

Module Catalogue

for the Subject

Mathematics

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

> Examination regulations version: 2019 Responsible: Faculty of Mathematics and Computer Science Responsible: Institute of Mathematics

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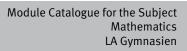
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The subject is divided into

section / sub-section	ECTS credits	starting page
Scientific Discipline	92	8
Compulsory Courses	46	9
Compulsory Electives	46	14
Subfield Basics in Linear Algebra	5	15
Subfield Basics in Analysis	5	18
Subfield Basics in Higher Analysis	5	21
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Focus Basics in Algebra and Applied Mathematics	5	25
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Subfield Geometrie	10	32
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Paper	4	43
Freier Bereich (general as well as subject-specific electives)		45
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Module Group group Mathematics and Didactics of Mathema- tics		47
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Learning Outcomes

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German contents and learning outcome available but not translated yet.

Wissenschaftliche Befähigung

- Die Absolventinnen und Absolventen sind vertraut mit den Arbeitsweisen und der zugehörigen Fachsprache der Mathematik und beherrschen die Methoden mathematischen Denkens und Beweisens.
- Die Absolventinnen und Absolventen besitzen grundlegende Kenntnisse in Stochastik und mindestens einem weiteren Gebiet der Angewandten Mathematik und können sicher mit den Methoden dieser Gebiete umgehen.
- Die Absolventinnen und Absolventen besitzen grundlegende Kenntnisse ausgewählter Gebiete der Reinen Mathematik und sind vertraut mit den grundlegenden Beweismethoden dieser Gebiete.
- Die Absolventinnen und Absolventen sind geschult in analytischem Denken, besitzen ein hohes Abstraktionsvermögen, universell einsetzbare Problemlösungskompetenz und die Fähigkeit, komplexe Zusammenhänge zu strukturieren.
- Die Absolventinnen und Absolventen sind in der Lage, sich selbständig mithilfe von Fachliteratur in weitere Gebiete der Mathematik einzuarbeiten.
- Die Absolventinnen und Absolventen sind in der Lage, ihre Kenntnisse, Ideen und Problemlösungen verständlich zu präsentieren.
- Die Absolventinnen und Absolventen besitzen die für ein weiterführendes, insbesondere Master-
- Studium, erforderlichen Grundkenntnisse, Denk- und Arbeitsweisen und Methodenkenntnisse.
- Die Absolventinnen und Absolventen kennen die Regeln guter wissenschaftlicher Praxis und sind in der Lage, sie in ihrer eigenen Arbeit zu beachten.
- Die Absolventinnen und Absolventen können Konzepte, Prinzipien, Methoden und evidenzbasierte Erkenntnisse aus dem Bereich der Mathematikdidaktik interpretieren und anwenden.
- Die Absolventinnen und Absolventen können den Einsatz von Medien im Mathematikunterricht und die Betreuung von Schülerinnen und Schülern an ausgewählten Lehr-Lernsituationen wissenschaftlich fundiert reflektieren.

Befähigung zur Aufnahme einer Erwerbstätigkeit

- Die Absolventinnen und Absolventen sind geschult in analytischem Denken, besitzen ein hohes Abstraktionsvermögen, universell einsetzbare Problemlösungskompetenz und die Fähigkeit, komplexe Zusammenhänge zu strukturieren.
- Die Absolventinnen und Absolventen sind in der Lage, ihre Kenntnisse, Ideen und Problemlösungen zielgruppenorientiert verständlich zu formulieren und zu präsentieren.
- Die Absolventinnen und Absolventen sind in der Lage, konkrete Probleme aus anderen Gebieten zu erkennen, strukturieren und modellieren, mit mathematischen Methoden Lösungswege zu entwickeln.
- Die Absolventinnen und Absolventen besitzen ein ausgeprägtes Durchhaltevermögen bei der Lösung komplexer Probleme.
- Die Absolventinnen und Absolventen sind in der Lage, konstruktiv und zielorientiert in Teams zu arbeiten.
- Die Absolventinnen und Absolventen sind in der Lage, sich weitere Wissensgebiete selbständig, effizient und systematisch zu erschließen.
- Die Absolventinnen und Absolventen sind vertraut mit dem Umgang von digitalen Medien im Mathematikunterricht und können mathematische Software gewinnbringend in Lehr-Lernsituationen einsetzen.

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- Die Absolventinnen und Absolventen besitzen die Fähigkeit, in interdisziplinär zusammengesetzten Teams gestaltend mitzuwirken.
- Die Absolventinnen und Absolventen realisieren Konzepte, Prinzipien, Methoden und evidenzbasierte Erkenntnisse aus dem Bereich der Mathematikdidaktik im Mathematikunterricht.

Persönlichkeitsentwicklung

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- Die Absolventinnen und Absolventen sind geschult in analytischem Denken, besitzen ein hohes Abstraktionsvermögen, universell einsetzbare Problemlösungskompetenz und die Fähigkeit, komplexe Zusammenhänge zu strukturieren.
- Die Absolventinnen und Absolventen sind in der Lage, gesellschaftliche, wirtschaftliche, historische, fachdidaktische und schulpraktische Entwicklungen und Prozesse kritisch zu reflektieren und zu bewerten.
- Die Absolventinnen und Absolventen sind in der Lage, in partizipativen Prozessen gestaltend mitzuwirken.
- Die Absolventinnen und Absolventen besitzen ein ausgeprägtes Durchhaltevermögen bei der Lösung komplexer Probleme.
- Die Absolventinnen und Absolventen sind in der Lage, Ideen und Lösungsvorschläge allgemeinverständlich und zielgruppenorientiert zu identifizieren, realisieren und präsentieren.

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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:

LASPO2015

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

07-Nov-2018 (2018-66)

This module handbook seeks to render, as accurately as possible, the data that is of statutory relevance according to the examination regulations of the degree subject. However, only the FSB (subject-specific provisions) and SFB (list of modules) in their officially published versions shall be legally binding. In the case of doubt, the provisions on, in particular, module assessments specified in the FSB/SFB shall prevail.

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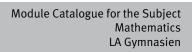




Scientific Discipline

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Compulsory Courses

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Module	e title				Abbreviation	
Introdu	uction i	nto Mathematical Thinki	ng and Working for T	eaching Degree	10-M-MDAL-152-m01	
(Germa	German Gymnasium)					
Module coordinator Module offered by						
Dean o	of Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics	
ECTS	Methe	od of grading	Only after succ. con	npl. of module(s)		
5	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	undergraduate				
Conten	nts					
					ion; basic concepts in mathema-	
		and functions; basic tec	hniques and method	s for proving; mathe	matical writing.	
		ning outcomes				
	asy mat				hematics. He/She is able to per- y and reasonably in written and	
	-	number of weekly contact hours, l	anguage — if other than Ger	man)		
V (1) +	Ü (1) +	V (1) + Ü (1)				
		Sessment (type, scope, langua ole for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
		15 pages) ssessment: German and	/or English			
Allocat	tion of _l	places				
Additio	onal inf	ormation				
Additic period.		ormation on module dura	ation: includes block	taught sessions pric	or to the beginning of the lecture	
Worklo	bad					
150 h						
Teachi	ng cycl	e				
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	mmes)		
§731N	Vr. 3 (2	ECTS credits) ECTS credits) ECTS credits)				
Module	e appea	ars in				
First st	ate exa	mination for the teaching mination for the teaching mination for the teaching	g degree Gymnasium	Mathematics (2019)	1	

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Module t	itle			Abbreviation
Overview	/ Linear Algebra for Teaching	Degree (German Gym	nasium)	10-M-LNL-Ü-191-m01
Module coordinator Module offer			Module offered by	<u> </u>
Dean of S	Studies Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS N	Aethod of grading	Only after succ. con	npl. of module(s)	
13 r	numerical grade			
Duration	Module level	Other prerequisites		
2 semest	er undergraduate			
Contents	;			
	ants; eigenvalue theory; bilin			equations; theory of matrices and baces; diagonalisability and Jor-
Intended	learning outcomes			
ply them knows at		n overview over the f etric background, is a	undamental notions	linear algebra and is able to ap- and methods of linear algebra, b each other and can present
Courses	(type, number of weekly contact hours, l	language — if other than Ger	rman)	
V (4) + V	(4) + Ü (2)			
	of assessment (type, scope, langua reditable for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
Language	nination of one candidate eac e of assessment: German and ent will have reference to the	/or English	10-M-LNL1 and 10-M	-LNL2.
Allocatio	n of places			
Addition	al information			
Workload	d			
390 h				
Teaching	; cycle			
Referred	to in LPO I (examination regulation	s for teaching-degree progra	mmes)	
§ 73 Nr.	2			
Module a	appears in			
	e examination for the teaching	,	-	
First state	e examination for the teachinន្	g degree Gymnasium	Mathematics (2023)	

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 11 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module	title				Abbreviation
Overview Analysis for Teaching Degree (German Gymnasium)			m)	10-M-ANL-Ü-191-m01	
Module coordinator				Module offered by	I
Dean of	Studie	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)	
16	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
2 semes	ster	undergraduate			
Content	s				
ries, dif	ferenti		n one variable, furthe		ivergence of sequences and se- erations, differential calculus
Intende	d learı	ning outcomes			
them in	depen ckgrou	dently, He/She has an ov nd and geometric interpr	verview over the fund	amental notions and	analysis and is able to apply d concepts of analysis, their ana- express them adequately in writ-
Courses	5 (type, n	number of weekly contact hours, l	anguage — if other than Ger	man)	
V (4) + \	/ (4) +	Ü (2)			
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether
Languag	ge of a	ion of one candidate eacl ssessment: German and, <i>r</i> ill have reference to the o	or English	10-M-ANL1 and 10-M	I-ANL2.
Allocati	on of p	olaces			
Additio	nal inf	ormation			
Workloa	ad				
480 h					
Teachin	g cycl	e			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
§ 73 N	r. 1				
Module	appea	ars in			
		mination for the teaching		-	
First sta	te exa	mination for the teaching	degree Gymnasium	Mathematics (2023)	

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Module	e title				Abbreviation	
		erential Equations and Co	omplex Analysis for T	eaching Degree	10-M-DFL-Ü-191-m01	
		nasium)			<u> </u>	
			Module offered by			
_		es Mathematik (Mathema		Institute of Mathem	natics	
ECTS		od of grading	Only after succ. com	npl. of module(s)		
12	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
2 seme	ster	undergraduate				
Conten	ts					
rems, is erstraß continu	solated producious de	singularities, meromorp tt theorem and theorem o	hic functions and Lau of Mittag-Leffler, conf n initial values, syste	urent series, residue ormal maps; exister	grals and Cauchy integral theo- theorem and applications, Wei- nce and uniqueness theorem, tial equations, matrix exponenti-	
Intende	ed lear	ning outcomes				
nary dif ges of t	fferenti hinkin	al equations. He/She is a g across the borders of d	able to relate these co ifferent branches in n	oncepts with one an nathematics.	analysis and the theory of ordi- other, and realises the advanta-	
		umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (4) + '						
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether	
oral exa Langua	aminat ige of a	ion of one candidate eacl ssessment: German and, vill have reference to the o	or English	10-M-DGLL and 10-N	1-FTHL.	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
360 h						
Teachi	ng cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
§731N						
Module		irs in				
First sta	ate exa	mination for the teaching mination for the teaching		-		

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Compulsory Electives

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Subfield Basics in Linear Algebra

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	data record Lehramt Gymnasien Mathematik - 2019	1

Module	e title				Abbreviation
Linear	Algebra	a 1 for Teaching Degree (German Gymnasium)		10-M-LNL1-191-m01
Module coordinator				Module offered by	<u> </u>
Dean o	of Studio	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	Its				
Basic n termina		and structures; vector sp	aces, linear maps, sy	stems of linear equa	ations; theory of matrices and de-
Intend	ed lear	ning outcomes			
ted wit	h the co	entral proof methods in li	near algebra and car	n apply them to solve	ear algebra. He/She is acquain- e easy problems. He/She is able m adequately in written form.
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)	
Ü (2)					
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	t every semester, information on whether
exercis	es eacl			n exercises (approx.	10 exercise sheets with approx. 4
Allocat					
Additio	onal inf	ormation			
Worklo	ad				
150 h					
-	ng cycl	e			
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	mmes)	
§731N					
_	e appea	urs in			
First st	ate exa	mination for the teaching mination for the teaching			

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Module	e title				Abbreviation
Linear	Algebra	a 2 for Teaching Degree ((German Gymnasium))	10-M-LNL2-191-m01
Module coordinator Module offered			Module offered by		
Dean o	fStudi	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Eigenva	alue the	eory, bilinear forms, Eucl	idean and unitary veo	ctor spaces, diagona	lisation and Jordan normal form.
Intende	ed lear	ning outcomes			
ted wit	h the c	entral proof methods in l	inear algebra and car	n apply them to solve	ear algebra. He/She is acquain- e easy problems. He/She is able m adequately in written form.
Course	S (type, r	number of weekly contact hours, I	language — if other than Ger	rman)	
Ü (2)					
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
exercis	es eacl			n exercises (approx.	10 exercise sheets with approx. 4
Allocat					
Additio	onal inf	ormation	-		
			-		
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	immes)	
<u></u> §73 N	lr. 2				
Module	e appea	ars in			
		mination for the teaching			
First sta	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (2023)	

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Subfield Basics in Analysis

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	data record Lehramt Gymnasien Mathematik - 2019	

Module	e title				Abbreviation	
Analysis 1 for Teaching Degree (German Gymnasium)			10-M-ANL1-191-m01			
Module	Module coordinator			Module offered by	<u> </u>	
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
ries; po	ower se		sics in differential ca		livergence of sequences and se- le; basics of integral calculus in	
Intende	ed lear	ning outcomes				
central	proof	nethods in analysis and o	can employ them to s	solve easy problems	He/She is acquainted with the . He/she is able to perform easy ts precisely and clearly in written	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)		
Ü (2)	-					
		Sessment (type, scope, langua Ile for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
exercis	es eacl			n exercises (approx.	10 exercise sheets with approx. 4	
Allocat						
Additio	onal inf	ormation				
Worklo	ad					
150 h						
Teachi	Teaching cycle					
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
§731N	lr. 1					
Module	e appea	ars in				
		mination for the teaching		-		
First sta	ate exa	mination for the teaching	degree Gymnasium	Mathematics (2023)		

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	e title				Abbreviation
Analysis 2 for Teaching Degree (German Gymnasium)				10-M-ANL2-191-m01	
Module coordinator				Module offered by	1
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	Its				
		gical considerations, bas on theorem.	sics in differential cal	culus in several vari	ables, inverse function theorem,
Intend	ed lear	ning outcomes			
central	proof	nethods in analysis and	can employ them to s	solve easy problems	He/She is acquainted with the . He/she is able to perform easy ts precisely and clearly in written
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)	
Ü (2)					
		Sessment (type, scope, langua Ile for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
exercis	es eacl			n exercises (approx.	10 exercise sheets with approx. 4
Allocat	ion of j	olaces			
Additio	onal inf	ormation			
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
§ 73 N	lr. 1				
Module	e appea	ars in			

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	data record Lehramt Gymnasien Mathematik - 2019	



Subfield Basics in Higher Analysis

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 21 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Modul	e title				Abbreviation
Ordina	Ordinary Differential Equations for Teaching Degree (German Gymnasium) 10-M-DGLL-191-m01				
Module coordinator Module offered b			y		
Dean o	of Studi	es Mathematik (Mathema	atics)	Institute of Mathe	ematics
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ester	undergraduate			
Conter	nts				
					nitial values; systems of linear dif
		tions; matrix exponentia	i series; inear differe	ntial equations of	nigher order.
	-	ning outcomes	dementel company	n d modele e de la 671	the same of a walter and all the same to be
		s acquainted with the fun /she is able to apply the			theory of ordinary differential
Course	es (type, r	number of weekly contact hours, I	language — if other than Ger	man)	
Ü (2)					
a) writt b) oral c) oral Langua credita	ten exa examir examin age of a ible for		ach (15 to 30 minutes of 2, 10 to 15 minutes	5) or	
Allocal	tion of _l	DIACES			
 Additid	onal inf	ormation			
Worklo	bad				
150 h					
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
§ 73 N	Vr. 1				
Modul	e appea	ars in			
First st	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (201	9)
First st	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (202	2)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 22 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module	e title				Abbreviation	
Introductory Complex Analysis for Teaching Degree (German Gymnasium) 10-M-FTHL-191-m01					10-M-FTHL-191-m01	
Module coordinator Module offere			Module offered by	,		
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathe	matics	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
rems, i erstraß	solatec produ	l singularities, meromorp ct theorem and theorem o	hic functions and La	urent series, residu	egrals and Cauchy integral theo- e theorem and applications, Wei-	
		ning outcomes				
		acquainted with the fun ethods to practical probl	•	nd methods in com	plex analysis. He/she is able to	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Gei	rman)		
Ü (2)						
		eessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if i	not every semester, information on whether	
b) oral c) oral	examir examin Ige of a	mination (approx. 90 to 1 nation of one candidate e ation in groups (groups o ssessment: German and bonus	ach (15 to 30 minute of 2, 10 to 15 minutes	s) or		
Allocat	ion of _l	olaces				
Additio	nal inf	ormation				
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
\$73 N	§ 73 Nr. 1					
Module	appea	ars in				
		mination for the teaching		-		
First sta	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (202	3)	

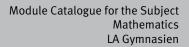
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	data record Lehramt Gymnasien Mathematik - 2019	



Subfield Stochastics and Basics in Algebra and Applied Mathematics

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	data record Lehramt Gymnasien Mathematik - 2019	





Focus Basics in Algebra and Applied Mathematics

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 25 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module title					Abbreviation	
Introdu	ictory A	Algebra for Teaching Deg	ree (German Gymnas	ium)	10-M-ALGL-191-m01	
Module coordinator Mo			Module offered by			
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics	
ECTS	Methe	od of grading	Only after succ. com	pl. of module(s)		
5	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
phism metric Topics Topics	theorei groups in ring in num	ns, solvability, group ope , dihedral groups). theory (particularly ideals ber theory (particularly E	erations, Sylow theore s, divisibility, polynor uclidean algorithm, F	ems; examples: cycl mial rings, irreducibi ermat's little theore	m, Euler's theorem, Chinese re-	
		rem, residue class rings a ning outcomes	ind their unit groups,	quadratic number ri	ngs).	
			contial mothods and	basic notions in alg	ebra. He/She is acquainted with	
		ncepts in this field, and is				
		number of weekly contact hours, l		•	, ,	
Ü (2)						
		Sessment (type, scope, langua ole for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether	
b) oral c) oral	examir examin Ige of a	mination (approx. 90 to 1 nation of one candidate e nation in groups (groups o ssessment: German and, bonus	ach (15 to 30 minutes of 2, 10 to 15 minutes	5) or		
Allocat	ion of	places				
			· · · · · · · · · · · · · · · · · · ·			
Additio	onal inf	ormation				
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	mmes)		
§731N	lr. 2 (2	ECTS credits), § 73 Nr. 5	(3 ECTS credits)			
Module	e appea	ars in				
First sta	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (2019)		
First sta	ate exa	mination for the teaching	degree Gymnasium	Mathematics (2023)		

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	data record Lehramt Gymnasien Mathematik - 2019	

Module title Abbreviation					Abbreviation
Applied Algebra for Teaching Degree (German Gymnasium)					10-M-AALL-191-m01
Module coordinator				Module offered by	
Dean o	of Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS	1	od of grading	Only after succ. con	npl. of module(s)	
5		successfully completed			
Duratio		Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	nts				
theory,	, solvat	theory (particularly algel bility of equations, cycloto of algebra and number th	omic fields, finite fiel	ds).	constructions, basics in Galois omputer algebra).
Intend	ed lear	ning outcomes			
	uainted				ebra and its applications. He/She damental proof methods inde-
Course	S (type, 1	number of weekly contact hours, l	anguage — if other than Ger	man)	
Ü (2)					
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
b) oral c) oral	examir examir age of a	mination (approx. 90 to 1 nation of one candidate e nation in groups (groups o ssessment: German and, bonus	ach (15 to 30 minutes of 2, 10 to 15 minutes	s) or	
Allocat	tion of	olaces			
Additio	onal inf	ormation			
Worklo	bad				
150 h					
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
§731N	Nr. 2 (2	ECTS credits), § 73 Nr. 5	(3 ECTS credits)		
Module	e appea	ars in			
First st	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (2019)	

Modul	e title				Abbreviation
Numerical Mathematics 1 for Teaching Degree (German Gymnasium)					10-M-NUL1-191-m01
Module coordinator Module			Module offere	d by	
Dean c	of Studi	es Mathematik (Mathema	atics)	Institute of Ma	thematics
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s	5)
5	(not)	successfully completed			
Durati	on	Module level	Other prerequisites		
1 seme	ester	undergraduate			
Conter	nts	~	·		
		stems of linear equations tion with polynomials, sp			ar equations and systems of equati-
		ning outcomes		ine functions, n	
The stu	udent is				numerical mathematics, applies then
Course	es (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)	
Ü (2)					
a) writt b) oral c) oral Langua	ten exa examir examin	nle for bonus) mination (approx. 90 to 1 nation of one candidate e nation in groups (groups o ssessment: German and bonus	ach (15 to 30 minutes of 2, 10 to 15 minutes	s) or	
Alloca	tion of _l	places			
Additio	onal inf	ormation			
Worklo	oad				
150 h					
Teachi	ing cycl	e			
		LPO I (examination regulation		immes)	
		ECTS credits), § 73 Nr. 5	(3 ECTS credits)		
	e appea				
		mination for the teaching			
First st	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (2	2023)

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	data record Lehramt Gymnasien Mathematik - 2019	





Focus Stochastics

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 29 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module title					Abbreviation	
Stochastics for Teaching Degree (German Gymnasium)					10-M-STL-191-m01	
Module coordinator				Module offered by		
Dean of	fStudie	es Mathematik (Mathema	atics)	Institute of Mathem	atics	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
6		rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme		undergraduate				
Conten						
assump discrete condition ce and	otions: e distril onal pr correla	basic notions of descript butions, elements of com obability, stochastic inde	ive statistics, discret binatorics, principle ependence, common ms, law of the large n	e probability spaces of inclusion and exc distributions, expec umbers, central limi	sation and discussion of basic , random variables, important lusion, multistage experiments, ted value and variance, covarian- it theorem, confidence intervals	
Intende	ed learr	ning outcomes				
	n Gymn	asium. He/She is able to			ics, as required for teaching at and handle the concept of stati-	
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (4) +	Ü (2)					
		e ssment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
b) oral c) oral e	examin examin ge of a	nination (approx. 90 to 1 ation of one candidate e ation in groups (groups c ssessment: German and, bonus	ach (15 to 30 minutes of 2, 10 to 15 minutes			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
180 h						
Teachir	ıg cycl	9				
		LPO I (examination regulations	s for teaching-degree progra	mmes)		
§731N		•				
Module				Mathematics ()		
		mination for the teaching gram Mathematics (2023)		mathematics (2019)		
		mination for the teaching		Mathematics (2023)		

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 30 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module title Abbreviation					Abbreviation
Stochastics 1 for Teaching Degree (German Gymnasium)					10-M-STOL-191-m01
Module coordinator				Module offered	by
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mat	hematics
ECTS	Meth	od of grading	Only after succ. con	1pl. of module(s)	
6	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	Its	~	• •		
continu chastic varianc	uous di indep ce, limit	stributions: normal distri endence, elementary cor t theorems: law of large r	bution, random varia	ble, distribution characteristics of	measure and integration theory, function, product measures and sto f distributions: expected value and
Intend	ed lear	ning outcomes			
		acquainted with fundan lems and knows about th			astics, applies these methods to
Course	S (type, r	number of weekly contact hours,	language — if other than Gei	rman)	
V (4) +	Ü (2)				
Metho	d of ass	Sessment (type, scope, langua	age — if other than German,	examination offered —	- if not every semester, information on whether
		le for bonus)			
b) oral c) oral	examir examin age of a	mination (approx. 90 to a nation of one candidate e nation in groups (groups o ssessment: German and bonus	each (15 to 30 minutes of 2, 10 to 15 minutes	•	
Allocat	ion of _l	places			
Additio	onal inf	ormation			
Worklo	ad				
180 h					
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	immes)	
§73∣N	lr. 3				
Modul	e appea	ars in			
		mination for the teaching mination for the teaching	,	-	019)

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	data record Lehramt Gymnasien Mathematik - 2019	





Subfield Geometrie

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 32 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module title					Abbreviation	
Elementary Geometry for Teaching Degree (German Gymnasium)				sium)	10-M-EGEL-191-m01	
Module	e coord	inator		Module offered by		
Dean o	f Studi	es Mathematik (Mathen	natics)	Institute of Mathem	natics	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	Its					
Congru	ience g ss and	eometry, transformation ruler constructions, sel	n geometry, similarity g	geometry, elementar	lidean geometry with discussion. y analytic geometry, geometric ted topics in affine and/or pro-	
Intend	ed lear	ning outcomes				
thods, tuition	so that and str	he/she masters the ba	sic notions of geometr	y. He realizes the m	l working as well as of proof me- utual stimulation of geometric in- imagination, and implicitly learn	
Course	S (type, r	number of weekly contact hours	, language — if other than Ger	rman)		
V (4) +	Ü (2)					
		sessment (type, scope, lang le for bonus)	uage — if other than German, o	examination offered — if no	ot every semester, information on whether	
b) oral c) oral	examir examin age of a	mination (approx. 90 to nation of one candidate ation in groups (groups ssessment: German an bonus	each (15 to 30 minutes of 2, 10 to 15 minutes	-		
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Worklo	ad					
300 h						
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)		
§731N						
Module		urs in				
		mination for the teachingram Mathematics (202		Mathematics (2019)		

Module title					Abbreviation	
Introdu	uctory [Differential Geometry for	Teaching Degree (Ge	erman Gymnasium)	10-M-DGEL-191-m01	
Module coordinator				Module offered by		
Dean o	of Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	undergraduate				
Conten	nts		·			
particu	ılar) in I		ure of hypersurfaces,		bmanifolds (hypersurfaces in ies, main theorem on local sur-	
Intend	ed lear	ning outcomes				
	ed with				ferential geometry. He/She is ac iental proof methods indepen-	
Course	es (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)		
V (4) +	Ü (2)					
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether	
b) oral c) oral Langua Assess quent s	examir examin age of a	er	ach (15 to 30 minutes of 2, 10 to 15 minutes /or English	per candidate)	es are offered and in the subse-	
Allocat	tion of p	olaces				
Additic	onal inf	ormation				
Worklo	oad					
300 h						
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
§731N	vr. 4		<u>,</u>			
	e appea	ars in				
First st	ate exa	mination for the teaching		-		
FIRST ST	ate exa	mination for the teaching	g degree Gymnasium	mathematics (2023))	

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	data record Lehramt Gymnasien Mathematik - 2019	

Module title					Abbreviation	
Introdu	ictory F	Projective Geometry for T	eaching Degree (Ger	man Gymnasium)	10-M-PGEL-191-m01	
Module	e coord	inator		Module offered by	·	
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 semester		undergraduate				
Conten	ts					
		l affine planes, projective , dualities and polarities			s, fundamental theorems for pro-	
Intende	ed lear	ning outcomes				
		acquainted with the fun ethods to practical probl		nd methods of proje	ective geometry. He/she is able to	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)		
V (4) +	Ü (2)					
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
b) oral c) oral Langua	examir examin ige of a ment o semest	er	ach (15 to 30 minute: of 2, 10 to 15 minutes /or English	per candidate)	es are offered and in the subse-	
Allocat	ion of J	olaces				
Additio	nal inf	ormation	-			
Worklo	ad					
300 h						
Teachi	ng cycl	e				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
§73∣N	lr. 4					
Module	e appea	ars in				
		mination for the teachinន mination for the teachinន		-		

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	data record Lehramt Gymnasien Mathematik - 2019	



Subfield Overview Algebra and Applied Mathematics

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	
	data record Lehramt Gymnasien Mathematik - 2019	

Module	e title				Abbreviation	
Overview Algebra and Applied Algebra for Teaching Degree				(German Gymnasi-	10-M-AALL-Ü-191-m	01
um)						
Module coordinator				Module offered by		
Dean o	f Studie	es Mathematik (Mathem	atics)	Institute of Mathem	atics	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10 numerical grade						
Duration Module level Other prerequisites						
2 semester undergraduate						
Conten	Its					
phism	theorer	p Theory (particularly finns, solvability, group op , dihedral groups).				
Topics	in ring	theory (particularly idea	ls, divisibility, polynoi	mial rings, irreducibi	lity of polynomials).	
•		ber theory (particularly em, residue class rings	-			Chinese re-
•		theory (particularly alge ility of equations, cyclo		-	constructions, basic	cs in Galois
Applica	ations o	f algebra and number tl	neory (e.g., coding the	ory, cryptography, co	omputer algebra).	
Intend	ed learr	ning outcomes				
thods,	so that	as extensive knowledge he/she masters the bas ther fields of mathemati	sic notions of algebra			
Course	S (type, n	umber of weekly contact hours,	language — if other than Ger	man)		
V (4) +	V (4) +	Ü (2)				
		essment (type, scope, langu le for bonus)	age — if other than German, o	examination offered — if no	t every semester, informat	ion on whether
Langua	age of a	on of one candidate ea ssessment: German and ill have reference to the	l/or English	10-M-ALGL und 10-M	I-AALL	
Allocat	ion of p	olaces				
			_			
Additio	onal info	ormation				
Worklo	ad					
300 h						
Teachi	ng cycl	e				
Referre	ed to in	LPOI (examination regulatio	ns for teaching-degree progra	mmes)		
<u></u> §73 N	Ir. 2 (5 I	ECTS credits), § 73 Nr.	5 (5 ECTS credits)			
Module						
		mination for the teachin mination for the teachin				
LA Gymnas	ien Mathe	matics (2019)		g • generated 19-Apr-2025 • e ehramt Gymnasien Mathemat		page 37 / 100

Modul	e title				Abbreviation
Overvi	ew Alge	ebra and Numerical Ma	thematics 1 for Teachin	ng Degree (German	10-M-ANUL-Ü-191-m01
Gymna	sium)				
Modul	e coord	inator		Module offered by	
Dean o	of Studi	es Mathematik (Mather	matics)	Institute of Mathem	natics
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
10	nume	rical grade			
Duratio	on	Module level	Other prerequisites	5	
2 seme	ester	undergraduate			
Conten	its				
phism metric	theore groups		perations, Sylow theor	ems; examples: cycl	ib- and factorgroups, isomor- ic groups, alternating and sym- ility of polynomials).
mainde Topics equation	er theo in num ons and	rem, residue class rings perical mathematics: So d systems of equations	and their unit groups, Iution of systems of lir	, quadratic number ri near equations and c	m, Euler's theorem, Chinese re- ings). urve fitting problems, nonlinear nd trigonometric functions, nume
rical in	tegratio	on.			
		ning outcomes			
She is	able to		with one another, and I		and numerical mathematics. He/ ges of thinking across the bor-
Course	S (type, 1	number of weekly contact hours	s, language — if other than Ge	rman)	
V (4) +	V (4) +	Ü (2)			
		s essment (type, scope, lang ole for bonus)	uage — if other than German,	examination offered — if no	ot every semester, information on whether
Langua	age of a	ion of one candidate ea issessment: German an vill have reference to th	d/or English	10-M-ALGL und 10-M	I-NUL1
Allocat	ion of	places			
Additio	onal inf	ormation			
Worklo	ad				
300 h					
Teachi	ng cycl	e			
	ed to in	LPO I (examination regulation	ons for teaching-degree progra	ammes)	
Referre					
	-	ECTS credits), § 73 Nr.	5 (5 ECTS credits)		
	lr. 2 (5		5 (5 ECTS credits)		
§ 73 N Module	Nr. 2 (5 e appe a			Mathematics (2019)	

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	data record Lehramt Gymnasien Mathematik - 2019	

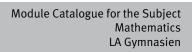




Teaching (10 ECTS credits)

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Compulsory Courses

(10 ECTS credits)

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	data record Lehramt Gymnasien Mathematik - 2019	

Modul	e title				Abbreviation
Didact	ics of N	Nathematics: Algebra and	l Analysis (German G	ymnasium)	10-M-DGY1-191-m01
Modul	e coord	linator		Module offered	by
Dean c	of Studi	es Mathematik (Mathema	atics)	Institute of Math	ematics
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
6	nume	rical grade			
Durati	on	Module level	Other prerequisites		
2 seme	ester	undergraduate			
Conter	nts				
kunda	rstufe I)		stufe II) as well as dis		g the examples of algebra (Se- pilities of implementation in the
Intend	ed lear	ning outcomes			
of alge ceptio	bra in S n of ma	Sekundarstufe I and analy	ysis in sekundarstufe e knows different as	II) and is able to pects of planning	echniques (in particular in the fields take into account the students'per- and analysing teaching of mathe- s them.
Course	es (type, i	number of weekly contact hours, I	anguage — if other than Gei	rman)	
V (2) +	Ü (2) +	V (2) + Ü (2)			
		sessment (type, scope, langua ble for bonus)	ge — if other than German,	examination offered — i	if not every semester, information on whether
b) oral c) oral Langua	examir examir	mination (60 to 120 minu nation of one candidate e nation in groups (groups o assessment: German and bonus	ach (approx. 30 minu of 2, 10 to 15 minutes		
	tion of				
Additio	onal inf	ormation			
Worklo	oad				
180 h					
Teachi	ing cycl	e			
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	immes)	
§7311	Vr. 6				
Modul	e appe	ars in			
First st	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (20	19)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 41 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Modul	e title				Abbreviation
Didact	ics of N	lathematics: Geometr	y (German Gymnasium)		10-M-DGY2-191-m01
Modul	e coord	inator		Module offered by	
Dean o	of Studi	es Mathematik (Math	ematics)	Institute of Mathen	natics
ECTS	Metho	od of grading	Only after succ. cor	npl. of module(s)	
4	nume	rical grade		-	
Duratio	on	Module level	Other prerequisites	5	
1 seme	ester	undergraduate			
Conter	nts		·		
) as wel				example of geometry (Sekundar- n, also including modern techno
Intend	ed lear	ning outcomes			
field of topics,	f geome , He/Sh	try in Sekundarstufe e knows important as	I) and is able to take int	o account the studer	ng techniques (in particular in th nts'perception of mathematical mathematics, masters different
	-	number of weekly contact hou	urs, language — if other than Ge	rman)	
V (2) +	Ü (2)				
		essment (type, scope, lan le for bonus)	nguage — if other than German,	examination offered — if n	ot every semester, information on whether
b) oral c) oral Langua	examir examin	ation in groups (grou ssessment: German a	te each (approx. 30 min ps of 2, 10 to 15 minutes		
Allocat	tion of p	olaces			
Additio	onal inf	ormation			
Worklo	ad				
120 h					
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regula	tions for teaching-degree progr	ammes)	
§731N	Vr. 6				
Modul	e appea	ars in			
			ning degree Gymnasium	Mathematics (2019))
		gram Mathematics (20	-		N
First st	ate exa	mination for the teach	ning degree Gymnasium	Mathematics (2023)

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	data record Lehramt Gymnasien Mathematik - 2019	P. 60 P. 7	1





Paper

(4 ECTS credits)

Students studying for a teaching degree Gymnasium must complete a practical training in didactics and teaching methodology (studienbegleitendes fachdidaktisches Praktikum) which refers to one of the subjects they selected as vertieft studiertes Fach (subject studied with a focus on the scientific discipline) pursuant to Section 34 Subsection 1 No. 4 LPO I (examination regulations for teaching-degree programmes). The obligatory accompanying tutorial is offered by the respective subject. The ECTS credits obtained are counted in the subject Erziehungswissenschaften pursuant to Section 10 Subsection 3 LASPO (general academic and examination regulations for teaching-degree programms).

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 43 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module title					Abbreviation
Practical Training in Classroom Teaching including Theory (German Gymnasi				(German Gymnasi-	10-M-SFDPGY-152-m01
um)					
Module	coord	inator		Module offered by	
Dean of	fStudie	es Mathematik (Mathema	atics)	Institute of Mathem	atics
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
4	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	undergraduate			
Conten	ts				
focus o specific ject-spe res wha dactic a cordand practice cessful Intende The stu able to cationa cognisa	The module introduces the student to the classroom practice of his/her Unterrichtsfach (subject studied with a focus on the scientific discipline) or Didaktikfach (subject studied with a focus on teaching methodology). Using specific teaching models, examples and projects in different grades, the module introduces the student to subject-specific techniques. In the university course accompanying the placement, the student reflects and structures what he/she has learned during his/her teaching placement and explores additional subject-specific and didactic aspects. In this context, the course discusses selected practical aspects of teaching mathematics in accordance with applicable guidelines and curricula. The course focuses on recent developments in classroom practice, also taking into account aspects of school pedagogy and learning psychology that can support the successful practical implementation of subject-specific conceptual designs. Intended learning outcomes The student is acquainted with the most important components of planning and organising teaching. He/She is able to teach the relevant topics for different forms, and can critically reflect the recent developments in the educational system. He/She is able to connect ideas from school pedagogy and learning psychology with didactical cognisance and incorporate them in the mise-en-scène of his/her teaching.				
		umber of weekly contact hours, l	anguage — If other than Ger	man)	
P (0) + 9					
		le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
b) term Content regulati	a) presentation (30 to 45 minutes) with position paper (1 to 2 pages) or b) term paper (10 to 15 pages) Contents and duration of placement as specified in Section 34 Subsection 1 Sentence 1 No. 4 LPO I (examination regulations for teaching-degree programmes); participation in mandatory teaching practice, completion of all set tasks as specified by placement school.				
Allocati	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
120 h					
Teachir	ıg cycl	9			
		LPO I (examination regulations	s for teaching-degree progra	mmes)	
§34 1					
Module					<i>.</i>
First sta	ate exa	mination for the teaching	degree Gymnasium	Educational Science	(2015)



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

(ECTS credits)

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

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

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	data record Lehramt Gymnasien Mathematik - 2019	





Mathematics (ECTS credits)

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

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	data record Lehramt Gymnasien Mathematik - 2019	



Module Group group Mathematics and Didactics of Mathematics

(ECTS credits)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 47 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module	e title				Abbreviation	
School Mathematics from a Higher Perspective				10-M-SCH-152-m01		
Module	e coord	inator		Module offered by		
Dean of Studies Mathematik (Mathematics)		Institute of Mathem	natics			
		Only after succ. con				
5	1	successfully completed				
) Duratio						
1 seme		undergraduate				
Contents						
Discussion of selected topics in school mathematics with respect to their integration into wider theories and						
their di	dactic	mplementation at bot	n school and university	levels.		
Intende	ed learı	ning outcomes				
	vanced	mathematical theorie	student gains insight in 5. He/She is able to dis			
Course	S (type, n	umber of weekly contact hour	s, language — if other than Ge	rman)		
V (2) +	Ü (2)					
		e essment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	ot every semester, informat	ion on whether
Langua Assess	age of a ment o		d/or English in which the course is	offered and in the su	ubsequent semester	
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
	-					
Worklo	ad					
150 h			_			
Teachi	ng cycl	9				
Referre	ed to in	LPO I (examination regulati	ons for teaching-degree progra	ammes)		
§ 22						
§ 22 8 22	-					
§ 22 II Nr. 3 f)						
Module appears in Bachelor's degree (1 major) Mathematics (2015)						
Bachelor's degree (1 major) Mathematics (2015) Bachelor's degree (1 major) Mathematical Physics (2015)						
Bachelor's degree (1 major) Mathematical Physics (2015) Bachelor's degree (1 major) Computational Mathematics (2015)						
First state examination for the teaching degree Grundschule Mathematics (2015)						
First state examination for the teaching degree Realschule Mathematics (2015)						
First state examination for the teaching degree Gymnasium Mathematics (2015)						
			ng degree Mittelschule	Mathematics (2015))	
		gree (1 major) Mathem				
First sta	ate exa	mination for the teachi	ng degree Gymnasium	Mathematics (2019)		
LA Gymnas	ien Mathe	matics (2019)		g • generated 19-Apr-2025 • e ehramt Gymnasien Mathema	-	page 48 / 100
				chianit Gynnasien Mathellid	ux 2019	



First state examination for the teaching degree Mittelschule Mathematics (2020 (Prüfungsordnungsversion 2015))

Bachelor's degree (1 major) Mathematical Physics (2020) Bachelor's degree (1 major) Mathematical Data Science (2022) exchange program Mathematics (2023) First state examination for the teaching degree Gymnasium Mathematics (2023) Bachelor's degree (1 major) Mathematics (2023)

Bachelor's degree (1 major) Mathematical Physics (2024)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 49 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

	e title				Abbreviation	
Compu	ters in	Mathematical Teaching	5		10-M-DCMU-152-m01	
Module	e coord	inator		Module offered by		
Dean o	f Studi	es Mathematik (Mathen	natics)	Institute of Mathem	natics	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
3	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites	i		
1 seme	ster	undergraduate				
Contents						
Discus: puter te		possible ways to use co	omputers in teaching n	nathematics as well	as discussion of commo	on com-
Intend	ed lear	ning outcomes				
		acquainted with basic s with the potential and			iters in the teaching of n	nathema-
	S (type, r	number of weekly contact hours	, language — if other than Ge	rman)		
V (2)						
			uage — if other than German,	examination offered — if no	ot every semester, information o	on whether
		le for bonus) 15 pages)				
		ffered: Every two years,	winter semester			
		· · ·				
Allocation of places						
 Additio	onal inf	ormation				
 Additic	onal inf	ormation				
 Additic Worklo		ormation				
		ormation				
 Worklo	ad					
 Worklo 90 h	ad					
 Worklo 90 h Teachi	ad ng cycl		ns for teaching-degree progra	ımmes)		
 90 h Teachi <u>Referre</u> § 22 II	ng cycl ed to in Nr. 2 f)	e LPOI (examination regulatio	ons for teaching-degree progra	ımmes)		
 Worklo 90 h Teachi Referre § 22 § 22	ng cycl ed to in Nr. 2 f) Nr. 1 h)	e LPOI (examination regulatio	ns for teaching-degree progra	ammes)		
 Workla 90 h Teachin <u>Referre</u> § 22 II § 22 II § 22 II	ad ng cycl ed to in Nr. 2 f) Nr. 1 h) Nr. 3 f)	e LPOI (examination regulatio	ns for teaching-degree progra	ammes)		
 90 h Teachii § 22 § 22 § 22 § 22 Module	ng cycl ed to in Nr. 2 f) Nr. 3 f) Nr. 3 f)	e LPOI (examination regulatio				
 90 h Teachin § 22 II § 22 II § 22 II § 22 II First sta	ed to in Nr. 2 f) Nr. 3 f) e appea ate exa	e LPOI (examination regulatio	ng degree Realschule I	Mathematics (2015)		
 90 h Teachin Referre § 22 II § 22 II § 22 II § 22 II First st. First st. First st. (2015)	ed to in Nr. 2 f) Nr. 3 f) e appea ate exa ate exa ate exa	e LPOI (examination regulation ars in mination for the teachir mination for the teachir mination for the teachir	ng degree Realschule I ng degree Gymnasium ng degree Sonderpäda	Mathematics (2015) Mathematics (2015) gogik Didactics in M	athematics (Middle Sch	nool)
 90 h Teachin Referren § 22 II § 22 II § 22 II § 22 II First sta First sta (2015) First sta	ad ng cycl ed to in Nr. 2 f) Nr. 3 f) e appea ate exa ate exa ate exa ate exa	e LPOI (examination regulation ars in mination for the teachir mination for the teachir mination for the teachir mination for the teachir mination for the teachir	ng degree Realschule <i>I</i> ng degree Gymnasium ng degree Sonderpäda ng degree Mittelschule	Mathematics (2015) Mathematics (2015) gogik Didactics in M Mathematics (2015)	athematics (Middle Sch)	
 90 h Teachin Referre § 22 II § 22 II § 22 II First sta First sta (2015) First sta First sta First sta	ad ng cycl ed to in Nr. 2 f) Nr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation mination for the teachir mination for the teachir	ng degree Realschule <i>I</i> ng degree Gymnasium ng degree Sonderpäda ng degree Mittelschule ng degree Mittelschule	Mathematics (2015) Mathematics (2015) gogik Didactics in M Mathematics (2015) Didactics in Mather	athematics (Middle Sch) natics (Middle School) (
 90 h Teachi Referre § 22 II § 22 II § 22 II § 22 II First st. First st. (2015) First st. First st. First st. (2015)	ad ng cycl ed to in Nr. 2 f) Nr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation ars in mination for the teachir mination for the teachir	ng degree Realschule <i>I</i> ng degree Gymnasium ng degree Sonderpäda ng degree Mittelschule ng degree Mittelschule ng degree Gymnasium	Mathematics (2015) Mathematics (2015) gogik Didactics in M Mathematics (2015) Didactics in Mather Mathematics (2019)	athematics (Middle Sch) natics (Middle School) ((2015)
 90 h Teachin Referren § 22 II § 22 II § 22 II First st. First st. (2015) First st. First st. First st. First st. First st. First st. 2015))	ad ng cycl ed to in Nr. 2 f) Nr. 3 f) e appea ate exa ate exa	e LPOI (examination regulation ars in mination for the teachir mination for the teachir	ng degree Realschule / ng degree Gymnasium ng degree Sonderpäda ng degree Mittelschule ng degree Mittelschule ng degree Gymnasium ng degree Mittelschule	Mathematics (2015) Mathematics (2015) gogik Didactics in M Mathematics (2015) Didactics in Mather Mathematics (2019) Mathematics (2020	athematics (Middle Sch) natics (Middle School) () (Prüfungsordnungsvers	(2015) sion
 90 h Teachin Referren § 22 ll § 22 ll § 22 ll § 22 ll Module First sta First sta (2015) First sta First sta First sta (2015)) First sta (2015)) First sta (2015))	ad ng cycl ed to in Nr. 2 f) Nr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation ars in mination for the teachir mination for the teachir	ng degree Realschule M ng degree Gymnasium ng degree Sonderpäda ng degree Mittelschule ng degree Mittelschule ng degree Gymnasium ng degree Mittelschule	Mathematics (2015) Mathematics (2015) gogik Didactics in M Mathematics (2015) Didactics in Mather Mathematics (2019) Mathematics (2020 Didactics in Mather	athematics (Middle Sch) natics (Middle School) () (Prüfungsordnungsvers natics (Middle School) ((2015) sion (2020
 90 h Teachi Referre § 22 II § 22 II § 22 II § 22 II First st. First st. (2015) First st. First st. First st. (2015)) First st. First st. (2015)) First st. (Prüfur First st. (Prüfur First st.	ad ng cycl ed to in Nr. 2 f) Nr. 3 f) e appea ate exa ate exa	e LPOI (examination regulation ars in mination for the teachir mination for the teachir	ng degree Realschule M ng degree Gymnasium ng degree Sonderpäda ng degree Mittelschule ng degree Mittelschule ng degree Gymnasium ng degree Mittelschule ng degree Mittelschule	Mathematics (2015) Mathematics (2015) gogik Didactics in M Mathematics (2015) Didactics in Mather Mathematics (2019) Mathematics (2020 Didactics in Mather	athematics (Middle Sch) natics (Middle School) () (Prüfungsordnungsvers	(2015) sion (2020



exchange program Mathematics (2023) First state examination for the teaching degree Gymnasium Mathematics (2023)

LA Gymnasien N	Nathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 51 / 100
		data record Lehramt Gymnasien Mathematik - 2019	

Module title Abbreviation					Abbreviation				
Introdu	uction t	o Hands-on Mathematics	5		10-M-PRM1-152-m01				
Module	e coord	inator		Module offered by	<u> </u>				
Dean o	of Studi	es Mathematik (Mathema	atics)	Institute of Mathen	natics				
ECTS	Meth	od of grading	Only after succ. com	npl. of module(s)					
3	(not)	successfully completed							
Duratio	on	Module level	Other prerequisites						
1 seme	ester	undergraduate							
Conten	nts	~							
tical pł table to	hase, th opic, el	ne students formulate the	subject-specific and project and draw up	didactic requireme a project plan. This	erest), workshops. In the theore- nts of the topic, search for a sui- is done in groups with students other's work.				
Intend	ed lear	ning outcomes							
The stu	udent is	able to select a suitable	mathematical topic f	or a school project	and elaborate it.				
	es (type, 1	number of weekly contact hours, l	anguage — if other than Ger	man)					
S (2)									
		sessment (type, scope, langua ole for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether				
		15 pages) ffered: Every two years, v	vinter semester						
Allocat	tion of	places							
Additio	onal inf	ormation							
 Workla	ad								
90 h									
	ing cycl	e							
Referre	ed to in	LPOI (examination regulations	s for teaching-degree progra	mmes)					
§ 22									
§ 22 Nr. 3 f)									
Module	e appea	ars in							
		mination for the teaching							
				First state examination for the teaching degree Gymnasium Mathematics (2015)					
	First state examination for the teaching degree Gymnasium Mathematics (2015) First state examination for the teaching degree Gymnasium Mathematics (2019)								
		gram Mathematics (2023)		Mathematics (2019))				

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 52 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module title Abbreviation				
Practical Course Hands-on Mathematics				10-M-PRM2-152-m01
Module coordinator			Module offered by	<u> </u>
	udies Mathematik (Mathema	atics)	Institute of Mathem	natics
	ethod of grading	Only after succ. com	pl. of module(s)	
3 (no	ot) successfully completed			
Duration	Module level	Other prerequisites		
1 semester	r undergraduate			
Contents				
beiten), Plu tical phase	uskurse (additional courses	for the in-depth study	y of areas of special	lays, school term papers (Fachar- interest), workshops. In the prac- upils and afterwards reflect the
Intended l	earning outcomes			
	nt is able to perform a schoo spects of project planning ar			pic. He/She is acquainted with ess critically.
Courses (ty	pe, number of weekly contact hours, l	anguage — if other than Ger	rman)	
P (2)				
	assessment (type, scope, langua ditable for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether
	awing up a project plan (5 to nt offered: Every two years, s		cal implementation	with pupils
Allocation	of places			
Additional	information			
Workload				
90 h				
Teaching o	cycle			
	o in LPO I (examination regulation:	s for teaching-degree progra	mmes)	
§ 22 II Nr. 2 f § 22 II Nr. 3 f)				
Module ap	pears in			
First state examination for the teaching degree Realschule Mathematics (2015) First state examination for the teaching degree Gymnasium Mathematics (2015) First state examination for the teaching degree Gymnasium Mathematics (2019) exchange program Mathematics (2023)				
	examination for the teaching		Mathematics (2023)	

Module title					Abbreviation
Didacti	cs of N	lathematics: Analytic Ge	ometry and Stochast	ics	10-M-D3GY-152-m01
Module	e coord	inator		Module offered by	
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS	Meth	od of grading	Only after succ. com	npl. of module(s)	
3	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
stocha	stics (S				xamples of analytic geometry and tation in the classroom, also in-
Intende	ed lear	ning outcomes			
fields o ceptior	of analy n of ma	tic geometry and stochas	stics in Sekundarstuf e knows important as	e I) and is able to tal spects of planning a	g techniques (in particular in the ke into account the students'per- nd analysing teaching of mathe- em.
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
V (2)					
		sessment (type, scope, langua ole for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
b) oral c) oral	examir examin	mination (approx. 60 to g nation of one candidate e nation in groups of up to g ffered: Every two years, s	ach (approx. 15 to 20 3 candidates (approx.		didate)
Allocat	ion of _l	places			
Additio	nal inf	ormation			
Worklo	ad				
90 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
§ 22 Nr. 3 f)					
Module	e appea	ars in			
		mination for the teaching			
First sta	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (2019)	

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 54 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module title					Abbreviation
Hands-on Seminar Mathematics					10-M-PRA-152-m01
Module coordinator				Module offered by	
Dean of	Dean of Studies Mathematik (Mathematics)			Institute of Mathem	atics
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
3	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
tics" (g ject, sc terest):	eometr hool te formul ic for cl	y, algebra, stochastics, a rm paper (Facharbeit) or ation of subject-related a	nalytic geometry, and Pluskurs (additional and didactic requirem	alysis) or a topic rela course for the in-dep nents, search for an a	e a topic in "classical mathema- ted to a school workshop, pro- oth study of areas of special in- appropriate topic, preparation of l be supervised and reflected by
Intende	ed learı	ning outcomes			
					atics in school. He/She is ac- e to critically reflect the process.
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
S (2)					
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
		ng up a project plan (10 t ffered: Every two years, s			
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
90 h					
Teachir	Teaching cycle				
Referred to in LPO I (examination regulations for teaching-degree programmes)					
§ 22 II Nr. 3 f)					
Module appears in					
First sta exchan	ate exa ge pros	mination for the teaching mination for the teaching gram Mathematics (2023) mination for the teaching	degree Gymnasium)	Mathematics (2019)	
This state examination for the reacting degree symmastam mathematics (2025)					

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 55 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

module	title				Abbreviation	
Selecte	d Topi	s in History of Mathem	atics		10-M-GES-152-m01	
Module	Coord	nator		Module offered by		
		es Mathematik (Mathen	antice)	Institute of Mathem	atics	
		•	F		Idlics	
ECTS		d of grading	Only after succ. con	npl. of module(s)		
5	<u> </u>	uccessfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
the fun	damen	cultural development a tals of mathematics, in ematics in modern soc	particular in its relation			
Intende	ed learr	ing outcomes				
tical the audien	eories a ce.	cted examples, the stud and their social relevan	ce. He/she is able to p	resent mathematica		
		umber of weekly contact hours	, language — if other than Ge	rman)		
V (2) +						
		essment (type, scope, lang e for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether
c) proje Langua	ect work ge of a ment o	(10 to 15 pages) or (15 to 25 hours) ssessment: German an ffered: In the semester		offered and in the su	ubsequent semester	
Additio	nal info	ormation				
Worklo	ad					
150 h						
Teachir						
I CAL III	is cycli	•				
	d to in					
 Referre		LPOI (examination regulation	ns for teaching-degree progra	mmes)		
 Referre § 22	Vr. 3 f)		ns for teaching-degree progra	mmes)		
 Referre § 22 Module	Nr. 3 f) e appea	rs in		immes)		
 Referre § 22 Module Bachelo	Nr. 3 f) appea or's deg	rs in gree (1 major) Mathema	tics (2015)	mmes)		
 Referre § 22 1 Module Bachelo Bachelo	Nr. 3 f) appea or's deg or's deg	rs in gree (1 major) Mathema gree (1 major) Mathema	tics (2015) tical Physics (2015)			
 Referre § 22 II I Module Bachelo Bachelo Bachelo	Nr. 3 f) e appea or's deg or's deg or's deg	rs in gree (1 major) Mathema gree (1 major) Mathema gree (1 major) Computa	tics (2015) tical Physics (2015) tional Mathematics (20	015)		
 Referre § 22 II I Module Bachele Bachele First sta	Nr. 3 f) e appea or's deg or's deg or's deg ate exa	rs in gree (1 major) Mathema gree (1 major) Mathema gree (1 major) Computa mination for the teachir	tics (2015) tical Physics (2015) tional Mathematics (20 ng degree Gymnasium	015)		
 Referre § 22 II I Module Bachele Bachele First sta Bachele	Nr. 3 f) e appea or's deg or's deg or's deg ate exan or's deg	rs in gree (1 major) Mathema gree (1 major) Mathema gree (1 major) Computa	tics (2015) tical Physics (2015) tional Mathematics (20 ng degree Gymnasium tical Physics (2016)	015) Mathematics (2015)		
 Referre § 22 II I Module Bachele Bachele First sta Bachele First sta	Nr. 3 f) e appea or's deg or's deg ate exan or's deg ate exan	rs in gree (1 major) Mathema gree (1 major) Mathema gree (1 major) Computa mination for the teachin gree (1 major) Mathema	tics (2015) tical Physics (2015) tional Mathematics (20 1g degree Gymnasium tical Physics (2016) 1g degree Gymnasium	015) Mathematics (2015)		
 Referre § 22 II I Module Bachele Bachele First sta Bachele First sta Bachele	Nr. 3 f) e appea or's deg or's deg or's deg ate exa or's deg ate exa or's deg ate exa	rs in gree (1 major) Mathema gree (1 major) Mathema gree (1 major) Computa mination for the teachir gree (1 major) Mathema mination for the teachir	tics (2015) tical Physics (2015) tional Mathematics (20 ng degree Gymnasium tical Physics (2016) ng degree Gymnasium tical Physics (2020)	015) Mathematics (2015) Mathematics (2019)		
 Referre § 22 II I Module Bachele Bachele First sta Bachele First sta Bachele Bachele Bachele Bachele	Vr. 3 f) e appea or's deg or's deg or's deg ate exan or's deg ate exan or's deg or's deg or's deg ge prog	rs in gree (1 major) Mathema gree (1 major) Mathema gree (1 major) Computa mination for the teachir gree (1 major) Mathema gree (1 major) Mathema gree (1 major) Mathema grem Mathematics (202	tics (2015) tical Physics (2015) tional Mathematics (20 ng degree Gymnasium tical Physics (2016) ng degree Gymnasium tical Physics (2020) tical Data Science (20 3)	015) Mathematics (2015) Mathematics (2019) 22)		
 Referre § 22 II I Module Bachele Bachele First sta Bachele First sta Bachele Bachele Eachele Bachele Bachele Bachele Bachele First sta	Vr. 3 f) appea or's deg or's deg or's deg ate exan or's deg ate exan or's deg or's deg ge prog ate exan	rs in gree (1 major) Mathema gree (1 major) Mathema gree (1 major) Computa mination for the teachir gree (1 major) Mathema gree (1 major) Mathema gree (1 major) Mathema	tics (2015) tical Physics (2015) tional Mathematics (20 ng degree Gymnasium tical Physics (2016) ng degree Gymnasium tical Physics (2020) tical Data Science (20 3) ng degree Gymnasium	015) Mathematics (2015) Mathematics (2019) 22)		page 56 / 100





Bachelor's degree (1 major) Mathematics (2023) Bachelor's degree (1 major) Mathematical Physics (2024)

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	data record Lehramt Gymnasien Mathematik - 2019	

Module	e title				Abbreviation	
Mathematical Writing			10-M-MSC-152-m01			
Module	e coord	inator		Module offered by		
Dean o	f Studi	es Mathematik (Mather	natics)	Institute of Mathem	natics	
ECTS Method of grading Only after succ. com			pl. of module(s)			
5	1	successfully completed				
Duratio		Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	Contents					
vers the compre	Discussion of good and bad mathematical writing using practical exercises and case examples. The course co- vers the whole range of mathematical texts from short proofs and the formulation of theorems and definitions to comprehensive works such as Bachelor's or Master's theses. Important aspects include not only mathematical rigour and efficiency but also didactic questions.					
Intende	ed lear	ning outcomes				
		able to formulate math ctures and conventions				
Course	S (type, r	number of weekly contact hours	, language — if other than Ger	man)		
V (2) +	-					
		sessment (type, scope, lang le for bonus)	uage — if other than German, e	examination offered — if no	ot every semester, informati	on on whether
c) proje Langua Assess	ect work ige of a ment o	(10 to 15 pages) or k (15 to 25 hours) ssessment: German an ffered: In the semester		offered and in the su	ubsequent semester	
Allocat	ion of j	Diaces				
Additio	onal inf	ormation				
	•					
Worklo	ad					
150 h						
Teachi	ng cycl	e				
		LPO I (examination regulation	ons for teaching-degree progra	mmes)		
§ 22	Nr. 3 f)					
Module						
Bachel	Bachelor's degree (1 major) Mathematics (2015) Bachelor's degree (1 major) Mathematical Physics (2015)					
		gree (1 major) Computa mination for the teachi				
First state examination for the teaching degree Gymnasium Mathematics (2015) Bachelor's degree (1 major) Mathematical Physics (2016)						
First state examination for the teaching degree Gymnasium Mathematics (2019)						
Bachelor's degree (1 major) Mathematical Physics (2020)						
Bachelor's degree (1 major) Mathematical Data Science (2022)						
		gram Mathematics (202 mination for the teachi	-	Mathematics (2023)		
LA Gymnas	ien Mathe	matics (2019)	-	• generated 19-Apr-2025 • e ehramt Gymnasien Mathemat	-	page 58 / 100





Bachelor's degree (1 major) Mathematics (2023) Bachelor's degree (1 major) Mathematical Physics (2024)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 59 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module	e title				Abbreviation
Semina	ar Math	iematics			10-M-SEM-152-m01
Module	e coord	inator		Module offered by	I
Dean o	f Studi	es Mathematik (Mathe	matics)	Institute of Mathen	natics
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade		· · · · · · · · · · · · · · · · · · ·	
Duratio	on	Module level	Other prerequisites	;	
1 seme	ster	undergraduate			
Conten	ts		·		
A selec	ted top	oic in mathematics.			
Intende	ed lear	ning outcomes			
of a giv	en top				sters elaboration and structuring /She is able to participate active
Course	S (type, r	number of weekly contact hour	s, language — if other than Ge	rman)	
S (2)					
		sessment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	ot every semester, information on whether
•		o minutes)			
		ssessment: German ar	id/or English		
Allocat	ion of _l	olaces			
Additio	onal inf	ormation			
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulati	ons for teaching-degree progra	ammes)	
§ 22	Nr. 3 f)				
Module					
		gree (1 major) Mathem		、 、	
		gree (1 major) Computa mination for the teachi			
		mination for the teachi		-	
		gree (1 major) Mathema		-	
		gram Mathematics (20:		,	
		mination for the teachi	-	Mathematics (2023))
Bachel	or's de	gree (1 major) Mathem	atics (2023)		

Module title			Abbreviation			
Computational Mathematics 10-M-COM-152-m01			L			
Module coordinator Module offer		Module offered by				
Dean o	f Studi	es Mathematik (Mathem	atics)	Institute of Mathem	natics	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
4	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	Its					
merica and 10 [.]	Introduction to modern mathematical software for symbolic computation (e. g. Mathematica or Maple) and nu- merical computation (e. g. Matlab) to supplement the basic modules in analysis and linear algebra (10-M-ANA-G and 10-M-LNA-G). Computer-based solution of problems in linear algebra, geometry, analysis, in particular diffe- rential and integral calculus; visualisation of functions.					
Intende	ed lear	ning outcomes				
		earns the use of advance cation to solve mathema		cal software package	es, and is able to ass	sess their
Course	S (type, r	number of weekly contact hours,	language — if other than Ge	rman)		
V (1) +	Ü (2)					
		sessment (type, scope, langu le for bonus)	age — if other than German,	examination offered — if no	t every semester, informati	ion on whether
project Langua	in the age of a	form of programming ex ssessment: German and ffered: Once a year, win	l/or English	25 hours)		
Allocat	ion of _l	olaces				
Additio	onal inf	ormation				
Worklo	ad					
120 h						
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulatio	ns for teaching-degree progra	ammes)		
§ 22	Nr. 3 f)					
Module	e appea	ars in				
		gree (1 major) Mathema	-			
		gree (1 major) Physics (2	-	 X 		
		gree (1 major) Nanostruo		5)		
		gree (1 major) Economat	_			
Bachelor's degree (1 major) Mathematical Physics (2015)						
Bachelor's degree (1 major) Computational Mathematics (2015) Bachelor's degree (1 major) Functional Materials (2015)						
		mination for the teaching		Mathematics (2015)		
		gree (1 major) Mathema				
		gree (1 major) Economat	•			
		mination for the teachin		Mathematics (2019)		
		gree (1 major) Physics (2				
LA Gymnas	ien Mathe	matics (2019)		g • generated 19-Apr-2025 • e ehramt Gymnasien Mathema	-	page 61 / 100

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Bachelor's degree (1 major) Nanostructure Technology (2020) Bachelor's degree (1 major) Mathematical Physics (2020) Bachelor's degree (1 major) Functional Materials (2021) Bachelor's degree (1 major) Quantum Technology (2021) Bachelor's degree (1 major) Economathematics (2022) Bachelor's degree (1 major) Economathematics (2022) Bachelor's degree (1 major) Mathematical Data Science (2022) exchange program Mathematics (2023) First state examination for the teaching degree Gymnasium Mathematics (2023) Bachelor's degree (1 major) Mathematics (2023) Bachelor's degree (1 major) Economathematics (2023) Bachelor's degree (1 major) Mathematical Physics (2024) Bachelor's degree (1 major) Economathematics (2024) Bachelor's degree (1 major) Functional Materials (2025) Bachelor's degree (1 major) Economathematics (2025)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 62 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module	e title				Abbreviation	
Programming course for students of Mathematics and other subjects			10-M-PRG-152-m01			
		Modulo offered by				
Module coordinator Dean of Studies Mathematik (Mathematics)		Module offered by				
_		· · · · · · · · · · · · · · · · · · ·	E C	Institute of Mathem	latics	
ECTS		od of grading	Only after succ. com	ipl. of module(s)		
3		successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Basics	of a mo	odern programming lan	guage (e.g.C).			
Intende	ed learı	ning outcomes				
The stu	dent is	able to work independ	ently on small program	ming exercises and	standard programm	ing problems
in math						
Course	S (type, n	umber of weekly contact hour	s, language — if other than Ger	man)		
P (2)						
	d of ass	essment (type. scope, lang	uage — if other than German, e	examination offered — if no	ot every semester. informati	on on whether
		le for bonus)			, , , , , , , , , , , , , , , , , , , ,	
project	in the	form of programming e	xercises (approx. 20 to	25 hours)		
		ssessment: German an				
Assess	ment o	ffered: Once a year, su	nmer semester			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
90 h						
Teachir	ng cycl	e				
	<u> </u>					
Referre	d to in	IPOI (examination regulation	ons for teaching-degree progra	mmes)		
§ 22				inites)		
_		re in				
Module						
		gree (1 major) Mathema gree (1 major) Physics (
			cture Technology (2014	5)		
				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Bachelor's degree (1 major) Economathematics (2015)						
Bachel	Bachelor's degree (1 major) Mathematical Physics (2015) Bachelor's degree (1 major) Computational Mathematics (2015)					
			,	015)		
Bachel	or's de		tional Mathematics (20	015)		
Bachelo Bachelo First sta	or's de or's de ate exa	gree (1 major) Computa gree (1 major) Function mination for the teachi	tional Mathematics (20 al Materials (2015) ng degree Gymnasium			
Bachelo Bachelo First sta Bachelo	or's de or's de ate exa or's de	gree (1 major) Computa gree (1 major) Function mination for the teachi gree (1 major) Mathema	tional Mathematics (20 al Materials (2015) ng degree Gymnasium atical Physics (2016)			
Bachelo Bachelo First sta Bachelo Bachelo	or's de or's de ate exa or's de or's de	gree (1 major) Computa gree (1 major) Function mination for the teachi gree (1 major) Mathema gree (1 major) Economa	tional Mathematics (20 al Materials (2015) ng degree Gymnasium atical Physics (2016) thematics (2017)	Mathematics (2015)		
Bachelo Bachelo First sta Bachelo Bachelo First sta	or's de or's de ate exa or's de or's de ate exa	gree (1 major) Computa gree (1 major) Function mination for the teachi gree (1 major) Mathema gree (1 major) Economa mination for the teachi	tional Mathematics (20 al Materials (2015) ng degree Gymnasium atical Physics (2016) thematics (2017) ng degree Gymnasium	Mathematics (2015)		
Bacheld Bacheld First sta Bacheld Bacheld First sta Bacheld	or's de or's de ate exa or's de or's de ate exa or's de	gree (1 major) Computa gree (1 major) Function mination for the teachi gree (1 major) Mathema gree (1 major) Economa mination for the teachi gree (1 major) Physics (tional Mathematics (20 al Materials (2015) ng degree Gymnasium atical Physics (2016) athematics (2017) ng degree Gymnasium 2020)	Mathematics (2015) Mathematics (2019)		
Bachelo Bachelo First sta Bachelo First sta Bachelo Bachelo	or's de or's de ate exa or's de or's de ate exa or's de or's de	gree (1 major) Computa gree (1 major) Function mination for the teachi gree (1 major) Mathema gree (1 major) Economa mination for the teachi gree (1 major) Physics (gree (1 major) Nanostru	tional Mathematics (20 al Materials (2015) ng degree Gymnasium atical Physics (2016) thematics (2017) ng degree Gymnasium 2020) cture Technology (2020	Mathematics (2015) Mathematics (2019)		
Bachelo Bachelo First sta Bachelo First sta Bachelo Bachelo Bachelo	or's de or's de ate exa or's de or's de ate exa or's de or's de or's de	gree (1 major) Computa gree (1 major) Function mination for the teachi gree (1 major) Mathema gree (1 major) Economa mination for the teachi gree (1 major) Physics (gree (1 major) Nanostru gree (1 major) Mathema	tional Mathematics (20 al Materials (2015) ng degree Gymnasium atical Physics (2016) athematics (2017) ng degree Gymnasium 2020) acture Technology (202 atical Physics (2020)	Mathematics (2015) Mathematics (2019)		
Bachelo Bachelo First sta Bachelo First sta Bachelo Bachelo Bachelo Bachelo	or's de or's de ate exa or's de or's de ate exa or's de or's de or's de or's de or's de	gree (1 major) Computa gree (1 major) Function mination for the teachi gree (1 major) Mathema gree (1 major) Economa mination for the teachi gree (1 major) Physics (gree (1 major) Nanostru	tional Mathematics (20 al Materials (2015) ng degree Gymnasium atical Physics (2016) thematics (2017) ng degree Gymnasium 2020) acture Technology (2020) atical Physics (2020) al Materials (2021)	Mathematics (2015) Mathematics (2019)		page 63 / 100

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Bachelor's degree (1 major) Quantum Technology (2021) Bachelor's degree (1 major) Economathematics (2021) Bachelor's degree (1 major) Economathematics (2022) Bachelor's degree (1 major) Mathematical Data Science (2022) exchange program Mathematics (2023) First state examination for the teaching degree Gymnasium Mathematics (2023) Bachelor's degree (1 major) Mathematics (2023) Bachelor's degree (1 major) Economathematics (2023) Bachelor's degree (1 major) Mathematical Physics (2023) Bachelor's degree (1 major) Mathematical Physics (2024) Bachelor's degree (1 major) Functional Materials (2025) Bachelor's degree (1 major) Economathematics (2025)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 64 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module	e title				Abbreviation	
Exercis	e tutor	or proof-reading in Ma	thematics		10-M-TuKo-152-mo:	L
Module	e coord	inator		Module offered by	<u>I</u>	
		es Mathematik (Mather	natics)	Institute of Mathem	natics	
ECTS		od of grading	Only after succ. con			
5		successfully completed				
Duratio		Module level	Other prerequisites			
1 seme		undergraduate				
Conten		undergraduite				
		ading homework for one	 of the basic courses i	n the Bachelor's or t	eaching degree prog	rammes un-
		on of the respective lect			caching acgree prog	Jullines un
Intende	ed lear	ning outcomes				
The stu	dent is	able to support the ac	quisition of mathemati	cal skills and knowle	edge. He/She helps	to identify
		athematical proof exerc				,
Course	S (type, r	number of weekly contact hours	, language — if other than Ger	man)		
Т (о)						
Method	d of ass	sessment (type, scope, lang	uage — if other than German, o	examination offered — if no	ot every semester, informat	ion on whether
		le for bonus)	_			
		f tutoring activities or c		rvising lecturers or e	exercise supervisors	(1 to 2 tea-
		approx. 5 pieces of cor	recting work)			
Allocat	ion of _l	olaces				
Additio	nal inf	ormation				
Please	direct	application to teaching	coordinator Mathemat	ics, he/she will sele	ct participants.	
Worklo	ad					
150 h						
Teachir	ng cycl	e				
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)		
§ 22						
Module		ars in				
		gree (1 major) Mathema	tics (2015)			
		gree (1 major) Economa				
		gree (1 major) Mathema	-			
		gree (1 major) Computa		-		
		mination for the teaching	,	Mathematics (2015)		
		gree (1 major) Mathema				
		gree (1 major) Economa				
		mination for the teaching	,	Mathematics (2019)		
Bachelor's degree (1 major) Mathematical Physics (2020) Bachelor's degree (1 major) Economathematics (2021)						
		gree (1 major) Economa gree (1 major) Economa				
		gree (1 major) Economa gree (1 major) Mathema		22)		
		gram Mathematics (202)		
		mination for the teaching		Mathematics (2023)		
		gree (1 major) Mathema	,			
LA Gymnasi	ien Mathe	matics (2019)	JMU Würzburg	• generated 19-Apr-2025 • e	exam. reg.	page 65 / 100
			-	ehramt Gymnasien Mathema	-	

Julius-Maximilians-UNIVERSITÄT WÜRZBURG



Bachelor's degree (1 major) Economathematics (2023) Bachelor's degree (1 major) Mathematical Physics (2024) Bachelor's degree (1 major) Economathematics (2024) Bachelor's degree (1 major) Economathematics (2025)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 66 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module	title				Abbreviation
Introdu	ction t	o Functional Analysis			10-M-FAN-152-m01
Module	coord	inator		Module offered by	
Dean of	fStudie	es Mathematik (Mathema	atics)	Institute of Mathematics	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
9	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	undergraduate	-		
Conten	ts				
Banach	space	s and Hilbert spaces, bou	unded operators, prir	ciples of functional	analysis.
Intende	ed learı	ning outcomes			
method broad a	ls, is al Ipplica	ole to apply methods fror bility of the theory to oth	n linear algebra and a er branches of mathe	analysis to functiona matics.	is as well as the pertinent proof al analysis, and realises the
		umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (4) + l					
		s essment (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether
Langua credital	ge of a ble for			per candidate)	
Allocati	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
270 h		_			
Teachir	ig cycl	8			
 Def					
		LPO I (examination regulations	s for teaching-degree progra	mmes)	
§ 22 N					
Module			ac (2245)		
		gree (1 major) Mathemati gree (1 major) Mathemati			
		gree (1 major) Mathemati		015)	
		mination for the teaching			
Bachelo	or's deg	gree (1 major) Mathemati	cal Physics (2016)	_	
		mination for the teaching			
		mination for the teaching		Mathematics (2023)	
Bachelo	or's deg	gree (1 major) Mathemati	cs (2023)		

Module title					Abbreviation		
Operations Research					10-M-ORS-152-m01		
Module coordinator				Module offered by			
Dean of	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	atics		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)			
9	(not) s	successfully completed					
Duratio	n	Module level	Other prerequisites	Other prerequisites			
1 seme	ster	undergraduate					
Conten	ts						
Linear p	orograr	nming, duality theory, tra	nsport problems, int	egral linear program	ming, graph theoretic problems.		
Intende	ed lear	ning outcomes					
for solv	ing ma		pecially in economics		n, as required as a central tool apply these methods to practical		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)			
V (4) +	Ü (2)						
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether		
b) oral (c) oral (Langua	examir examin ge of a ment o	mination (approx. 90 to 1 nation of one candidate e ation in groups (groups c ssessment: German and, ffered: In the semester in bonus	ach (15 to 30 minutes of 2, 10 to 15 minutes ⁄or English	s) or per candidate)	ıbsequent semester		
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
270 h							
Teachir	ıg cycl	e					
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)			
§ 22	Nr. 3 f)						
Module	appea	ars in					
		gree (1 major) Mathemati	-				
		gree (1 major) Computatio		-			
		mination for the teaching					
	First state examination for the teaching degree Gymnasium Mathematics (2019) First state examination for the teaching degree Gymnasium Mathematics (2023)						
				· · · · · · · · · · · · · · · · · · ·			

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 68 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Modul	e title				Abbreviation
Advanced Didactics of Mathematics (German Gymnasium) 10-M-DV					10-M-DVGY-191-m01
Module coordinator				Module offered by	<u>I</u>
Dean o	of Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS	CTS Method of grading Only after succ. compl. of module(s)				
2	(not) s	successfully completed			
Duratio	Duration Module level Other prer		Other prerequisites		
1 seme	ester	undergraduate			
Conter	nts				
lar mat	themati		analyses, contempo		unt different aspects, in particu- nathematics didactics as well as
Intend	ed lear	ning outcomes			
		able to discuss central t idering subject-specific,			cs in high school (German Gym-
Course	es (type, r	number of weekly contact hours, l	anguage — if other than Gei	rman)	
S (2)					
		sessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
Langua	age of a	50 minutes) ssessment: German ffered: Once a year, sum	mer term		
	tion of _l	·			
Additio	onal inf	ormation			
Worklo	ad				
60 h					
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
§ 22	Nr. 3 f)				
Modul	e appea	ars in			
exchar	nge prog	mination for the teaching gram Mathematics (2023 mination for the teaching)	-	

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 69 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module	title				Abbreviation	
Review	Review Course for Teaching Degree (German Gymnasium) 10-M-REPL-191-m01					
Module coordinator Module offered by						
Dean of	Studie	es Mathematik (Mathema	atics)	Institute of Mathem	natics	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
3	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	undergraduate				
Content	s					
number ons.	theory	; didactics of mathemati			ysis; linear algebra, algebra and ng past state examination questi-	
Intende	d learı	ning outcomes				
		as advanced knowledge §73 (2), and is able to ap			regulations for teaching degree nation.	
Courses	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
S (2)						
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether	
		<. 45 minutes) or to 15 pages)				
		ssessment: German and,	/or English			
Allocati	on of p	olaces				
Additio	nal inf	ormation				
Workloa	ad					
90 h						
Teachin	g cycl	e				
Referred	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
§ 22 N	Ir. <u>3</u> f)					
Module	appea	irs in				
		mination for the teaching				
FIRST STA	te exa	mination for the teaching	g degree Gymnasium	iniathematics (2023)		



Module Group Virtual Courses

(ECTS credits)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 71 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

	e title				Abbreviation
E-Learr	ning an	d Blended Learning in M	athematical Teaching	g (virtual Course)	10-M-DVHB-152-m01
Module coordinator				Module offered by	
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
3	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites	;	
1 seme	ster	undergraduate			
Conten	ts				
		ered by Virtuelle Hochsc e-learning and blended			acquainted with and reflects on
Intende	ed lear	ning outcomes			
		acquainted with basic n otentials and limitations		and blended learnir	ng in teaching methematics, as
	S (type, r	umber of weekly contact hours,	language — if other than Ge	rman)	
Ü (2) Course	type: e	Learning, mostly Virtuell	e Hochschule Bayern	ı (vhb)	
		s essment (type, scope, langua le for bonus)	age — if other than German,	examination offered — if no	ot every semester, information on whether
		oased, 15 to 20 hours) ffered: Once a year, wint	er semester		
Allocat	ion of p	olaces			
Allocat	ion of p	blaces			
		ormation			
 Additio 	onal inf				
 Additio Worklo	onal inf				
 Additio Worklo 90 h	onal info	ormation			
	onal info	ormation			
 Additio Worklo 90 h Teachin 	nal info ad ng cycl	ormation e			
 Additio Worklo 90 h Teachin Referre	nal info ad ng cycl	ormation	s for teaching-degree progra	ammes)	
 Additio Worklo 90 h Teachin Referre § 22	nal info ad ng cycl ed to in Nr. 1 h)	ormation e	s for teaching-degree progra	ammes)	
 Additio Worklo 90 h Teachin Referre § 22 § 22	nal info ad ng cycl ed to in Nr. 1 h) Nr. 2 f)	ormation e	s for teaching-degree progra	ammes)	
 Additio Worklo 90 h Teachin 	nal info ad ng cycl ed to in Nr. 1 h) Nr. 2 f) Nr. 3 f)	e POI (examination regulation	s for teaching-degree progra	ammes)	
 Additio Worklo 90 h Teachin § 22 § 22 § 22 § 22 Module	nal info nad ng cycl ed to in Nr. 1 h) Nr. 2 f) Nr. 3 f) e appea	e POI (examination regulation)
 Additio Worklo 90 h Teachin Referre § 22 § 22 § 22 Module First sta First sta	ed to in Nr. 1 h) Nr. 3 f) e appea ate exa ate exa	e LPOI (examination regulation urs in mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule	e Mathematics (2015 e Didactics in Mathe) matics (Primary School) (2015)
 Worklo 90 h Teachin § 22 II I § 22 II I § 22 II I § 22 II I § 22 II I First sta First sta First sta	enal info ad ng cycl ed to in Nr. 1 h) Nr. 2 f) Nr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation mination for the teaching mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule I	e Mathematics (2015 e Didactics in Mather Mathematics (2015)	matics (Primary School) (2015)
 Additio Worklo 90 h Teachin Referre § 22 II I § 5 25 I First sta First sta First sta	ed to in Nr. 1 h) Nr. 2 f) Nr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation mination for the teaching mination for the teaching mination for the teaching mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule I g degree Gymnasium	e Mathematics (2015 e Didactics in Mather Mathematics (2015) Mathematics (2015)	matics (Primary School) (2015)
 Additio Worklo 90 h Teachin Referre § 22 § 22 § 22 Module First sta First sta First sta First sta	ed to in Nr. 1 h) Nr. 2 f) Nr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation mination for the teaching mination for the teaching mination for the teaching mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule I g degree Gymnasium	e Mathematics (2015 e Didactics in Mather Mathematics (2015) Mathematics (2015)	matics (Primary School) (2015)
 Additio Worklo 90 h Teachin Referre § 22 II I § 5 20 I I § 5 20 I § 5 20 I I § 5 20 I § 5	ad ng cycl ed to in Nr. 1 h) Nr. 2 f) Nr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule I g degree Gymnasium g degree Sonderpäda	e Mathematics (2015 e Didactics in Mather Mathematics (2015) Mathematics (2015) Igogik Didactics in M	matics (Primary School) (2015)
 Additio Worklo 90 h Teachin Referre § 22 II I § 22 I I § 7 First sta (2015) First sta (2015)	ng cycl ed to in Nr. 1 h) Nr. 2 f) Nr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule I g degree Gymnasium g degree Sonderpäda g degree Sonderpäda	e Mathematics (2015 e Didactics in Mather Mathematics (2015) Mathematics (2015) ngogik Didactics in M ngogik Didactics in M	matics (Primary School) (2015) athematics (Primary School) athematics (Middle School)
 Additio Worklo 90 h Teachin Referre § 22 II I § 22 II I First sta (2015) First sta (2015) First sta First sta	ad ng cycle ed to in Nr. 1 h) Nr. 2 f) Nr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa ate exa ate exa ate exa ate exa ate exa	e LPO I (examination regulation mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule I g degree Gymnasium g degree Sonderpäda g degree Sonderpäda g degree Mittelschule g degree Mittelschule	e Mathematics (2015 e Didactics in Mather Mathematics (2015) Mathematics (2015) gogik Didactics in M gogik Didactics in M e Mathematics (2015) e Didactics in Mather	matics (Primary School) (2015) athematics (Primary School) athematics (Middle School)) natics (Middle School) (2015)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg. data record Lehramt Gymnasien Mathematik - 2019	page 72 / 100
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First state examination for the teaching degree Mittelschule Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 73 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module	e title				Abbreviation	
Basics	in Arith	metics (virtual course))		10-M-VHBAri-152-m	01
Module	e coord	inator		Module offered by		
Dean o	of Studie	es Mathematik (Mather	natics)	Institute of Mathem	atics	
ECTS	1	od of grading	Only after succ. con	nl. of module(s)		
		successfully completed				
2 Duratio	·	Module level				
			Other prerequisites			
1 seme	l	undergraduate				
Conten						
Basic t	opics o	n teaching arithmetics	in school, e.g. divisab	ility theory, prime nu	mbers, set theory.	
Intend	ed learr	ning outcomes				
		•	e teaching of arithmetic e employment of new t			
Course	S (type, n	umber of weekly contact hour	s, language — if other than Gei	man)		
Ü (2)						
. ,	type: e	Learning, mostly Virtue	elle Hochschule Bayern	(vhb)		
		· · · · · ·	uage — if other than German,		t every semester, informat	ion on whether
		le for bonus)				
project	(web-b	ased, 15 to 20 hours)				
Assess	ment o	ffered: Once a year, wi	nter semester			
Allocat	tion of p	olaces				
Additio	onal info	ormation				
Workla	ad					
60 h						
Teachi	ng cycl	a				
reaction	ing cycl	•				
	1					
		LPO I (examination regulation	ons for teaching-degree progra	mmes)		
§ 22	-					
§ 22 § 22	-					
_	e appea	rs in				
			ng dogroo Crundoshula	Mathamatics (as)	
			ng degree Grundschule ng degree Grundschule) (2015)
			ng degree Grundschule N		natics (Finidly Scho	101) (2015)
			ng degree Gymnasium			
			ng degree Sonderpäda		athematics (Primarv	School)
(2015)			0 · · 0 · · · · · · · · · · · · · · · ·			
	ate exa	mination for the teachi	ng degree Sonderpäda	gogik Didactics in M	athematics (Middle	School)
(2015)						
			ng degree Mittelschule			
			ng degree Mittelschule		natics (Middle Scho	ol) (2015)
			ng degree Gymnasium	-		
	ate exa	mination for the teach	ng degree Mittelschule	mathematics (2020	(Prufungsordnungs	version
2015))						
		matics (2010)	IMIL Würzburg			· · ·
A Gymnas	sien Mathe	matics (2019)		• generated 19-Apr-2025 • e	xam. reg.	page 74 / 100

First state examination for the teaching degree Mittelschule Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

exchange program Mathematics (2023)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 75 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module	e title				Abbreviation	
Basics	in Scho	ool Geometry (virtual c	ourse)		10-M-VHBGeo-152-1	m01
Module	e coord	inator		Module offered by		
Dean of Studies Mathematik (Mathematics)		matics)	Institute of Mathem	atics		
ECTS	r –	od of grading	Only after succ. com			
2		successfully completed				
Duratio	<u> </u>	Module level	Other prerequisites			
1 seme		undergraduate				
Conten	l		I			
Revisio	n and c		ndamental topics in ele I particular teaching deg			
Intende	ed learr	ning outcomes				
tics.He	/She is	acquainted with the e	school geometry, as rea mployment of new tech	nologies for teachin		
Ü (2)			s, language — if other than Ger			
			elle Hochschule Bayern			
		essment (type, scope, lan le for bonus)	guage — if other than German, e	examination offered — if no	t every semester, informat	on on whether
		ased, 15 to 20 hours)				
		ffered: Once a year, su	mmer semester			
Allocat		•				
	· · · ·					
Additio	nal info	ormation				
			C			
Worklo	ad					
60 h						
Teachi	ng cycl	9				
Referre	d to in	LPO I (examination regulat	ions for teaching-degree progra	mmes)		
§ 22						
§ 22						
§ 22	Nr. 3 f)					
Module	e appea	rs in				
First sta	ate exa	mination for the teach	ing degree Grundschule	Mathematics (2015))	
			ing degree Grundschule		natics (Primary Scho	ool) (2015)
First state examination for the teaching degree Realschule Mathematics (2015) First state examination for the teaching degree Gymnasium Mathematics (2015)						
			,		athomatics (Driman	School)
First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2015)						
	ate exa	mination for the teach	ing degree Sonderpäda	gogik Didactics in M	athematics (Middle	School)
-	ate exa	mination for the teach	ing degree Mittelschule	Mathematics (2015)		
			ing degree Mittelschule		natics (Middle Schoo	ol) (2015)
First sta	ate exa	mination for the teach	ing degree Gymnasium	Mathematics (2019)		
	ien Mathe	matics (2019)	JMU Würzburg	• generated 19-Apr-2025 • e	xam. reg.	page 76 / 100



First state examination for the teaching degree Mittelschule Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

exchange program Mathematics (2023)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 77 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module	e title				Abbreviation
Start-up Tutorial Mathematics (virtual course)				10-M-VHBBr-152-m01	
Module coordinator				Module offered by	
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mather	natics
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
2	(not)	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
		ussion of basic topics in I proofs.	mathematics that are	well known from sc	hool, with a focus on mathemati-
Intend	ed lear	ning outcomes			
The stu	ıdent g			ues which are prere	equisites for the further courses in
Course	S (type, r	number of weekly contact hours, I	anguage — if other than Ge	rman)	
Ü (2) Course	type: e	eLearning, mostly Virtuell	e Hochschule Bavern	(vhb)	
		sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if n	ot every semester, information on whether
		oased, 15 to 20 hours) iffered: Every two years, v	vinter semester		
Allocat	ion of	places			
Additio	onal inf	ormation			
Worklo	ad				
60 h					
Teachi	ng cycl	e			
	-				
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	immes)	
§ 22					
Module		ars in			
		mination for the teaching	g degree Gymnasium	Mathematics (2015))
First sta	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (2019)
First sta	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (2023)

	title				Abbreviation
Stocha	Stochastics in Sekundarstufe I (virtual course)				10-M-VHBSto-152-mo1
Module coordinator				Module offered by	
Dean of	fStudie	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
2	(not) s	successfully completed	pleted		
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
		consolidation of the fund c courses in stochastics.		ochastics that are pre	erequisites for the subject-speci-
Intende	ed learı	ning outcomes			
		as basic knowledge of st acquainted with the em			athematics and its didac- og stochastics in school.
	S (type, n	umber of weekly contact hours, I	language — if other than Gei	rman)	
Ü (2) Course	type: e	Learning, mostly Virtuell	e Hochschule Bayern	ı (vhb)	
			ge — if other than German,	examination offered — if no	ot every semester, information on whether
		le for bonus)			
		based, 15 to 20 hours) ffered: Once a year, wint	orcomostor		
Allocat					
Allocal		1465			
 Additio	nal inf	ormation			
 Additio	nal inf	ormation			
		ormation			
 Worklo		ormation			
 Worklo 60 h	ad				
 Worklo	ad				
 Worklo 60 h Teachir	ad ng cycl	9	c for toaching dogge are		
 Worklo 60 h Teachir Referre	ad ng cycle ed to in		s for teaching-degree progra	ammes)	
 Worklo 60 h Teachir	ad 1g cyclo d to in Nr. 1 h)	9	s for teaching-degree progra	ammes)	
 Worklo 60 h Teachir Referre § 22 N § 22 N	ad ng cyclo d to in Nr. 1 h) Nr. 2 f)	9	s for teaching-degree progra	ammes)	
 Worklo 60 h Teachir Referre § 22	ad 1g cyclo d to in Vr. 1 h) Vr. 2 f) Vr. 3 f)	e LPO I (examination regulation	s for teaching-degree progra	immes)	
 60 h Teachir § 22 N § 22 N § 22 N § 22 N First sta	ad <u>ng cyclo</u> <u>d to in</u> Vr. 1 h) Vr. 2 f) Vr. 3 f) e appea ate exa	e LPOI (examination regulation I rs in mination for the teaching	g degree Grundschule	e Mathematics (2015	
 60 h Teachir § 22 N § 22 N § 22 N Module First sta First sta	ad ng cyclo d to in Vr. 1 h) Vr. 2 f) Vr. 3 f) e appea ate exa ate exa	e LPOI (examination regulation I rs in mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule	e Mathematics (2015 e Didactics in Mather) matics (Primary School) (2015)
 60 h Teachir § 22 II N § 22 II N § 22 II N § 22 II N First sta First sta First sta	ad ng cycle d to in Nr. 1 h) Nr. 2 f) Nr. 3 f) e appea ate exa ate exa ate exa ate exa	e LPOI (examination regulation rs in mination for the teaching mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule N	e Mathematics (2015) e Didactics in Mather Mathematics (2015)	matics (Primary School) (2015)
 60 h Teachir Referre § 22 II N § 22 II N § 22 II N First sta First sta First sta First sta First sta First sta	ad ng cycle d to in Vr. 1 h) Vr. 2 f) Vr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation mination for the teaching mination for the teaching mination for the teaching mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule M g degree Gymnasium	e Mathematics (2015 e Didactics in Mather Mathematics (2015) Mathematics (2015)	matics (Primary School) (2015)
 Worklo 60 h Teachir § 22 II N § 22 II N § 22 II N § 22 II N Module First sta First sta First sta First sta First sta First sta (2015) First sta	ad ng cycle d to in Vr. 1 h) Vr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule <i>N</i> g degree Gymnasium g degree Sonderpäda	e Mathematics (2015 e Didactics in Mather Mathematics (2015) Mathematics (2015) gogik Didactics in M	matics (Primary School) (2015)
 Worklo 60 h Teachir 8 22 II N § 22 II N First sta First sta First sta First sta (2015) First sta (2015)	ad ng cycle d to in Nr. 1 h) Nr. 2 f) Nr. 3 f) e appea ate exa ate exa	e LPOI (examination regulation mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule A g degree Gymnasium g degree Sonderpäda g degree Sonderpäda	e Mathematics (2015 e Didactics in Mather Mathematics (2015) Mathematics (2015) gogik Didactics in M gogik Didactics in M	matics (Primary School) (2015) lathematics (Primary School) lathematics (Middle School)
 Worklo 60 h Teachir Referre § 22 N § 22 N § 22 N Module First sta First sta First sta (2015) First sta (2015) First sta First sta (2015)	ad ng cycle d to in Vr. 1 h) Vr. 2 f) Vr. 3 f) e appea ate exa ate exa	e LPO I (examination regulation mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule M g degree Gymnasium g degree Sonderpäda g degree Sonderpäda g degree Mittelschule g degree Mittelschule	e Mathematics (2015 e Didactics in Mather Mathematics (2015) Mathematics (2015) gogik Didactics in M gogik Didactics in M e Mathematics (2015) e Didactics in Mather	matics (Primary School) (2015) lathematics (Primary School) lathematics (Middle School)) matics (Middle School) (2015)

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	data record Lehramt Gymnasien Mathematik - 2019	



First state examination for the teaching degree Mittelschule Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

exchange program Mathematics (2023)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 80 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module	title				Abbreviation
Mather	Mathematics in grade 10 (virtual course)				10-M-VHBM10-152-m01
Module	coord	inator		Module offered by	
Dean of	fStudie	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)	
2	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Basic to	opics o	n teaching mathematics	in tenth grade in Hau	ptschule, Realschul	e and Gymnasium.
Intende	ed learn	ning outcomes			
schule, of new	as wel techno	l as the related mathema logies for teaching mathe	atical backgrounds ar ematics in tenth form	nd proofs. He/She is	German Mittelschule and Real- acquainted with the employment
	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
Ü (2) Course	type: e	Learning, mostly Virtuell	e Hochschule Bayern	(vhb)	
			ge — if other than German, e	examination offered — if no	ot every semester, information on whether
		le for bonus)			
		based, 15 to 20 hours) ffered: Once a year, sum	mer semester		
Allocati					
Additio	nal info	ormation			
Worklo	ad				
60 h					
Teachir	ng cycl	9			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
§ 22					
§ 22 N					
§ 22		•			
Module					N
First sta First sta	ate exa ate exa	mination for the teaching	g degree Grundschule g degree Realschule N	e Didactics in Mather Nathematics (2015)) matics (Primary School) (2015)
First state examination for the teaching degree Gymnasium Mathematics (2015) First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2015)					
_	ate exa	mination for the teaching	g degree Sonderpäda	gogik Didactics in M	athematics (Middle School)
First sta First sta	ate exa	mination for the teaching mination for the teaching mination for the teaching	g degree Mittelschule	Didactics in Mathem	natics (Middle School) (2015)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg. data record Lehramt Gymnasien Mathematik - 2019	page 81 / 100
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First state examination for the teaching degree Mittelschule Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

exchange program Mathematics (2023)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 82 / 100
	data record Lehramt Gymnasien Mathematik - 2019	1

Module	title				Abbreviation
School Mathematics from a Didactical Point of View: Algebra online (virtual course)					10-M-VHBDAL-191-m01
Module		inator		Module offered by	
		es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS		od of grading	Only after succ. com		
2		successfully completed			
Duratio		Module level	Other prerequisites		
1 semes	ster	undergraduate			
Conten	ts				
		tics is about learning and algebra: extensions of n			n the central and important to- uations and functions.
Intende	ed lear	ning outcomes			
justify l able to tion. Th	earnin assess ey kno	g units and learning sequestions and value the important	ences for the importa ce of digital technolog ation of algebraic co	ant topics in school gy with respect to to	ics. They are able to develop and algebra independently. They are days and future design of instruc- e to perform modelling (in the
Course	5 (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
Ü (2)					
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether
Assessi	ment o	based, 15 to 20 hours) ffered: Once a year, winte ning, Vhb	er semester		
Allocati	ion of _l	olaces			
Additio	nal inf	ormation			
Worklo	ad				
60 h					
Teachir	ng cycl	e			
	44. •				
		LPO I (examination regulations	s for teaching-degree progra	mmes)	
§ 22					
Module First sta		ars in mination for the teaching	degree Gympasium	Mathematics (2010)	
		gram Mathematics (2023)	- ,	mainematics (2019)	
		mination for the teaching		Mathematics (2023)	

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 83 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module title					Abbreviation
School course)		matics from a Didactical	Point of View: Analys	sis online (virtual	10-M-VHBDAN-191-m01
Module	coord	inator		Module offered by	
Dean of	fStudie	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
2	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
analysi	s. This		entral and important t		e" is about learning and teaching lysis: functions, sequences and li-
Intende	ed learn	ning outcomes	-		
ment of justify l able to tion. Th	f under earning assess iey kno	standing of the central co g units and learning sequ and value the important	oncepts of analysis ir lences for the import ce of digital technolo cation of concepts in	n teaching mathema ant topics in school gy with respect to to	niddle and long term develop- tics. They are able to develop and analysis independently. They are days and future design of instruc- le to perform modelling (in the
		umber of weekly contact hours, l		man)	
Ü (2)					
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether
Assess	ment o	based, 15 to 20 hours) ffered: Once a year, wint ing, Vhb	er semester		
Allocat	ion of p	olaces			
Additio	nal info	ormation			
Worklo	ad				
60 h					
Teachir	ng cycl	e			
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
§ 22	Nr. 3 f)				
Module	appea	irs in			
		mination for the teaching gram Mathematics (2023	g degree Gymnasium	Mathematics (2019)	

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 84 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module	title				Abbreviation
Didactics of Stochastics (virtual course)				10-M-VHBDST-191-m01	
Module coordinator				Module offered by	
Dean of	fStudie	es Mathematik (Mathema	atics)	Institute of Mathem	atics
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
2	(not) s	successfully completed	pleted		
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
portant dom va	topics riables	in stochastics, for examp	ple basics in stochas e, probability spaces	tics, Bernoulli experi s or the Tschebysche	focuses on the central and im- iments, location parameter, ran- ff inequality. Moreover, the cour- re on stochastics.
Intende	ed leari	ning outcomes			
tions an of unde justify l are able structio	The students are acquainted with the subject-specific contents of stochastics, and are able to structure the no- tions and methods within a conceptual map. They know strategies of short, middle and long term development of understanding of the central concepts of stochastics in teaching mathematics. They are able to develop and justify learning units and learning sequences for the important topics in school stochastics independently. They are able to assess and value the importance of digital technology with respect to todays and future design of in- struction. They know various fields of application of concepts in stochastics, and are able to perform modelling (in the sense of modelling cycles) independently.				
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
Ü (2)					
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
Assess	ment o	based, 15 to 20 hours) ffered: Once a year, winte ing, Vhb	er semester		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
60 h					
Teachir	ıg cycl	e			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
§ 22	Nr. 3 f)				
Module	e appea	ins in			
exchan	ge prog	mination for the teaching gram Mathematics (2023) mination for the teaching)	-	
			_ ·		

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 85 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Modul	e title				Abbreviation
Exam Tutorial Didactics of Mathematics (virtual course)			s (virtual course)		10-M-VHBEx-191-m01
Module coordinator				Module offered by	<u>.</u>
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
3	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conter	its				
the Ers as bas	tes Sta ic guide	atsexamen für Lehramt G elines for answering exan	iymnasium (first state	e examination for tea	g of theorems) in preparation for aching at a Gymnasium) as well tate examination in Bavaria).
	-	ning outcomes	- C + b - c + - b - c		- fan a dei an de anno an a blanca
					s for solving the exam problems.
	S (type, r	number of weekly contact hours, I	anguage — If other than Ger	man)	
Ü (2)					
		le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
Assess	ment o	based, 15 to 20 hours) ffered: Once a year, wint ning, Vhb	er semester		
Allocat	ion of _l	olaces			
Additio	onal inf	ormation			
Worklo	ad				
90 h					
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	mmes)	
§ 22	Nr. <u>3</u> f)				
Modul	e appea	ars in			
		mination for the teaching		-	
First st	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (2023)	

Module title				Abbreviation
Exam Tutoria	ıl Algebra (virtual course)			10-M-VHBExA-191-m01
Module coordinator			Module offered by	<u> </u>
Dean of Stuc	ies Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS Met	nod of grading	Only after succ. con	npl. of module(s)	
3 (not)	successfully completed			
Duration	Module level	Other prerequisites		
1 semester	undergraduate			
Contents				
for the Bavar are addresse are discusse Intended lea	ian state examination for d with equal importance, d in detail. Each module c rning outcomes	the teaching degree (and fundamental alg ontains problems of	Gymnasium. The the ebraic concepts with increasing difficulty	ra with respect to their relevance ories of groups, rings and fields o their set-theoretic interrelations and their solutions.
braic proof n				shows the level of difficulty in the
Courses (type	number of weekly contact hours,	anguage — if other than Ger	rman)	
Ü (4)				
Method of as module is credita		ge — if other than German, o	examination offered — if no	ot every semester, information on whether
	based, 15 to 20 hours) offered: Once a year, sum ning, Vhb	mer semester		
Allocation of	places			
Additional in	formation			
Workload				
90 h				
Teaching cy	le			
Referred to i	n LPO I (examination regulation	s for teaching-degree progra	mmes)	
§ 22 Nr. 3 f)			
Module app	ears in			
	amination for the teaching amination for the teaching		-	

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 87 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

	e title				Abbreviation
Mathe	matics	1 (virtual course)			10-M-VHBMa1-152-m01
Module	e coord	inator		Module offered by	
Dean o	f Studie	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
2	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites	;	
1 seme	ster	undergraduate			
Conten	ts				
		basic topics on teaching concerning the organisa		mnasium, in particu	lar verbal and subject-specific
Intend	ed learı	ning outcomes			
		able to discuss selected oth subject-related and r		s on teaching mathe	matics at German Gymnasium,
Course	S (type, n	umber of weekly contact hours,	anguage — if other than Ge	rman)	
Ü (2) Course	type: e	Learning, mostly Virtuell	e Hochschule Bayern	ı (vhb)	
		essment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
		oased, 15 to 20 hours) ffered: Every two years, v	vinter semester		
Allocat	ion of p	olaces			
Allocat	ion of p	blaces			
		ormation			
	onal info				
 Additio	onal info				
 Additio Worklo 60 h	onal info	ormation			
 Additio Worklo	onal info	ormation			
 Additio Worklo 60 h Teachin 	ad ng cycl	ormation	s for teaching-degree progra	ammes)	
 Additio Worklo 60 h Teachin 	ad ng cyclo ed to in Nr. 1 h)	ormation e	s for teaching-degree progra	ammes)	
 Additio Worklo 60 h Teachin Referre § 22 § 22	ad ng cyclo ed to in Nr. 1 h) Nr. 2 f)	ormation e	s for teaching-degree progra	ammes)	
 Additio Worklo 60 h Teachin Referre § 22 II	ad ng cyclo ed to in Nr. 1 h) Nr. 2 f) Nr. 3 f)	e POI (examination regulation	s for teaching-degree progra	ammes)	
 Additio Worklo 60 h Teachin Referre § 22 § 22 § 22 Module First sta First sta	ad ng cyclo ed to in Nr. 1 h) Nr. 2 f) Nr. 3 f) e appea ate exa ate exa	e LPOI (examination regulation urs in mination for the teaching	g degree Grundschule g degree Grundschule	e Mathematics (2015 e Didactics in Mathe) matics (Primary School) (2015)
 Additio Worklo 60 h Teachin Referre § 22 II § 21 II § 22 II § 23 II § 23 II § 23 II § 23 II § 23 II § 23 II § 24 II § 25 II § 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	ad ng cyclo ed to in Nr. 1 h) Nr. 2 f) Nr. 3 f) e appea ate exa ate exa ate exa ate exa	e LPOI (examination regulation urs in mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule I	e Mathematics (2015 e Didactics in Mathe Mathematics (2015)	matics (Primary School) (2015)
 Additio Worklo 60 h Teachin Referre § 22 II I § 22 II I § 22 II I § 22 II I § 22 II I First sta First sta First sta First sta First sta	ad ng cyclo ed to in Nr. 1 h) Nr. 2 f) Nr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation mination for the teaching mination for the teaching mination for the teaching mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule I g degree Gymnasium	e Mathematics (2015 e Didactics in Mathe Mathematics (2015) Mathematics (2015)	matics (Primary School) (2015)
 Additio Worklo 60 h Teachin Referre § 22 II I § 22 II I § 22 II I § 22 II I § 22 II I First sta First sta First sta First sta First sta (2015)	ad ng cycle ed to in Nr. 1 h) Nr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule I g degree Gymnasium g degree Sonderpäda	e Mathematics (2015 e Didactics in Mathe Mathematics (2015) Mathematics (2015) gogik Didactics in M	matics (Primary School) (2015)

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	data record Lehramt Gymnasien Mathematik - 2019	



First state examination for the teaching degree Mittelschule Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

exchange program Mathematics (2023)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 89 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

	e title				Abbreviation
Mather	natics	2 (virtual course)			10-M-VHBMa2-152-m01
Module coordinator				Module offered by	
Dean of	fStudie	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
2	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites	i	
1 seme	ster	undergraduate			
Conten	ts				
		central topics on teachir lementation in the classr		Symnasium, in partic	ular didactic analyses and possi
Intende	ed learı	ning outcomes			
		able to discuss and ana om a didactical point of		and questions on tea	aching mathematics at German
Course	S (type, n	umber of weekly contact hours,	language — if other than Ge	rman)	
Ü (2) Course	type: e	Learning, mostly Virtuell	e Hochschule Bayern	ı (vhb)	
		s essment (type, scope, langua le for bonus)	age — if other than German,	examination offered — if no	ot every semester, information on whether
• •		ased, 15 to 20 hours) ffered: Every two years, s	summer semester		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Additio	nal inf	ormation			
Additio Worklo		ormation			
		ormation			
 Worklo 60 h	ad				
 Worklo	ad				
 Worklo 60 h Teachir	ad ng cycl	9	s for teaching-degree progra	ammes)	
 Worklo 60 h Teachir	ad ng cycle ed to in		s for teaching-degree progra	ammes)	
 60 h Teachir <u>Referre</u> § 22 1 § 22 1	ad ng cyclo d to in Nr. 1 h) Nr. 2 f)	9	s for teaching-degree progra	ammes)	
 Worklo 60 h Teachir Referre § 22 § 22	ad ng cyclo d to in Nr. 1 h) Nr. 2 f)	9	s for teaching-degree progra	ammes)	
 60 h Teachir § 22 1 § 22 1 § 22 1	ad 1g cyclo d to in Vr. 1 h) Vr. 2 f) Vr. 3 f)	e LPO I (examination regulation	s for teaching-degree progra	ammes)	
 Worklo 60 h Teachir Referre § 22 1 § 22 1 § 22 1 First sta	ad <u>ng cyclo</u> <u>d to in</u> Vr. 1 h) Vr. 2 f) Vr. 3 f) e appea ate exa	e LPOI (examination regulation r rs in mination for the teaching	g degree Grundschule	e Mathematics (2015	
 Worklo 60 h Teachir § 22 1 § 22 1 § 22 1 § 22 1 First sta First sta	ad ng cyclo d to in Vr. 1 h) Vr. 2 f) Vr. 3 f) e appea ate exa ate exa	e LPOI (examination regulation I rs in mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule	e Mathematics (2015 e Didactics in Mathe) matics (Primary School) (2015)
 Worklo 60 h Teachir Referre § 22 1 § 22 1 § 22 1 Module First sta First sta First sta	ad ng cycle d to in Nr. 1 h) Nr. 2 f) Nr. 3 f) e appea ate exa ate exa ate exa ate exa	e LPOI (examination regulation rs in mination for the teaching mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule I	e Mathematics (2015 e Didactics in Mather Mathematics (2015)	matics (Primary School) (2015)
 Worklo 60 h Teachir § 22 II I § 22 II I § 22 II I § 22 II I § 22 II I First sta First sta First sta First sta	ad ng cycle d to in Vr. 1 h) Vr. 2 f) Vr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation mination for the teaching mination for the teaching mination for the teaching mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule I g degree Gymnasium	e Mathematics (2015 e Didactics in Mather Mathematics (2015) Mathematics (2015)	matics (Primary School) (2015)
 Worklo 60 h Teachir Referre § 22 1 § 22 1 § 22 1 S S 22 1 S S 22 1 S S 22 1 S S 22 1 S 22 1 S S 22 1 S 2 S 2 S 2 S 2 S 2 S 2 S 2 S 2	ad ng cycle d to in Vr. 1 h) Vr. 2 f) Vr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation mination for the teaching mination for the teaching mination for the teaching mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule I g degree Gymnasium	e Mathematics (2015 e Didactics in Mather Mathematics (2015) Mathematics (2015)	matics (Primary School) (2015)
 Worklo 60 h Teachir Referre § 22 1 § 22 1 § 22 1 Module First sta First sta First sta First sta (2015) First sta	ad ng cycle d to in Vr. 1 h) Vr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa ate exa ate exa ate exa	e LPOI (examination regulation irs in mination for the teaching mination for the teaching mination for the teaching mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule I g degree Gymnasium g degree Sonderpäda	e Mathematics (2015 e Didactics in Mather Mathematics (2015) Mathematics (2015) gogik Didactics in M	matics (Primary School) (2015)
 60 h Teachir Referre § 22 1 § 22 1 § 22 1 § 22 1 First sta First sta First sta First sta First sta (2015) First sta (2015) First sta	ad ag cycle d to in Vr. 1 h) Vr. 2 f) Vr. 3 f) e appea ate exa ate exa ate exa ate exa ate exa ate exa ate exa ate exa	e LPO I (examination regulation mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule I g degree Gymnasium g degree Sonderpäda g degree Sonderpäda g degree Mittelschule	e Mathematics (2015 e Didactics in Mathen Mathematics (2015) Mathematics (2015) gogik Didactics in M gogik Didactics in M	matics (Primary School) (2015) athematics (Primary School) athematics (Middle School)
 Worklo 60 h Teachir Referre § 22 1 § 22 1 § 22 1 Module First sta First sta First sta (2015) First sta (2015) First sta First sta (2015)	ad ng cycle d to in Vr. 1 h) Vr. 2 f) Vr. 3 f) e appea ate exa ate exa	e LPO I (examination regulation mination for the teaching mination for the teaching	g degree Grundschule g degree Grundschule g degree Realschule I g degree Gymnasium g degree Sonderpäda g degree Sonderpäda g degree Mittelschule g degree Mittelschule	e Mathematics (2015 e Didactics in Mathematics (2015) Mathematics (2015) gogik Didactics in M gogik Didactics in M gogik Didactics in M	matics (Primary School) (2015) athematics (Primary School) athematics (Middle School)) natics (Middle School) (2015)

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	data record Lehramt Gymnasien Mathematik - 2019	



First state examination for the teaching degree Mittelschule Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

exchange program Mathematics (2023)

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 91 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module	title				Abbreviation
Introdu	ction t	o Elementary Number Th	eory (virtual course)		10-M-VHBZth-191-m01
Module	e coord	inator		Module offered by	
Dean of Studies Mathematik (Mathematics)		atics)	Institute of Mathem	atics	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
3	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
proofs) (includ	, introd ing mo	luces the different numbed dular arithmetics) and in	er domains, discusse	s elementary divisib	ositional logic, sets, definitions, ility properties of the integers proximation properties.
		ning outcomes			
		get aquainted with the m etic questions, and get a			ion techniques to elementary cations.
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	man)	
Ü (2)					
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	t every semester, information on whether
Assess	ment o	based, 15 to 20 hours) ffered: Once a year, winto ing, Vhb	er semester		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
90 h					
Teachir	ıg cycl	e			
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
§ 22	Vr. 3 f)				
Module	e appea	in in			
First sta	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (2019)	

LA Gymnasien Mathematics (2019)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 92 / 100
	data record Lehramt Gymnasien Mathematik - 2019	

Module	e title				Abbreviation	
Analyti	c Geon	netry (virtual course)			10-M-VHBAnG-191-m01	
Module	e coord	inator		Module offered by		
Dean o	Dean of Studies Mathematik (Mathematics)			Institute of Mathem	atics	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
3	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
		ives a brief introduction t ding Hessian normal form			ytic geometry in Euclidean vector ssification of quadrics.	
Intende	ed lear	ning outcomes	·			
the lan	guage		nsolidate certain asp	ects of linear algebr	anslate geometric problems to a by applying them to geometric am.	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
Ü (2)						
		Sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
Assess	ment o	based, 15 to 20 hours) ffered: Once a year, sum iing, Vhb	mer semester			
Allocat						
			,			
Additio	nal inf	ormation				
Worklo	ad					
90 h						
Teachi	ng cycl	e				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
§ 22	Nr. <u>3</u> f)					
Module	e appea	ars in				
First sta	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (2019)		

Module	Module title Abbreviation				
Compu	iter and	l Mathematics (virtual co	urse)		10-M-VHBCom-152-m01
Module	e coord	linator		Module offered by	<u>.</u>
Dean o	of Studi	es Mathematik (Mathema	atics)	Institute of Mathen	natics
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
2	(not)	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	nts	• •	·		
Discus puter te		possible ways to use cor	nputers in teaching n	nathematics as well	as discussion of common com-
Intend	ed lear	ning outcomes			
		s acquainted with basic p s with the potential and l			iters in the teaching of mathema-
Course	S (type, I	number of weekly contact hours, l	anguage — if other than Ger	man)	
Ü (2) Course	type: e	eLearning, mostly Virtuell	e Hochschule Bayern	(vhb)	
		Sessment (type, scope, langua ole for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
	-	oased, 15 to 20 hours) offered: Every two years, s	ummer semester		
Allocat	tion of	places			
Additio	onal inf	ormation			
Worklo	bad				
60 h					
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	mmes)	
§ 22	Nr. 3 f)				
Module	e appea	ars in			
First st	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (2015)	
		mination for the teaching			
First st	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (2023))

Module	e title				Abbreviation
Exam T	utorial	Complex Analysis (virtua	al course)		10-M-VHBFT-191-m01
Module	e coord	inator		Module offered by	
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS	Metho	od of grading	d of grading Only after succ. compl. of module(s)		
3	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
for the tions w exercis	Bavaria vith ree es from	an state examination for l analysis and geometry. n exams of previous years	he teaching degree (The topics are supple	Gymnasium. A partic emented and illustra	s with respect to their relevance ular focus is given to interrela- ted by selected examples and
		ning outcomes			
the res	pective		plex analysis and is	able to apply them i	ands the central concepts and n different contexts. The course
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)	
Ü (4)					
		s essment (type, scope, langua ile for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
Assess	ment o	based, 30 to 40 hours) ffered: Once a year, winto iing, Vhb	er semester		
Allocat					
Additio	onal inf	ormation			
Worklo	ad				
90 h					
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	immes)	
§ 22	Nr. 3 f)				
Module	e appea	ars in			
		mination for the teaching		-	
First st	ate exa	mination for the teaching	degree Gymnasium	Mathematics (2023)	1

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	data record Lehramt Gymnasien Mathematik - 2019	

Module	e title				Abbreviation
Exam T	utorial	Ordinary Differential Equ	uations (virtual cours	se)	10-M-VHBDGL-191-m01
Module	e coord	inator		Module offered by	
Dean of Studies Mathematik (Mathematics)		Institute of Mathem	natics		
ECTS	Metho	od of grading	Only after succ. con	Ily after succ. compl. of module(s)	
3	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
cus is g are sup degree	given to opleme s of dif	animations and visualis nted and illustrated by se ficulty.	ations of the behavio	our of solutions of di	egree Gymnasium. A particular fo- fferential equations. The topics ms of previous years in varying
Intende	ed lear	ning outcomes			
the res rent co	pective ntexts.	e methods of proof in the The course shows the lev	field of ordinary diffe vel of difficulty in the	rential equations ar Bavarian state exan	ands the central concepts and nd is able to apply them in diffe- nination.
	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)	
Ü (3)					
		sessment (type, scope, langua ele for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
Assess	ment o	based, 20 to 30 hours) Iffered: Once a year, sum hing, Vhb	mer semester		
Allocat	ion of j	places			
Additio	onal inf	ormation			
Worklo	ad				
90 h	_				
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	immes)	
§ 22	Nr. 3 f)				
Module	e appea	ars in			
		mination for the teaching mination for the teaching		-	

Module	e title				Abbreviation
School course)		matics from a Didactical	Point of View: Geome	etry online (virtual	10-M-VHBDG-191-m01
Module	e coord	inator		Module offered by	
Dean o	Dean of Studies Mathematik (Mathematics)			Institute of Mathem	natics
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
2	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
importa which a chapte	ant for a are usu rs on s	all of geometry and math ally discussed only briefl bace geometry, trigonom	ematics, namely prov y or not at all in unive	ing and problem so rsity lectures and ir	es on topics which are central and lving. It also addresses topics n the literature. Among these are
Intende	ed lear	ning outcomes			
ment o and jus They ar of instr	f under stify lea re able ruction.	standing of the central co rning units and learning to assess and value the i	oncepts of geometry in sequences for the imp mportance of digital t s of application of geo	n teaching mathem portant topics in sch echnology with resp	niddle and long term develop- atics. They are able to develop nool geometry independently. pect to todays and future design nd are able to perform modelling
Course	S (type, r	umber of weekly contact hours, l	anguage — if other than Gerr	man)	
Ü (2)	-				
		essment (type, scope, langua le for bonus)	ge — if other than German, e	xamination offered — if no	ot every semester, information on whether
Assess	ment o	based, 15 to 20 hours) ffered: Once a year, sum ing, Vhb	mer semester		
Allocat	ion of p	olaces			
Additio	onal inf	ormation			
Worklo	ad				
60 h					
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree prograr	nmes)	
§ 22					
Module	-	irs in			
		mination for the teaching	g degree Gymnasium I	Mathematics (2019)	I
		gram Mathematics (2023			
First sta	ate exa	mination for the teachinន្	g degree Gymnasium I	Mathematics (2023))

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	data record Lehramt Gymnasien Mathematik - 2019	

Modul	e title				Abbreviation	
History	of Ma	thematics (virtual course)		10-M-VHBHM-191-m01	
Module coordinator				Module offered by	·	
Dean o	of Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics	
ECTS	Meth	od of grading	f grading Only after succ. compl. of module(s)			
5	(not)	successfully completed				
Duration Module level		Module level	Other prerequisites			
1 semester undergraduate		undergraduate				
Conter	Its					
the dev	velopm	ent of modern algebra (a			e foundation of mathematics or	
Intend	ed lear	ning outcomes				
The stu	ıdent s	hall				
ii) learı	n the ba	verview over the develop asic techniques for worki search using databases a	ng with mathematica	l texts as well as his	torical texts on mathematics	
iii) be a	able to	write an essay on a selec	ted topic from the his	story of mathematics	5.	
Course	S (type, 1	number of weekly contact hours, l	anguage — if other than Ger	man)		
Ü (2) Modul	e taugh	t in: English				
		Sessment (type, scope, langua ole for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether	
Langua Assess	age of a ment o	o to 20 pages) issessment: German and, iffered: Once a year, sum iing, Vhb				
	tion of					
Additio	onal inf	ormation				
Worklo	ad					
150 h						
-	ng cycl	e				
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	mmes)		
§ 22						
	e appea	ars in				
		mination for the teaching	g degree Gymnasium	Mathematics (2019)		
		gram Mathematics (2023				
)			

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	data record Lehramt Gymnasien Mathematik - 2019	





Paper

(10 ECTS credits)

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

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	data record Lehramt Gymnasien Mathematik - 2019	

Module	e title			Abbreviation		
Thesis in Mathematics (Teaching Degree at German Gymnasium) 10-M-HMGY-152-m01						
Module	e coord	inator		Module offered by		
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
			Other prerequisites			
1-2 semester		undergraduate				
Conten	Its		·			
		y researching and writing supervisor.	on a topic in mathen	natics or mathemation	cs didactics selected in consulta-	
Intend	ed lear	ning outcomes				
tained	during		aching degree progra	mme. He/She can w	pply the skills and methods ob- rite down the result of his/her	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)		
No cou	rses as	signed to module				
		s essment (type, scope, langua ile for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
to 300 Langua	hours) age of a		-	-	aching-degree programmes) (250 on 4 LPO I (examination regulati-	
Allocat	ion of j	olaces				
Additio	onal inf	ormation				
Worklo	ad					
300 h						
-	ng cycl	e				
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	mmes)		
§ 29		-				
	e appea	ars in				
		mination for the teaching	g degree Gymnasium	Mathematics (2015)		
First state examination for the teaching degree Gymnasium Mathematics (2019)						
First sta	ate exa	mination for the teaching	g degree Gymnasium	Mathematics (2023))	