) 1. Didaktik der Hauptschule Chemie § 38 (1) 1. Didaktik der Mittelschule Chemie § 38 (1) 1. Didaktik der Mittelschule Chemie § 42 Chemie Fachdidaktik § 62 (1) 6. Chemie Didaktik Module appears in A Grundschulen Chemistry (2009) JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re- page 17 / 4	AUUITIO	ulat INT	UIIIdUUI				
Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) § 36 (1) 7. Didaktik der Grundschule Chemie § 38 (1) 1. Didaktik der Hauptschule Chemie § 38 (1) 1. Didaktik der Mittelschule Chemie § 38 (1) 1. Didaktik der Mittelschule Chemie § 42 Chemie Fachdidaktik § 62 (1) 6. Chemie Didaktik Module appears in A Grundschulen Chemistry (2009) JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re- page 17 / 4	 World -						
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<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)         § 36 (1) 7. Didaktik der Grundschule Chemie         § 38 (1) 1. Didaktik der Hauptschule Chemie         § 38 (1) 1. Didaktik der Mittelschule Chemie         § 38 (1) 1. Didaktik der Mittelschule Chemie         § 38 (1) 1. Didaktik der Mittelschule Chemie         § 42 Chemie Fachdidaktik         § 62 (1) 6. Chemie Didaktik <b>Module appears in</b> A Grundschulen Chemistry (2009)         JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-         page 17 / 44		ng a	0				
§ 36 (1) 7. Didaktik der Grundschule Chemie § 38 (1) 1. Didaktik der Hauptschule Chemie § 38 (1) 1. Didaktik der Mittelschule Chemie § 42 Chemie Fachdidaktik § 62 (1) 6. Chemie Didaktik Module appears in A Grundschulen Chemistry (2009) JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re- page 17 / 44	reachi	ing cycl	e				
§ 38 (1) 1. Didaktik der Hauptschule Chemie § 38 (1) 1. Didaktik der Mittelschule Chemie § 42 Chemie Fachdidaktik § 62 (1) 6. Chemie Didaktik Module appears in A Grundschulen Chemistry (2009) JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re- page 17 / 44	Referre	ed to in	LPOI (examination re	gulations for teaching-	degree programmes)		
A Grundschulen Chemistry (2009) JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re- page 17 / 4	§ 38 (1) § 38 (1) § 42 Cł	) 1. Did ) 1. Did hemie F	aktik der Hauptschule aktik der Mittelschule ( Fachdidaktik	Chemie			
	Module	e appea	ars in				
	AGrunder	chulen Cha	emistry (2000)		enerated 26-Aug-2024 • ever	n, reg. data re-	nage 17 / 40
		-nateri ent					P~50 1/ / 40

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 Mittelschule Chemistry (2013)

LA Grundschulen Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-	page 18 / 40
	cord Lehramt Grundschulen (Unterrichtsfach) Chemie - 2009	

Module title					Abbreviation	
Experii	ments i	n Chemical Education			08-FD-ExUnt-092-m01	L
Module	e coord	inator		Module offered by		
holder	of the F	Professorship of Didacti	cs of Chemistry	Institute of Inorgani	ic Chemistry	
ECTS		od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio		Module level	Other prerequisites			
1 seme		undergraduate				
Conten This mo their le	odule e	quips students with exp	perimental skills and t	eaches them how to	incorporate experimen	its into
		ning outcomes	_			
Studen le scho own ex	its have ools and perime	e learned some essentia I have developed the ab nts, tailor them to their	ility to safely perform teaching goals and to	them. They have devincorporate them int	veloped the ability to d to their lessons.	
Course	<b>s</b> (type	, number of weekly cont	act hours, language –	- if other than Germa	n)	
compo • c	nent. 08-FD-E	omprises 2 module com xUnt-1-092: Ü (no inforn xUnt-2-092: S (no inforr	nation on SWS (weekly	y contact hours) and	course language availa	able)
		essment (type, scope, lon on whether module			tion offered — if not ev	'ery seme-
ster, information on whether module can be chosen to earn a bonus) Assessment in this module comprises the assessments in the individual module components as specified 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-ExUnt-1-o92: Experiments in Chemical Teaching at Primary and Secon- dary Public Schools  4 ECTS, Method of grading: numerical grade presentation with demonstration (approx. 30 minutes) Language of assessment: German or English Assessment in module component o8-FD-ExUnt-2-o92: Planning of Teaching Units 1 ECTS, Method of grading: numerical grade presentation (approx. 20 minutes) Language of assessment: German or English Allocation of places Additional information Workload						
Teachi	ng cycl	9				
Referre	ed to in	LPOI (examination reg	ulations for teaching-	degree programmes)		
§ 38 (1) § 38 (1)	) 1. Dida ) 1. Dida	aktik der Grundschule C aktik der Hauptschule C aktik der Mittelschule C achdidaktik	hemie			
LA Grundso	chulen Che	mistry (2009)		enerated 26-Aug-2024 • exam ndschulen (Unterrichtsfach) C	-	page 19 / 40

#### 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 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)

LA Grundschulen Chemistry (2009)	JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-	page 20 / 40
	cord Lehramt Grundschulen (Unterrichtsfach) Chemie - 2009	

Module					Abbreviation
Concep	ts of T	eaching Chemistry			08-FD-SchulUms-092-m01
Module	coord	inator		Module offered by	<u> </u>
holder	nolder of the Professorship of Didactics of Chemistry			Institute of Inorgan	ic Chemistry
ECTS			·		
3	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Topics	covere	d in the chemistry curricu	lla for Grundschule a	nd Hauptschule sch	ools and ways to teach them.
Intende	ed lear	ning outcomes			
sons. T classro	hey ha om on	ve developed the ability t the basis of the relevant	to plan and teach les curricula.	sons in the Grundsc	nditions of chemistry les- hule or Hauptschule chemistry
		, number of weekly conta			
S (no ir	format	ion on SWS (weekly cont	act hours) and cours	e language available	e)
		<b>sessment</b> (type, scope, la on on whether module ca			tion offered — if not every seme
		approx. 20 minutes) ssessment: German or Ei	nglish		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachi	ıg cycl	e			
Referre	d to in	LPOI (examination regu	lations for teaching-	degree programmes)	
§ 38 (1) § 38 (1)	1. Did 1. Did	aktik der Grundschule Ch aktik der Hauptschule Ch aktik der Mittelschule Ch ʿachdidaktik	emie		
Module	appea	ars in			
First sta First sta	ate exa ate exa	mination for the teaching mination for the teaching mination for the teaching	g degree Hauptschule	e Chemistry (2009)	

Module title	Abbreviation					
Extracurricular Sites			08-FD-WPF-LLL-092	-m01		
Module coordinator		Module offered by				
holder of the Professorship of Didaction	s of Chemistry	Institute of Inorgani	c Chemistry			
ECTS Method of grading	Only after succ. con	npl. 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.						
Intended learning outcomes						
Students are able to plan chemistry le activities in school labs that support t de pupils as they perform experiments	heir teaching goals. T					
Courses (type, number of weekly cont	act hours, language –	- if other than Germa	n)			
This module comprises 2 module com	ponents. Information	on courses will be lis	sted separately for e	ach module		
component.						
<ul> <li>o8-FD-WPF-LLL-1-092: S (no information on SWS (weekly contact hours) and course language available)</li> <li>o8-FD-WPF-LLL-2-092: P (no information on SWS (weekly contact hours) and course language available)</li> </ul>						
<b>Method of assessment</b> (type, scope, laster, information on whether module of			tion offered — if not	every seme-		
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  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 Language of assessment: German or English Allocation of places Additional information						
Workload						
Teaching cycle						
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module appears in						
First state examination for the teachin First state examination for the teachin	<b>Module appears in</b> 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)					
LA Grundschulen Chemistry (2009)				ool) (2009)		

#### Julius-Maximilians-UNIVERSITÄT WÜRZBURG

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

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

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

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

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	cord Lehramt Grundschulen (Unterrichtsfach) Chemie - 2009	

Modul	e title				Abbreviation
Prepa	ration o	f Exams (Primary and Sec	condary Public Schol	ll Teachers)	08-FD-WPF-PVGSHS-092-m01
Modul	e coord	linator		Module offered	l by
holder	holder of the Professorship of Didactics of Chemistry			Institute of Inor	ganic Chemistry
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	)
2	nume	rical grade		•	
Durati	on	Module level	Other prerequisites	;	
1 seme	ester	undergraduate			
Conte	nts	·			
Stude	nts will	solve selected questions	that were asked in th	ne state examina	ation in previous years.
		ning outcomes			
			estions that were ask	ed in the state e	examination in previous years.
		, number of weekly conta			· ·
		tion on SWS (weekly cont			
•	-	. ,		<u> </u>	,
		ion on whether module ca			nination offered — if not every seme
		nation (approx. 30 minute			
	tion of	· · · · · · ·			
Alloca		places			
Additi	onal inf	ormation			
Workl	oad				
Teachi	ing cycl	e			
Referr	ed to in	LPOI (examination regu	lations for teaching-	degree programn	nes)
Modul	e appea	ars in			
First st	tate exa	mination for the teaching	g degree Grundschule	e Chemistry (200	9)
			-	-	emistry (Primary School) (2009)
		mination for the teaching		-	-
					emistry (Secondary School) (2009)
First st (2009)		mination for the teaching	g degree Sonderpäda	gogik Didactics i	in Chemistry (Secondary School)
					in Chemistry (Middle School) (2013)
		mination for the teaching	-		
First st	tate exa	mination for the teaching	g degree Mittelschule	Didactics in Che	emistry (Middle School) (2013)

Module	e title				Abbreviation	
Guidan	ce in S	elf-reliant Scientific Wor	k		08-FD-WPF-WA-092-m01	
Module	coord	inator		Module offered by		
holder	of the F	Professorship of Didactic	s of Chemistry	Institute of Inorgan	ic Chemistry	
ECTS		od of grading	Only after succ. com			
2	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
This mo tics.	odule w	vill teach students how to	independently resea	arch and write on se	lected topics in chemistry didac-	
Intende	ed learı	ning outcomes				
					emistry didactics. They are able to o advance the discipline.	
Course	<b>s</b> (type	, number of weekly conta	ict hours, language –	· if other than Germa	an)	
S (no ir	format	ion on SWS (weekly cont	act hours) and cours	e language available	2)	
		essment (type, scope, la on on whether module ca			ition offered — if not every seme-	
		approx. 30 minutes) ssessment: German or El	nglish			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ng cycl	<b>e</b>	·			
	<u></u>	•				
Poforro	d to in	LPOI (examination regu	lations for teaching	legree programmes)		
Kelelle						
Module						
		mination for the teaching	_		stry (Primary School) (2009)	
		mination for the teaching			stry (Filliary School) (2009)	
		-			stry (Secondary School) (2009)	
		mination for the teaching			, (2000, 2009)	
		mination for the teaching				
		-			hemistry (Secondary School)	
	ate exa	mination for the teaching	g degree Sonderpäda	gogik Didactics in Cl	hemistry (Middle School) (2013)	
		mination for the teaching	_	· · · –		
First sta	ate exa	mination for the teachinន្	g degree Mittelschule	Didactics in Chemis	stry (Middle School) (2013)	

	itle			Abbreviation	
Organic (	Chemistry 1 (teaching degre	e for secondary schoo	ls)	08-0C1-GHR-092-m	01
Module c	oordinator		Module offered by		
	the Professorship of Organi	ic Chemistry			
	Nethod of grading	Only after succ. cor		enemistry	
	umerical grade				
Duration	Module level	Other prerequisites	6		
1 semeste	er undergraduate	ses in the respectiv (usually 70% of exe	isite to assessment: e classes as specifie ercises to be success kercises (usually a m	d at the beginning o fully completed) as v	f the course vell as regu-
Contents					
the bondi organic co	ule provides students with a ing situation of carbon and ompounds. The module also d elimination reactions as w	introduces students to o discusses the fundar	the nomenclature of mental principles of s	simple and modera	tely complex
Intended	learning outcomes				
lecules. T that purp syntheses	clature to determine simple hey are able to describe an ose, they can analyse and c s. (type, number of weekly con	d formulate some of th ategorise the characte	e most important rea eristic reaction condit	actions in organic ch ions and can use the	emistry. For
	information on SWS (weekl				
Method o	of assessment (type, scope, rmation on whether module	language — if other th	an German, examina		every seme-
or 90 min each (app	vritten examinations (1 writt outes each; 3 written examir orox. 20 minutes) or c) oral o e of assessment: German or	nations: approx. 60 min examination in groups	nutes each) or b) ora	l examination of one	
	n of places				
	·				
Additiona	al information				
Workload					
Workload					
Workload  Teaching					
 Teaching 	cycle	gulations for toaching	degree programmec)		
 Teaching  Referred	cycle to in LPO I (examination reg				
 Teaching  Referred § 42 (1) 2	<b>cycle</b> <b>to in LPO I</b> (examination reg . Chemie "Organische und E				
 <b>Teaching</b>  <b>Referred</b> to § 42 (1) 2 <b>Module a</b> First state First state First state First state	<b>cycle</b> <b>to in LPO I</b> (examination reg . Chemie "Organische und E	Bioorganische Chemie ng degree Grundschuld ng degree Grundschuld ng degree Hauptschuld ng degree Hauptschuld	e Chemistry (2009) e Didactics in Chemis e Chemistry (2009) e Didactics in Chemis	stry (Primary School)	

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

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

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	cord Lehramt Grundschulen (Unterrichtsfach) Chemie - 2009	

Modul					Abbreviation	
Organ	ic Chen	nistry 2 (teaching deg	gree for secondary schoo	ols)	08-0C2-GHR-092-m01	
Modul	e coord	inator		Module offered by		
		Chair of Physically Or	ganic Chemistry	Institute of Organic Chemistry		
ECTS		od of grading	Only after succ. co			
7	1	rical grade				
Duration Module level Other pr		Other prerequisite	5			
1 seme	ester	undergraduate	ses in the respectiv (usually 70% of exe	ve classes as specific ercises to be success	successful completion of exerci- ed at the beginning of the course sfully completed) as well as regu- naximum of 2 incidents of unexcu	
Conter	nts	<u>,</u>	<u> </u>			
the exa on rea well as	ample o ctions t s rearra	of carbonyl compound o complex reaction m ngement.	ds, it extends the studen	its' knowledge of sul	cific reactions of aromatics. Using ostitution, elimination and additi lation and reduction reactions as	
Intend	ed lear	ning outcomes				
bonyl they ca unkno	compou an plan wn read	unds. They are able to and formulate multi- ctions.	e describe specific reacti stage syntheses with co	ons of carbonyls and mplex reaction mech	se the varying reactivity of car- d aromatics. For that purpose, nanisms and can transfer them to	
Course	<b>es</b> (type	, number of weekly c	ontact hours, language -	<ul> <li>if other than Germa</li> </ul>	an)	
		·	kly contact hours) and c			
			e, language — if other th le can be chosen to earr		ation offered — if not every seme	
or 90 r each (a	ninutes approx.	each; 3 written exam	ninations: approx. 60 mi Il examination in groups	nutes each) or b) ora	itten examinations: approx. 60 al examination of one candidate x. 30 minutes)	
-	tion of		0			
Additio	onal inf	ormation				
Workle	oad					
Teachi	ing cycl	e				
Referre	ed to in	LPOI (examination	regulations for teaching-	degree programmes	)	
			Bioorganische Chemie			
	é appea		-			
First st First st First st	tate exa tate exa tate exa	mination for the teac mination for the teac mination for the teac	hing degree Hauptschul	e Didactics in Chemi e Chemistry (2009) e Didactics in Chemi	istry (Primary School) (2009) istry (Secondary School) (2009)	

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

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

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	cord Lehramt Grundschulen (Unterrichtsfach) Chemie - 2009	

Modul					Abbreviation	
Organ	ic Chem	nistry 3 (teaching de	gree for secondary schoo	ls)	08-0C3-LA-102-m01	
Modul	e coord	inator		Module offered by		
holder	r of the l	Professorship of Orga	anic Chemistry	Institute of Organic Chemistry		
ECTS	1	od of grading	Only after succ. con		,	
6	_	rical grade	08-0C1 or 08-0C1-G			
Duration Module level Other prere		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	
Conte	nts		<b>,</b>			
radica	ls. It dis		ntal principles of stereos		reactions, carbenes, nitriles and symmetric catalysis, organome-	
Intend	led lear	ning outcomes				
asymn	netric ca		-		tereoselective syntheses and Fhey are able to conduct retrosyr	
Course	<b>es</b> (type	, number of weekly c	ontact hours, language –	- if other than Germa	an)	
V + Ü (	(no info	rmation on SWS (wee	ekly contact hours) and co	ourse language avail	able)	
			be, language — if other tha ule can be chosen to earn		tion offered — if not every seme	
or 90 r each (a	minutes approx.	each; 3 written exar	ninations: approx. 60 mir al examination in groups	nutes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)	
	tion of		•			
Additi	onal inf	ormation				
Workle	oad					
Teachi	ing cycl	ρ				
	ing cycl	~				
Doferr	od to in	IPOL (avamination	regulations for teaching-o	dograa programme -		
Referr				regree programmes		
 Madul		are in				
	e appea		hing dogroo Crundoshula	Chomistry (2007)		
			ching degree Grundschule ching degree Hauptschule			
			ching degree Realschule (			
First st						
			ching degree Gymnasium			

Module title				Abbreviation
Organic Chem	nistry 4 - advanced cours	e		08-0C4-LAGY-102-m01
Module coord	inator		Module offered by	<u> </u>
holder of the	Chair of Organic Chemist	ry II	Institute of Organic	Chemistry
ECTS Meth	ECTS Method of grading Only after succ.		pl. of module(s)	
5 numerical grade 08-0C1 or 08-0C		08-0C1 or 08-0C1-G	HR	
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				
				nd syntheses, working with spe- ification methods and product
Intended lear	ning outcomes			
able to charac	cterise and categorise dy	es. Students are able	to describe the stru	actions and syntheses. They are cture and selective synthesis of ydrates, fats, terpenes and stero-
Courses (type	, number of weekly cont	act hours, language —	· if other than Germa	ın)
V + Ü (no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)
	<b>sessment</b> (type, scope, l ion on whether module o			tion offered — if not every seme-
or 90 minutes each (approx.		itions: approx. 60 mir kamination in groups	utes each) or b) ora	tten examinations: approx. 60 l examination of one candidate . 30 minutes)
Allocation of				
Additional inf	ormation			
Workload				
Teaching cycl	e			
Referred to in	LPOI (examination reg	ulations for teaching-o	legree programmes)	
§ 62 (1) 2. Che	emie "Organische und Bi	oorganische Chemie"		
Module appea	ars in			
First state exa First state exa First state exa	mination for the teachin mination for the teachin mination for the teachin mination for the teachin mination for the teachin	g degree Hauptschule g degree Realschule ( g degree Gymnasium	Chemistry (2009) Chemistry (2009) Chemistry (2009)	

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	cord Lehramt Grundschulen (Unterrichtsfach) Chemie - 2009	

Modul		Abbreviation					
-	ic Chemistry - laboratory cours	o8-OC-Prakt-GHR-o	92-m01				
	schools)						
	Module coordinator Module offered by						
	ers Organische Chemie (Organi		Institute of Organic	Chemistry			
ECTS	Method of grading	Only after succ. con	npl. of module(s)				
5	(not) successfully completed						
Duratio	· · · · · · · · · · · · · · · · · · ·	Other prerequisites					
1 seme							
Conter							
lated lo dition their k	odule gives students the oppo ecture(s). After a safety briefing to those experiments, student nowledge. The course focuses ions of organic chemistry, sim	g, the students autono s will be expected to ta on the safe handling c	mously conduct expo lke oral tests and wri If hazardous substan	eriments in the labou te lab reports to den ices, simple experim	ratory. In ad- nonstrate		
Intend	ed learning outcomes						
rations error se in the l	nts know how to safely handle of organic chemistry. They are ources. They are able to conne laboratory.	e able to analyse the yi ct the theoretical aspe	eld and purity of the cts covered in the le	products and identi cture with practical e	fy possible		
Course	es (type, number of weekly con	tact hours, language –	- if other than Germa	n)			
P (no i	nformation on SWS (weekly co	ntact hours) and cours	e language available	2)			
	<b>d of assessment</b> (type, scope, formation on whether module			tion offered — if not	every seme-		
Assess	ost-experiment examination tal sment offered: once a year, sur age of assessment: German or	nmer semester	approx. 15 minutes e	ach), log (approx. 5	to 10 pages)		
Allocat	tion of places						
Additio	onal information						
Worklo	bad						
Teachi	ng cycle						
Referre	ed to in LPO I (examination reg	gulations for teaching-	degree programmes)				
<ul><li>§ 42 (1) 2. Chemie "Organische und Bioorganische Chemie"</li><li>Module appears in</li></ul>							
First state examination for the teaching degree Grundschule Chemistry (2009)							
First state examination for the teaching degree Grundschule Chemistry (2009) First state examination for the teaching degree Grundschule Didactics in Chemistry (Primary School) (2009)							
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 Sonderpädagogik Didactics in Chemistry (Secondary School) (2009)							
First state examination for the teaching degree Sonderpädagogik Didactics in Chemistry (Middle School) (2013)							
	ate examination for the teachi						
First st	ate examination for the teachi	ng degree Mittelschule	Didactics in Chemis	try (Middle School)	(2013)		
LA Grunds	chulen Chemistry (2009)		enerated 26-Aug-2024 • exan ndschulen (Unterrichtsfach) C	-	page 32 / 40		

coord of lect Metho numer	troscopy 1 (teaching deg inator ure "Organische Chemie od of grading rical grade	-	hools) Module offered by	o8-OC-Spec-LAGY-092-mo1		
of lect <b>Metho</b> numer	ure "Organische Chemie od of grading		Module offered by	l		
Metho numer	od of grading					
numei 1		Only after succ. com	Institute of Organic	Chemistry		
า	rical grade		pl. of module(s)			
ter	Duration Module level Other prerequisites					
	1 semester undergraduate					
s						
		e spectroscopic meth	ods of infrared spec	troscopy, mass spectrometry and		
d learr	ning outcomes					
		t spectroscopic meth	ods, to evaluate a s	pectrum and to draw conclusions		
(type,	number of weekly conta	ct hours, language —	if other than Germa	in)		
format	ion on SWS (weekly cont	act hours) and cours	e language available	2)		
				tion offered — if not every seme-		
nutes pprox.	each; 3 written examina 20 minutes) or c) oral ex	tions: approx. 60 min amination in groups (	utes each) or b) ora	l examination of one candidate		
on of p	olaces					
nal info	ormation					
ıd						
g cycl	9					
l to in	LPOI (examination regu	lations for teaching-c	legree programmes)			
2. Che	mie "Organische und Bio	oorganische Chemie"				
te exai te exai te exai	mination for the teaching mination for the teaching mination for the teaching	g degree Hauptschule g degree Realschule C g degree Gymnasium	Chemistry (2009) Chemistry (2009) Chemistry (2009)			
	d learr s are a g the (type, format of ass promati writte nutes pprox. ge of a on of p nal info d g cycle d to in 2. Che appea te exal te exal te exal te exal	g the molecular structure. (type, number of weekly conta- formation on SWS (weekly conta- formation on whether module ca- promation on whether module ca- written examinations (1 writter nutes each; 3 written examination prox. 20 minutes) or c) oral ex- ge of assessment: German or Er- on of places mal information ad g cycle to in LPO I (examination regu- 2. Chemie "Organische und Bio appears in te examination for the teaching te examination for the teaching	d learning outcomes s are able to describe important spectroscopic meth g the molecular structure. (type, number of weekly contact hours, language — formation on SWS (weekly contact hours) and course of assessment (type, scope, language — if other that prmation on whether module can be chosen to earn written examinations (1 written examination: approx nutes each; 3 written examinations: approx. 60 min poprox. 20 minutes) or c) oral examination in groups ( ge of assessment: German or English on of places al information d to in LPO I (examination regulations for teaching-c 2. Chemie "Organische und Bioorganische Chemie" appears in te examination for the teaching degree Grundschule te examination for the teaching degree Realschule C te examination for the teaching degree Gymnasium	d learning outcomes s are able to describe important spectroscopic methods, to evaluate a s g the molecular structure. (type, number of weekly contact hours, language — if other than German formation on SWS (weekly contact hours) and course language available of assessment (type, scope, language — if other than German, examina prmation on whether module can be chosen to earn a bonus) written examinations (1 written examination: approx. 90 minutes; 2 written inutes each; 3 written examinations: approx. 60 minutes each) or b) or approx. 20 minutes) or c) oral examination in groups (groups of 2, approx ge of assessment: German or English on of places mal information d d d to in LPO I (examination regulations for teaching-degree programmes) 2. Chemie "Organische und Bioorganische Chemie"		

Module ti	tle			Abbreviation			
Physical a	and Theoretical Chemistry 3:	Symmetry and Quant	tum Chemistry	08-PC3-092-m01			
Module coordinator			Module offered by				
	f lecture "Quantenchemie"		Institute of Physica	l and Theoretical Che	emistry		
	ethod of grading	Only after succ. com	pl. of module(s)				
6 ni	umerical grade						
Duration	Module level	Other prerequisites					
1 semeste	er undergraduate	Admission prerequis	site to assessment:	successful completion	on of exerci-		
		ses in the respective	e classes as specifie	d at the beginning of	f the course		
		(usually 70% of exer	cises to be success	fully completed) as v	vell as regu-		
		lar attendance of exe	ercises (usually a m	aximum of 2 inciden	ts of unexcu-		
		sed absence).					
Contents							
This modu	ule discusses the fundamenta	al principles of quanti	um chemistry and sy	mmetry in chemistry	/.		
	learning outcomes			, , , , , , , , , , , , , , , , , , , ,	,		
		o fundamental avia -:-	aloc of quantum cha	micta and arms	v in cho		
	have become familiar with th d are able to apply the knowle			emistry and symmetr	y in che-		
· · · · · · · · · · · · · · · · · · ·		- ·	•	(m)			
	type, number of weekly conta						
	+ Ü (no information on SWS (						
	f assessment (type, scope, la			ition offered — if not	every seme-		
	mation on whether module c						
	ritten examinations (1 writter						
-	ritten examinations: 60 minu oral examination in groups (g			andidate each (appro	ox. 20 minu-		
-			5 minutes)				
Allocation	i or places						
Additiona	l information						
Workload							
Teaching	cvcle						
	•						
Poforrad +	to in LPO I (examination regu	lations for toaching d	lagraa programmaa				
Keleneul			iegiee programmes)				
Module ap							
	degree (1 major) Biochemist						
	degree (1 major) Chemistry (2						
Bachelor' degree (1 major) Chemistry (2009)							
Bachelor' degree (1 major) Mathematics (2012)							
Bachelor' degree (1 major) Mathematics (2013) Bachelor' degree (1 major) Computational Mathematics (2000)							
	Bachelor' degree (1 major) Computational Mathematics (2009) Bachelor' degree (1 major) Computational Mathematics (2012)						
	degree (1 major) Computatio						
	degree (1 major) FOKUS Cher						
	examination for the teaching		Chemistry (2009)				
	examination for the teaching						
	examination for the teaching	,					
	en Chemistry (2009)	JMU Würzburg • ge	nerated 26-Aug-2024 • exam		page 34 / 40		
		cord Lehramt Grun	dschulen (Unterrichtsfach) (	.hemie - 2009			



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	cord Lehramt Grundschulen (Unterrichtsfach) Chemie - 2009	

Module					Abbreviation	
Physic	al Cher	nistry 4: Statistical Th	ermodynamics		08-PC4-092-m01	
Module	e coord	inator		Module offered by		
		ture "Statistische Ther	modynamik"	Institute of Physical and Theoretical Chemistry		
ECTS		od of grading	Only after succ. co	· · · · · · · · · · · · · · · · · · ·		
3		rical grade				
<u> </u>		Module level	Other prerequisites	-		
1 seme		undergraduate			successful completion of exerci-	
1 Seme	SICI	undergraduate			•	
				ses in the respective classes as specified at the beginning of the c (usually 70% of exercises to be successfully completed) as well as		
					aximum of 2 incidents of unexcu	
			sed absence).	cicises (asaany a m		
C t	4-		sed absence).			
Conten	-		utal a da 11 - 6 - 11	at a laboration of the		
			ntal principles of statis	stical thermodynamic	5.	
		ning outcomes				
		e become familiar with wledge they have deve		iples of statistical th	ermodynamics and are able to	
Course	<b>s</b> (type	, number of weekly cor	ntact hours, language -	– if other than Germa	ın)	
V + Ü (r	no infoi	mation on SWS (week	ly contact hours) and c	ourse language avail	able)	
					tion offered — if not every seme	
			e can be chosen to earr			
					tten examinations: approx. 60 l examination of one candidate	
			examination in groups			
Allocat						
 A d d := : : : :	nal inf	ormation				
Additio	onat ini	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	ed to in	LPOI (examination re	gulations for teaching-	degree programmes)		
Module	e appea	ars in				
Bachel	or' deg	ree (1 major) Chemistry	y (2010)			
	-	ree (1 major) Chemistr	-			
	-	ree (1 major) FOKUS Ch				
			ing degree Grundschul			
			ing degree Hauptschul			
			ing degree Realschule			
			ing degree Gymnasium	Chemistry (2009)		
Firct ct	2t0 0V2	mination for the teach	ing degree Mittelschule	Chomistry (2012)		

Module	e title				Abbreviation		
Electro	Electronic structure and spectroscopy				08-PC-ESS-092-m01		
Module coordinator				Madula affarad bu			
				Module offered by			
	lecturer of lecture "Elektronische Struktur and Spektrosko- pie" (Electronic Structure and Spectroscopy)						
ECTS	·	od of grading	Only after succ. con	pl. of module(s)			
3	·	rical grade					
Duratio		Module level	Other prerequisites				
1 seme	ster	undergraduate	ses in the respective (usually 70% of exe	e classes as specifie rcises to be successf	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						
Fundar	nentals	of atomic and molecula	r structure as well as	spectroscopy.			
Intende	ed learı	ning outcomes					
		e learned the fundament nowledge they have dev		ecular structure as w	vell as spectroscopy and are able		
Course	<b>s</b> (type	, number of weekly cont	act hours, language –	· if other than Germa	n)		
v + Ü (r	no infor	mation on SWS (weekly	contact hours) and co	ourse language avail	able)		
		essment (type, scope, la on on whether module o			tion offered — if not every seme-		
or 90 m each (a	ninutes approx.		itions: approx. 60 mir kamination in groups	utes each) or b) oral	ten examinations: approx. 60 l examination of one candidate . 30 minutes)		
Allocat	ion of p	olaces					
Additio	onal inf	ormation					
Worklo	ad						
Teachi		9					
	.5 .,	-					
Referre	<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)						
Module	e annea	in in					
First sta First sta First sta First sta	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)						

Modul					Abbreviation
Physical Chemistry (teaching degree for secondary school				5)	08-PC-GHR-102-m01
Modul	e coord	inator		Module offered by	
für Stu	dierend	ture "Thermodynamik, Ki le der Biologie, Lebensm emie GHR"	-	Institute of Physica	l and Theoretical Chemistry
ECTS		od of grading	Only after succ. com	pl. of module(s)	
4	1	rical grade			
Duratio	on .	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
This m	odule c	liscusses the fundament	al principles of therm	odynamics, kinetics	and electrochemistry.
	-	ning outcomes			
		e become familiar with th re able to understand an			nics, kinetics and electroche- re and engineering.
Course	<b>s</b> (type	, number of weekly conta	act hours, language —	- if other than Germa	n)
V + Ü (I	no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)
	exami	ion on whether module c nation (approx. 60 minut <b>places</b>		a bonus)	
Additic	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regu	lations for teaching-o	degree programmes)	
	_	mie "Allgemeine und An			
Module					
First st First st	ate exa ate exa	mination for the teaching	g degree Grundschule g degree Hauptschule	e Didactics in Chemis e Chemistry (2009)	stry (Primary School) (2009) stry (Secondary School) (2009)
First st (2009)	ate exa		g degree Sonderpäda	gogik Didactics in Cl	nemistry (Secondary School)
Eirct ct	ate exa	mination for the teaching	g degree Sonderpäda	gogik Didactics in Cl	nemistry (Middle School) (2013)

Module	e title				Abbreviation
Basic M	<b>Nathem</b>	atics (teaching degree)			08-PC-VKM-LA-102-m01
Module	e coord	inator		Module offered by	
			(Mathematics)		l and Theoretical Chemistry
ECTS	ecturer of block course "Mathematik" (Mathematics)Institute of Physical and Theoretical ChemistCTSMethod of gradingOnly after succ. compl. of module(s)				
2		successfully completed		1	
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	Its				
					sed in physical/theoretical che- n thermodynamics and kinetics.
Intend	ed lear	ning outcomes			
Studer mistry.	its have	e been trained in mathem	natical methods. They	v are able to apply th	ose methods to problems in che-
Course	<b>s</b> (type	, number of weekly conta	ict hours, language –	- if other than Germa	in)
V + Ü (I	no infoi	mation on SWS (weekly	contact hours) and co	ourse language avail	able)
		essment (type, scope, la on on whether module ca			tion offered — if not every seme-
exercis	es (4 w	ork sheets)			
Langua	ige of a	ssessment: German or E	nglish		
Allocat	ion of p	olaces			
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regu	lations for teaching-	degree programmes)	
			0		
Module	e appea	urs in			
		mination for the teaching	g degree Grundschule	e Chemistry (2009)	
					stry (Primary School) (2009)
First st	First state examination for the teaching degree Hauptschule Chemistry (2009)				
	First state examination for the teaching degree Hauptschule Didactics in Chemistry (Secondary School) (2009)				
		mination for the teaching			
		mination for the teaching	,		
(2009)					hemistry (Secondary School)
			,		hemistry (Middle School) (2013)
		mination for the teaching			the (Middle Celeral) ()
rirst st	ate exa	mination for the teaching	g aegree Mittelschule	udactics in Chemis	stry (Middle School) (2013)

Module					Abbreviation
Theore	tical M	odels in Chemistry (teac	hing degree for secor	ndary schools)	08-TC-LA-092-m01
Module coordinator Module offered by					
lecture	r of lect	ure "Quantenchemie"		Institute of Physic	al and Theoretical Chemistry
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
3	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate	Admission prerequis	site to assessment:	successful completion of exerci-
			ses in the respective	e classes as specifi	ed at the beginning of the course
			(usually 70% of exe	cises to be succes	sfully completed) as well as regu-
			lar attendance of ex	ercises (usually a n	naximum of 2 incidents of unexcu
			sed absence).		
Conten	ts				
spin, tł	ne Paul		inants, the Hartree-Fo	ock method, correla	uantum chemistry. It focuses on ation energy, configuration interac odels of H2+.
Intende	ed lear	ning outcomes			
Studen	ts are a	able to describe excited s	tates of molecules w	ith the help of key (	concepts and models.
Course	<b>s</b> (type	, number of weekly conta		if other than Germ	an)
V + Ü (r	no infoi	mation on SWS (weekly o	contact hours) and co	urse language ava	ilable)
		essment (type, scope, la on on whether module ca			ation offered — if not every seme-
or 90 m	ninutes		tions: approx. 60 min	utes each) or b) or	itten examinations: approx. 60 al examination of one candidate x. 30 minutes)
Allocat			<b>C</b> ,		
Additio	nal inf	ormation			
naunne					
Worklo					
WORKIO	au				
Teachi	ng cycl	e			
Referre	d to in	LPOI (examination regu	lations for teaching-o	legree programmes	;)
		•			
Module					
		mination for the teaching			
		mination for the teaching			
		mination for the teaching mination for the teaching			
		mination for the teaching			
			segree milleischule	chemistry (2013)	