

## Subdivided Module Catalogue for the Subject

# **Mathematics**

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

> Examination regulations version: 2009 Responsible: Institute of Mathematics

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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:

#### LASPO2009

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

#### 23-May-2012 (2012-81)

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.

## The subject is divided into

Abbreviation	Module title	ECTS credits	Method of grading	page
Scientific Discipline (54 E	CTS credits)			
Compulsory Courses (54	ECTS credits)			
10-M-EL1-092-m01	Elementary Mathematics 1 (German Grundschule/Hauptschu- le/Realschule)	7	NUM	11
10-M-EL2-092-m01	Elementary Mathematics 2 (German Grundschule/Hauptschu- le/Realschule)	11	NUM	13
10-M-M1GHR-092-m01	Basics in Mathematics (German Grundschule/Hauptschu- le/Gymnasium)	15	NUM	16
10-M-M2GHR-092-m01	Advances in Mathematics (German Grundschule/Hauptschu- le/Realschule)	18	NUM	18
10-M-M3GHR-092-m01	Revision Course in Mathematics (German Grundschule/Haupt- schule/Gymnasium)	3	B/NB	20
Teaching (12 ECTS credits	;)			
10-M-DGHR-092-m01	Didactics of Mathematics (German Hauptschule/Realschule)	10	NUM	5
10-M-DVHS-092-m01	Advanced Didactics of Mathematics (German Hauptschule)	2	B/NB	10
nex "Ergänzende Bestimmung Mathematics	ary: The interdisciplinary additional offer for a teaching degree o gen für den "Freien Bereich" im Rahmen des Studiums für ein Le rell as subject-specific electives) subject specific)	hramt".		
	Computers in Mathematical Teaching	3	B/NB	4
	Methodology of Teaching in Mathematics (German Hauptschu- le)	3	B/NB	7
10-M-DVHB-092-m01	E-Learning and Blended Learning in Mathematics at school	3	B/NB	8
10-M-VHBSto-092-m01	Stochastics in Sekundarstufe I (virtual course)	3	B/NB	27
10-M-VHBAri-092-m01	Basics in Arithmetics (virtual course)	3	B/NB	21
10-M-VHBGeo-092-m01	Basics in School Geometry (virtual course)	3	B/NB	23
10-M-VHBM10-092-m01	Mathematics in Class 10 (virtual course)	3	B/NB	25
	arbeit (thesis) in accordance with the provisions of Section 29 L ) is a prerequisite for teaching degree students to be admitted t		ination regulat	

Module	e title				Abbreviation
Compu	ters in	Mathematical Teaching			10-M-DCMU-092-m01
Module	e coord	inator		Module offered by	
Dean o	f Studie	es Mathematik (Mathema	atics)	Institute of Mathem	atics
ECTS	i	od of grading	Only after succ. con		
3	(not) s	successfully completed		-	
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Discus puter te		possible ways to use cor	nputers in teaching n	nathematics as well	as discussion of common com-
Intend	ed learı	ning outcomes			
					ters in the teaching of mathema-
tics, as	well as	s with the potential and l	imitations of comput	er tools.	
Course	<b>s</b> (type	, number of weekly conta	ct hours, language –	if other than Germa	n)
V (no ir	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)
		e <b>ssment</b> (type, scope, la on on whether module ca			tion offered — if not every seme-
project	(type a	nd expenditure of time t	o be specified by the	lecturer at the begin	ning of the course)
		ffered: every two years, s			8
Allocat	ion of p	olaces			
Additio	onal info	ormation			
Worklo	ad				
Teachi	ng cycl	9			
Referre	ed to in	LPOI (examination regu	lations for teaching-	legree programmes)	
Module	e appea	in in			
		mination for the teaching	g degree Hauptschule	Mathematics (2009	)
		-			natics (Secondary School) (2009)
First st	ate exa	mination for the teaching	g degree Realschule N	Aathematics (2009)	
		mination for the teaching			
		mination for the teaching		-	
First sta (2009)	ate exa	mination for the teaching	g degree Sonderpäda	gogik Didactics in M	athematics (Secondary School)
First sta (2013)	ate exa	mination for the teaching	g degree Sonderpäda	gogik Didactics in M	athematics (Middle School)
		mination for the teaching			
First st	ate exa	mination for the teachinន្	g degree Mittelschule	Didactics in Mathen	natics (Middle School) (2013)

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Modul		Abbreviation					
	ics of Mathematics (German Ha	uptschule/Realschule		10-M-DGHR-092-m01			
Modul	e coordinator		Module offered by				
Dean of Studies Mathematik (Mathematics)			Institute of Mathematics				
ECTS Method of grading Only after succ. compl. of module(s)							
10	numerical grade						
Duratio		Other prerequisites					
3 seme	ester undergraduate						
Conter	its						
	sion of basic topics in teaching s as well as possibilities of impl			ule taking into account didactic ing modern technologies.			
Intend	ed learning outcomes						
accour	udent is acquainted with mather ht the students'perception of ma teaching of mathematics, maste	thematical topics. He	e/She knows importa	ant aspects of planning and ana-			
Course	s (type, number of weekly conta	ict hours, language –	- if other than Germa	n)			
• 1 • 1 t	odule has 4 components; inform o-M-DGHR-P-092: M (no informa o-M-DGHR-1-092, and 10-M-DGH act hours available) o-M-DGHR-3-092: V (no informa	ation on language and IR-2-092: V + Ü (no in	d number of weekly o Iformation on langua	contact hours available) ge and number of weekly con-			
				tion offered — if not every seme-			
	formation on whether module c			tion onered — If not every seme-			
	odule has the following 4 assess assessment components to pass	•		ise, students must pass all of			
le) (As	sment in module component 10- sessment Mathematics Didactic ECTS credit, numerical grading			- Prüfung (Haupt- und Realschu-			
• v k i	vritten examination (approx. 12) be replaced by an oral examinat n groups (groups of 2: approx. 4 i-media portfolio (as announced	ion of one candidate 5 minutes, groups of	each (approx. 30 mi	inutes) or an oral examination			
• (	Dnly after successful completion aken by students who successf	of module compone	•				
Assess schule DGHR- Haupts • 2 • 6	DGHR-2 and 10-M-DGHR-3. <b>Assessment in module component 10-M-DGHR-1-092:</b> Didaktik der Mathematik - Algebra (Haupt- und Real- schule) (Mathematics Didactics - Algebra, Hauptschule and Realschule), and <b>in module component 10-M- DGHR-2-092:</b> Didaktik der Mathematik - Geometrie (Haupt- und Realschule) (Mathematics Didactics - Geometry, Hauptschule and Realschule) : • 4 ECTS credits, pass / fail • exercises: at the beginning of the course, the lecturer will specify the type and scope of exercises to be successfully completed over the course of the semester for the module component to be considered						
Assess schule	successfully completed. <b>sment in module component 10-</b> ) (Mathematics Didactics - Stock			- Stochastik (Haupt- und Real-			
• e	ECTS credit, pass / fail exercises: at the beginning of the successfully completed over t successfully completed.						

#### Additional information

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#### Workload

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#### Teaching cycle

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

§ 51 (1) 4. Mathematik Didaktik

§ 51 (1) 4. Mathematik Fachdidaktik

#### Module appears in

First state examination for the teaching degree Hauptschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009)

Modul	e title				Abbreviation
Metho	dology	of Teaching in Mathema	tics (German Haupts	chule)	10-M-DMHS-092-m01
Module coordinator Module offered by					ed by
Dean of Studies Mathematik (Mathematics)			atics)	Institute of N	lathematics
ECTS	Meth	od of grading	Only after succ. con	npl. of module	(s)
3	(not)	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ester	undergraduate			
Conter	nts				
Discus	sion of	selected methods for tea	ching mathematics i	n Hauptschule	2.
		ning outcomes			
their re	espectiv				s at German Hauptschule, can assess oy an appropiate method depending on
Course	<b>es</b> (type	, number of weekly conta	ict hours, language –	- if other than	German)
S (no i	nforma	tion on SWS (weekly cont	act hours) and cours	e language av	ailable)
		<b>sessment</b> (type, scope, la ion on whether module ca			amination offered — if not every seme-
a) talk	(appro	x. 45 minutes) or b) proje	ct (approx. 5 to 15 pa	ges) or c) port	folio (approx. 5 to 15 pages)
Allocat	tion of	places			
Additio	onal inf	ormation			
Worklo	bad				
Teachi	ng cycl	Δ			
	<u></u>				
Doforr	d to in	LPOI (examination regu	lations for toaching	dograa prograv	nmoc)
Neient				uegiee piogiai	1111(=5)
		•			
Modul					
		mination for the teaching	,		-
	ate exa	-			Mathematics (Secondary School) (2009) ss in Mathematics (Secondary School)
		mination for the teaching	g degree Sonderpäda	gogik Didactio	s in Mathematics (Middle School)
	ate exa	mination for the teaching	g degree Mittelschule	Mathematics	(2013)
First st					Asthomatics (Middle School) (2012)

	e title				Abbreviation	
E-Learı	ning an	d Blended Learning in M	athematics at school		10-M-DVHB-092-m01	
Module coordinator				Module offered by	<u> </u>	
Dean o	ean of Studies Mathematik (Mathema				natics	
ECTS	Method of grading		Only after succ. compl. of module(s)			
3		successfully completed		•		
Duratio	on	Module level	Other prerequisites			
1 seme		undergraduate	Certain prerequisites Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew. Courses offered online by Virtuelle Hochschule Bayern (vhb) in the field of mathematics are always incor- porated into a module with an exercise. The respective modules can be identified by the word virtuell (online) added in brackets. Registration fo the exercise must always be made via SB@Home at the beginning of the course. This registration for the exercise will be considered a declaration of will to seek admission to assessment. If the exercise was successful-			
Conter	nts	I				
		fered by Virtuelle Hochsc e-learning and blended l	÷		acquainted with and reflects on	
Intend	ed lear	ning outcomes				
		s acquainted with basic n potentials and limitations	-	and blended learnir	ng in teaching methematics, as	
Course	es (type	, number of weekly conta	ict hours, language —	if other than Germa	ın)	
		tion on SWS (weekly con				
		<b>sessment</b> (type, scope, la ion on whether module c			tion offered — if not every seme	
web-ba course		oject assignments and te	ests (length/expendit	ure of time to be anr	nounced at the beginning of the	
Allocat	tion of	places	-			
Additic	onal inf	ormation				
Worklo	ad					
Teachi	ng cycl	٥				
LCULII	ing cycl					

#### Module appears in

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

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

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

First state examination for the teaching degree Gymnasium Mathematics (2012)

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

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2009)

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

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

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

Module	e title				Abbreviation
Advanc	ed Did	actics of Mathematics (G	ierman Hauptschule)		10-M-DVHS-092-m01
Module coordinator Module offered by					
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	atics
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	Its				
lar mat	hemat		analyses, contempo		nt different aspects, in particu- nathematics didactics as well as
Intende	ed lear	ning outcomes			
		able to discuss central t t-specific, didactical and		teaching mathematio	s in German Hauptschule, cons
Course	<b>s</b> (type	, number of weekly conta	ict hours, language –	- if other than Germa	n)
S (no ir	nforma	tion on SWS (weekly cont	tact hours) and cours	e language available	2)
		<b>sessment</b> (type, scope, la ion on whether module c			tion offered — if not every seme
a) talk	(appro	x. 60 minutes) or b) assig	nment to be complet	ed at home (approx.	50 to 60 hours)
Allocat			· · · · ·		
Additio	nal inf	ormation			
Auditio		ormation			
Worklo	ad				
	-				
Teachi	ng cycl	е	-		
Referre	ed to in	LPOI (examination regu	llations for teaching-o	degree programmes)	
§ 51 (1)	4. Mat	hematik Fachdidaktik			
Module	e appea	ars in			
First sta	ate exa	mination for the teaching	g degree Hauptschule	Mathematics (2009	)
					natics (Secondary School) (200
First sta (2009)		mination for the teaching	g degree Sonderpäda	gogik Didactics in M	athematics (Secondary School)
First sta (2013)	ate exa	mination for the teaching	g degree Sonderpäda	gogik Didactics in M	athematics (Middle School)
	ato ova				
		mination for the teaching		-	natics (Middle School) (2013)

at the beginning of the course. Registration for the course will be co         sidered a declaration of will to seek admission to assessment. If stu         dents have obtained the qualification for admission to assessment. If stu         dents have obtained the qualification for admission to assessment. If stu         dents have obtained the qualification for admission to assessment. If stu         dents have obtained the qualification for assessment in the current or in the subsequent semester. For sessment at a later date, students will have to obtain the qualification admission to assess the structure of the number as a basic theme in math tics, basic topics in elementary number theory and the structure of the number system.         Intendel learning outcomes       Intendel learning outcomes         The student knows the basic ways of thinking and working in mathematics, as well as the fundamental matimatical proof methods. He/She is able to apply these skills to basic problems in the fields of number theory the structure of the number system.         Courses (type, number of weekly contact hours, language — if other than German,         V + Û (no information on SWS (weekly contact hours) and course language available)         Method of assessment (type, scope, language — if other than German, examination of motil-media portfolio (as a nounced)         v: Û (no information on one candidate each (approx. 15 minutes) or an oral examination ragroups (gr of 2: approx. 20 minutes); if announced by the lecturer, the written examination in groups (gr of 2: approx. 20 minutes) arguage.         Aldication of places       Image: Image: Image: Image: Image: Image:	Modul	e title				Abbreviation	
Module coordinator         Module offered by           Dean of Studies Mathematik (Mathematics)         Institute of Mathematics           CTS         Method of grading         Only after succ. compl. of module(s)           7         numerical grade         -           1 semester         Undergraduate         Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective det at the beginning of the course. Registration for the course will be course is detered a declaration of will to seek admission to assessment. If stu dents have obtained the qualification for admission to assessment. If stu dents have obtained the qualification for admission to assessment at the course of the semester, the lecturer will prequisites will be ad ted to assessment and later date, students will have to obtain the qualificati- admission to assessment anew.           Contents         Introduction to fundamental techniques in mathematics. Approach to the number system.           Introduction to fundamental techniques in mathematics. Approach to the number system.         Interded learning outcomes           The student knows the basic ways of thinking and working in mathematics, as well as the fundamental math matical proof methods. He/She is able to apply these skills to basic problems in the fields of number theory the structure of the number system.           Courses (type, number of weekly contact hours) and course language available)           Method of assessment (type, scope, language — if other than German, examination of some conditiate each (approx. 15 minutes) or an oral examination in groups (gr of 2: approx. 2: omin	Eleme	ntary M	athematics 1 (German	Grundschule/Hauptsch	nule/Realschule)	1	
Dean of Studies Mathematik (Mathematics)         Institute of Mathematics           ECTS         Method of grading         Only after succ. compl. of module(s)           7         numerical grade	Module coordinator			Madula offered by			
ECTS       Method of grading numerical grade       Only after succ. compl. of module(s)         7       numerical grade							
7       numerical grade					natics		
Duration         Module level         Other prerequisites           1 semester         Undergraduate         Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective det at the beginning of the course. Registration for the course will be co sidered a declaration of will to seek admission to assessment. If stu dents have obtained the qualification for admission to assessment. If stu dents have obtained the qualification for admission to assessment. If stu dents have obtained the qualification for admission to assessment. If stu dents have obtained the current or in the subsequent semester. For sessment at a later date, students will have to obtain the qualificati admission to assessment anew.           Contents           Introduction to fundamental techniques in mathematics. Approach to the number system.           Intended learning outcomes           The student knows the basic ways of thinking and working in mathematics, as well as the fundamental math matical proof methods. He/She is able to apply these skills to basic problems in the fields of number theor the structure of the number system.           Courses (type, number of weekly contact hours, language — if other than German)           V + 0 (no information on SWS (weekly contact hours) and course language available)           Method of assessment (type, scope, language — lif other than German, examination in groups (gr of 2: approx. 20 minutes); if announced by the lecturer, the written examination in groups (gr of 2: approx. 20 minutes, groups of 3: approx. 30 minutes) or by a written and/or multi-media portfolio (as a nounced)           Allocation of places				Only after succ. con	npl. of module(s)		
1 semester       undergraduate       Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective det at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment. If students have obtained the qualification for admission to assessment. If students have obtained the qualification for admission to assessment. If students we obtained the qualification for admission to assessment. If students we obtained the qualification for admission to assessment in the current or in the subsequent semester. For sessment in the ferce, students who meet all prerequisites will be ad ted to assessment an earnew.         Contents       Introduction to fundamental techniques in mathematics. Approach to the number as a basic theme in math tics, basic topics in elementary number theory and the structure of the number system.         Intended learning outcomes       The student knows the basic ways of thinking and working in mathematics, as well as the fundamental matimatica proof methods. He/She is able to apply these skills to basic problems in the fields of number theory the structure of the number system.         Courses (type, number of weekly contact hours, language — if other than German)       V + 0 (no information on SWS (weekly contact hours) and course language available)         Method of assessment (type, scope, language — if other than German, examination offered — if not every siter, information on whether module can be chosen to eam a bous)         witten examination of one candidate each (approx. 15 minutes) or an oral examination in groups (gr of 2: approx. 20 minutes); if announced by the lecturer, the wri			r -	Other prorequisites			
sessment. The lecturer will inform students about the respective detat the beginning of the course. Registration for the course will be couse of sidered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment. The course of the semester, the lecturer will put their registration for sessment into effect. Students who meet all preroquisites will be adted to assessment in the current or in the subsequent semester. For sessment at a later date, students will have to obtain the qualification admission to assessment. Into current or in the subsequent semester. For sessment at a later date, students will have to obtain the qualification admission to assessment and test, basic topics in elementary number theory and the structure of the number system.         Introduction to fundamental techniques in mathematics. Approach to the number system.         Intended learning outcomes         The student knows the basic ways of thinking and working in mathematics, as well as the fundamental matical proof methods. He/She is able to apply these skills to basic problems in the fields of number theory the structure of the number system.         Courses (type, number of weekly contact hours, language — if other than German)         V + U (no information on SWS (weekly contact hours) and course language available)         Method of assessment (type, scope, language — if other than German, sumination in groups (gr of 2: approx. 2: on inutes); if announced by the lecturer, the written examination in groups (gr of 2: approx. 2: on inutes, groups of 3: approx. 3: on inutes) or an oral examination in groups (gr of 2: approx. 2: on inutes, groups of 3: approx. 3: on inutes) or by a written and/or multi-media portfolio (as a nounced)         Alditional informat						alify for admission t	0 as-
Contents         Introduction to fundamental techniques in mathematics. Approach to the number as a basic theme in math tics, basic topics in elementary number theory and the structure of the number system.         Intended learning outcomes         The student knows the basic ways of thinking and working in mathematics, as well as the fundamental matinal proof methods. He/She is able to apply these skills to basic problems in the fields of number theory the structure of the number system.         Courses (type, number of weekly contact hours, language — if other than German)         V + Ü (no information on SWS (weekly contact hours) and course language available)         Method of assessment (type, scope, language — if other than German, examination offered — if not every suster, information on whether module can be chosen to earn a bonus)         written examination of one candidate each (approx. 15 minutes) or an oral examination in groups (gr of 2: approx. 20 minutes); groups of 3: approx. 30 minutes) or by a written and/or multi-media portfolio (as a nounced)         Allocation of places	1 3611163161			Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment ove the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for			ill be con- nt. If stu- ssment over ation for as- vill be admit- ster. For as-
Introduction to fundamental techniques in mathematics. Approach to the number as a basic theme in math tics, basic topics in elementary number theory and the structure of the number system. Intended learning outcomes The student knows the basic ways of thinking and working in mathematics, as well as the fundamental mati- matical proof methods. He/She is able to apply these skills to basic problems in the fields of number theory the structure of the number system. Courses (type, number of weekly contact hours, language — if other than German) V + Ü (no information on SWS (weekly contact hours) and course language available) Method of assessment (type, scope, language — if other than German, examination offered — if not every sister, information on whether module can be chosen to earn a bonus) written examination (approx. 120 minutes); if announced by the lecturer, the written examination can be reg- ced by an oral examination of one candidate each (approx. 15 minutes) or an oral examination in groups (gr of 2: approx. 20 minutes, groups of 3: approx. 30 minutes) or by a written and/or multi-media portfolio (as a nounced) Allocation of places 	Contor	ate	1				
tics, basic topics in elementary number theory and the structure of the number system. Intended learning outcomes The student knows the basic ways of thinking and working in mathematics, as well as the fundamental matimatical proof methods. He/She is able to apply these skills to basic problems in the fields of number theory the structure of the number system. Courses (type, number of weekly contact hours, language — if other than German) V + Ü (no information on SWS (weekly contact hours) and course language available) Method of assessment (type, scope, language — if other than German, examination offered — if not every sister, information on whether module can be chosen to earn a bonus) written examination (approx. 120 minutes); if announced by the lecturer, the written examination and her module can be chosen to earn a bonus) written examination of one candidate each (approx. 15 minutes) or an oral examination in groups (gr of 2: approx. 20 minutes, groups of 3: approx. 30 minutes) or by a written and/or multi-media portfolio (as a nounced) Allocation of places Mdditional information Workload Merered to in LPO I (examination regulations for teaching-degree programmes) § 51 (1) 3. Mathematik Elementare Zahlentheorie, Elementare Stochastik, Elementargeometrie Module appears in First state examination for the teaching degree Grundschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) KAHauptschulen Mathematics (2009) MUWuzburg • generated 26-Aug-2024 • exam. reg. data re			o fundamental tashs:-	une in mathematica Ar	proach to the numb	or ac a bacic there	in mathema
Intended learning outcomes         The student knows the basic ways of thinking and working in mathematics, as well as the fundamental mathematical proof methods. He/She is able to apply these skills to basic problems in the fields of number theory the structure of the number system.         Courses (type, number of weekly contact hours, language — if other than German)         V + Ü (no information on SWS (weekly contact hours) and course language available)         Method of assessment (type, scope, language — if other than German, examination offered — if not every sister, information on whether module can be chosen to earn a bonus)         written examination (approx. 120 minutes); if announced by the lecturer, the written examination can be represented and the each (approx. 15 minutes) or an oral examination in groups (gr of 2: approx. 20 minutes, groups of 3: approx. 30 minutes) or by a written and/or multi-media portfolio (as a nounced)         Allocation of places				-	-		in mathema-
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Method of assessment (type, scope, language — if other than German, examination offered — if not every sister, information on whether module can be chosen to earn a bonus)         written examination (approx. 120 minutes); if announced by the lecturer, the written examination can be represed by an oral examination of one candidate each (approx. 15 minutes) or an oral examination in groups (group 2: approx. 20 minutes, groups of 3: approx. 30 minutes) or by a written and/or multi-media portfolio (as a nounced)         Allocation of places              Additional information              Morkload              Referred to in LPO I (examination regulations for teaching-degree programmes)       § 51 (1) 3. Mathematik Elementare Zahlentheorie, Elementare Stochastik, Elementargeometrie         Module appears in       First state examination for the teaching degree Grundschule Mathematics (2009)         First state examination for the teaching degree Realschule Mathematics (2009)       First state examination for the teaching degree Realschule Mathematics (2009)	Course	<b>es</b> (type	, number of weekly con	itact hours, language –	- if other than Germa	an)	
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ced by an oral examination of one candidate each (approx. 15 minutes) or an oral examination in groups (gr   of 2: approx. 20 minutes, groups of 3: approx. 30 minutes) or by a written and/or multi-media portfolio (as a nounced)   Allocation of places     Additional information     Workload     Teaching cycle     Referred to in LPO I (examination regulations for teaching-degree programmes)   § 51 (1) 3. Mathematik Elementare Zahlentheorie, Elementare Stochastik, Elementargeometrie   Module appears in   First state examination for the teaching degree Grundschule Mathematics (2009)   First state examination for the teaching degree Rauptschule Mathematics (2009)   First state examination for the teaching degree Realschule Mathematics (2009)   First state examination for the teaching degree Realschule Mathematics (2009)						ation offered — if not	every seme-
Additional information            Workload            Teaching cycle            Referred to in LPO I (examination regulations for teaching-degree programmes)         § 51 (1) 3. Mathematik Elementare Zahlentheorie, Elementare Stochastik, Elementargeometrie         Module appears in         First state examination for the teaching degree Grundschule Mathematics (2009)         First state examination for the teaching degree Realschule Mathematics (2009)         First state examination for the teaching degree Realschule Mathematics (2009)         LA Hauptschulen Mathematics (2009)         JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-         page 11	ced by of 2: a	an ora	l examination of one ca	indidate each (approx.	15 minutes) or an or	al examination in gr	oups (groups
Workload            Teaching cycle            Referred to in LPO I (examination regulations for teaching-degree programmes)         § 51 (1) 3. Mathematik Elementare Zahlentheorie, Elementare Stochastik, Elementargeometrie         Module appears in         First state examination for the teaching degree Grundschule Mathematics (2009)         First state examination for the teaching degree Realschule Mathematics (2009)         First state examination for the teaching degree Realschule Mathematics (2009)         LA Hauptschulen Mathematics (2009)         JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-         page 11	Allocat	tion of	places				
Workload Teaching cycle Referred to in LPO I (examination regulations for teaching-degree programmes) § 51 (1) 3. Mathematik Elementare Zahlentheorie, Elementare Stochastik, Elementargeometrie Module appears in First state examination for the teaching degree Grundschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009) First state examination for th							
Teaching cycle            Referred to in LPO I (examination regulations for teaching-degree programmes)         § 51 (1) 3. Mathematik Elementare Zahlentheorie, Elementare Stochastik, Elementargeometrie         Module appears in         First state examination for the teaching degree Grundschule Mathematics (2009)         First state examination for the teaching degree Hauptschule Mathematics (2009)         First state examination for the teaching degree Realschule Mathematics (2009)         LA Hauptschulen Mathematics (2009)         JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-         page 11	Additio	onal inf	ormation				
Teaching cycle            Referred to in LPO I (examination regulations for teaching-degree programmes)         § 51 (1) 3. Mathematik Elementare Zahlentheorie, Elementare Stochastik, Elementargeometrie         Module appears in         First state examination for the teaching degree Grundschule Mathematics (2009)         First state examination for the teaching degree Hauptschule Mathematics (2009)         First state examination for the teaching degree Realschule Mathematics (2009)         LA Hauptschulen Mathematics (2009)         JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-         page 11							
Referred to in LPO I (examination regulations for teaching-degree programmes)         § 51 (1) 3. Mathematik Elementare Zahlentheorie, Elementare Stochastik, Elementargeometrie         Module appears in         First state examination for the teaching degree Grundschule Mathematics (2009)         First state examination for the teaching degree Hauptschule Mathematics (2009)         First state examination for the teaching degree Realschule Mathematics (2009)         First state examination for the teaching degree Realschule Mathematics (2009)         IA Hauptschulen Mathematics (2009)	Worklo	oad					
Referred to in LPO I (examination regulations for teaching-degree programmes)         § 51 (1) 3. Mathematik Elementare Zahlentheorie, Elementare Stochastik, Elementargeometrie         Module appears in         First state examination for the teaching degree Grundschule Mathematics (2009)         First state examination for the teaching degree Hauptschule Mathematics (2009)         First state examination for the teaching degree Realschule Mathematics (2009)         First state examination for the teaching degree Realschule Mathematics (2009)         LA Hauptschulen Mathematics (2009)         JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-         page 11							
Referred to in LPO I (examination regulations for teaching-degree programmes)         § 51 (1) 3. Mathematik Elementare Zahlentheorie, Elementare Stochastik, Elementargeometrie         Module appears in         First state examination for the teaching degree Grundschule Mathematics (2009)         First state examination for the teaching degree Hauptschule Mathematics (2009)         First state examination for the teaching degree Realschule Mathematics (2009)         First state examination for the teaching degree Realschule Mathematics (2009)         LA Hauptschulen Mathematics (2009)         JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-         page 11	Teachi	ing cycl	e				
<ul> <li>§ 51 (1) 3. Mathematik Elementare Zahlentheorie, Elementare Stochastik, Elementargeometrie</li> <li>Module appears in</li> <li>First state examination for the teaching degree Grundschule Mathematics (2009)</li> <li>First state examination for the teaching degree Hauptschule Mathematics (2009)</li> <li>First state examination for the teaching degree Realschule Mathematics (2009)</li> <li>First state examination for the teaching degree Realschule Mathematics (2009)</li> <li>IA Hauptschulen Mathematics (2009)</li> <li>JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-</li> </ul>							
<ul> <li>§ 51 (1) 3. Mathematik Elementare Zahlentheorie, Elementare Stochastik, Elementargeometrie</li> <li>Module appears in</li> <li>First state examination for the teaching degree Grundschule Mathematics (2009)</li> <li>First state examination for the teaching degree Hauptschule Mathematics (2009)</li> <li>First state examination for the teaching degree Realschule Mathematics (2009)</li> <li>First state examination for the teaching degree Realschule Mathematics (2009)</li> <li>IA Hauptschulen Mathematics (2009)</li> <li>JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-</li> </ul>	Referre	ed to in	LPOI (examination re	gulations for teaching-	degree programmes)		
Module appears in         First state examination for the teaching degree Grundschule Mathematics (2009)         First state examination for the teaching degree Hauptschule Mathematics (2009)         First state examination for the teaching degree Realschule Mathematics (2009)         LA Hauptschulen Mathematics (2009)         JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-         page 11					- • -		
First state examination for the teaching degree Grundschule Mathematics (2009)         First state examination for the teaching degree Hauptschule Mathematics (2009)         First state examination for the teaching degree Realschule Mathematics (2009)         LA Hauptschulen Mathematics (2009)         JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-         page 11	-					-	
First state examination for the teaching degree Hauptschule Mathematics (2009)         First state examination for the teaching degree Realschule Mathematics (2009)         LA Hauptschulen Mathematics (2009)         JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-         page 11				ng degree Grundschule	e Mathematics (2009	9)	
LA Hauptschulen Mathematics (2009) JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re- page 11	First st	tate exa	mination for the teachi	ng degree Hauptschule	e Mathematics (2009		
	First st	tate exa	mination for the teachi	ng degree Realschule I	Mathematics (2009)		
conditional containent augebonation (onternentententation 2004	A Haupts	chulen Ma	thematics (2009)			-	page 11 / 28



Elemer	le title				Abbreviation	
	ntary M	athematics 2 (Germa	in Grundschule/Hauptso	chule/Realschule)	10-M-EL2-092-m01	
Module coordinator				Module offered by		
Dean of Studies Mathematik (Mathemat		ematics)				
ECTS			Only after succ. co	mpl. of module(s)		
11 numerical grade						
Duratio	on	Module level	Other prerequisite	S		
2 seme	ester	undergraduate				
Conter	nts					
		o fundamental and a is well as stochastics		nathematics. Basic to	opics in elementary and Euclide-	
Intend	led lear	ning outcomes				
matica	al proof				well as the fundamental mathe- n the fields of Euclidean geomet	
Course	<b>es</b> (type	, number of weekly c	ontact hours, language -	— if other than Germa	an)	
compo • 1 • 1	onent. 10-M-EL 10-M-EL	2-P-092: M (no inforr 2-1-092: V + Ü (no inf	nation on SWS (weekly o formation on SWS (week	contact hours) and co dy contact hours) and	isted separately for each module ourse language available) d course language available) d course language available)	
ster, in Assess low. Ur vidual <b>Assess</b>	nformati sment in nless st assess <b>sment i</b> n	ion on whether modu n this module compri ated otherwise, succ ments. n module component	le can be chosen to ear ses the assessments in essful completion of the	n a bonus) the individual modu e module will require	le components as specified be-	
ster, in Assess low. Ur vidual Assess schule 1 v r schule t v r	nformati sment in assess sment in e/Realso 1 ECTS, written o replaced groups ti-media Only aft	ion on whether module in this module compri- ated otherwise, succoments. In module component chule) Method of grading: n examination (approx. d by an oral examina (groups of 2: approx. a portfolio (as annour er successful comple	le can be chosen to ear ses the assessments in essful completion of the a <b>10-M-EL2-P-092:</b> Eleme umerical grade . 90 minutes); if announ tion of one candidate ea . 30 minutes, groups of need) tion of module compone	n a bonus) the individual modul e module will require entary Mathematics 2 ficed by the lecturer, 1 ach (approx. 20 minuto 3: approx. 45 minuto	le components as specified be- successful completion of all ind e (German Grundschule/Haupt- the written examination can be utes) or an oral examination in es) or by a written and/or mul- pletion of the two module com-	
ster, in Assess low. Ur vidual Assess schule 1 v v r g t t 0 0 F Assess le/Hau schule 6 6	nformati sment in nless st assess sment in e/Realso 1 ECTS, written of replaced groups ti-media Only aft ponents sment in uptschu e) 6 ECTS, exercise	ion on whether module in this module compri- ated otherwise, succoments. In module component chule) Method of grading: n examination (approx. d by an oral examina (groups of 2: approx. a portfolio (as annour er successful comple is 10-M-EL2-1 and 10-A n module component le/Realschule) Eleme Method of grading: ( es: At the beginning	Ile can be chosen to earn ses the assessments in essful completion of the a <b>10-M-EL2-P-092:</b> Eleme umerical grade . 90 minutes); if announ tion of one candidate ea . 30 minutes, groups of need) tion of module compone A-EL2-2 is a prerequisite a <b>10-M-EL2-1-092:</b> Eleme entary Mathematics 2: G not) successfully completed of the course, the lecture	n a bonus) the individual modul e module will require entary Mathematics 2 aced by the lecturer, t ach (approx. 20 minut 3: approx. 45 minute ents: Successful com for participation in n entary Mathematics 2 eometry (German Gru eted urer will specify the t	successful completion of all ind (German Grundschule/Haupt- the written examination can be utes) or an oral examination in es) or by a written and/or mul-	

#### Additional information

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#### Workload

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#### Teaching cycle

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

§ 51 (1) 3. Mathematik Elementare Zahlentheorie, Elementare Stochastik, Elementargeometrie

#### Module appears in

First state examination for the teaching degree Grundschule Mathematics (2009) First state examination for the teaching degree Hauptschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009)

Modul	e title				Abbreviation
Thesis	in Mat	hematics (teaching degr	ee at German Haupts	chule)	10-M-HMHS-092-m01
Modul	e coord	inator		Module offered by	<u> </u>
Dean o	of Studi	es Mathematik (Mathem	atics)	Institute of Mathen	natics
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
10				pecific modules/mc	odule components as specified by
Durati	on	Module level	Other prerequisites		
1 seme	ester	undergraduate			
Conter	nts				
		y researching and writing supervisor.	; on a topic in mathen	natics or mathemati	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- rrite down the result of his/her
Course	<b>es</b> (type	, number of weekly conta	act hours, language –	- if other than Germa	an)
no cou	irses as	signed			
		s <b>essment</b> (type, scope, la ion on whether module c			ation offered — if not every seme-
Langua	age of a	(approx. 250 to 300 hou issessment: German, exc eaching degree program	eptions in accordanc	e with Section 29 St	ubsection 4 LPO I (examination re-
-	tion of				
Additi	onal inf	ormation			
Additio	onal inf	ormation on module dura	ation: 1 to 2 semester	S.	
Worklo	-		-		
Teachi	ing cycl	e			
Referre	ed to in	LPOI (examination regu	llations for teaching-	degree programmes	
			3		
Modul	e appea	ars in			
		mination for the teaching	g degree Hauptschule	Mathematics (2000	a)
		mination for the teaching	,		

LA Hauptschulen Mathematics (2009)

Basics	e title				Abbreviation	
	in Mat	hematics (German Gru	Indschule/Hauptschule	e/Gymnasium)	10-M-M1GHR-092-m01	
Modul	e coord	inator		Module offered by		
Dean of Studies Mathematik (Mathematics)			ematics)	Institute of Mat	•	
ECTS	-	od of grading	Only after succ. cor			
	1					
15 numerical grade						
Durati		Module level	Other prerequisites	5		
2 seme		undergraduate				
Conter	nts					
Introdu	uction t	o the two most import	ant basic fields of math	ematics: linear a	lgebra and analysis.	
Intend	ed lear	ning outcomes				
is able orally a	e to com and in v	prehend the central p	roof methods, can perfo	orm easy mathem	analysis and linear algebra. He/Sh natical arguments and present then s and employ methods of analysis	
Course	es (type	, number of weekly co	ntact hours, language –	– if other than Ge	erman)	
compc • 1 • 1	onent. 10-M-M 10-M-M	1GHR-P-092: M (no info 1GHR-1-092: V + Ü (no i	ormation on SWS (week information on SWS (we	kly contact hours) eekly contact hou	be listed separately for each modul and course language available) rs) and course language available) rs) and course language available)	
ctor ir	nformat	ion on whether module	a can be chocon to earn			
Assess low. U	sment i nless si	n this module compris ated otherwise, succe	es the assessments in t	the individual mo		
Assess low. U vidual <b>Assess</b> schule	sment i nless st assess sment i e/Gymn 1 ECTS,	n this module compris ated otherwise, succe ments. <b>n module component</b> a asium) Method of grading: nu	es the assessments in t ssful completion of the to-M-M1GHR-P-092: Ba merical grade	the individual mo module will requ	ire successful completion of all ind tics (German Grundschule/Haupt-	
Assess low. U vidual Assess schule	sment i nless st assess sment i c/Gymn 1 ECTS, written replace groups ti-media	n this module compris cated otherwise, succe ments. <b>n module component</b> a asium) Method of grading: nu examination (approx. a d by an oral examinati (groups of 2: approx. a a portfolio (as annound	es the assessments in t ssful completion of the to-M-M1GHR-P-092: Ba merical grade t20 minutes); if announ on of one candidate ea 45 minutes, groups of g	the individual mo module will requ sics in Mathema need by the lectur ach (approx. 30 n 3: approx. 60 min	tire successful completion of all ind tics (German Grundschule/Haupt- er, the written examination can be ninutes) or an oral examination in nutes) or by a written and/or mul-	
Assess low. Ul vidual Assess schule	sment i nless st assess sment i e/Gymn 1 ECTS, written replace groups ti-media Only aft ponents M-M1GH	n this module compris cated otherwise, succe ments. <b>n module component</b> a asium) Method of grading: nu examination (approx. a d by an oral examinati (groups of 2: approx. a portfolio (as annound er successful completi 5 10-M-M1GHR-1 and 10 HR-P.	es the assessments in t ssful completion of the to-M-M1GHR-P-092: Ba merical grade t20 minutes); if announ on of one candidate ea 45 minutes, groups of ced) on of module compone o-M-M1GHR-2 is a prere	the individual mo module will requ sics in Mathemat aced by the lectur ach (approx. 30 n 3: approx. 60 min nts: Successful c equisite for partic	er, the written examination can be ninutes) or an oral examination in nutes) or by a written and/or mul- ompletion of the two module com- cipation in module component 10-	
Assession Ulividual Assession Assess	sment i nless st assess sment i e/Gymn 1 ECTS, written replace groups ti-media Only aft ponents M-M1GH sment i e/Haupt nnasiur 8 ECTS,	n this module compris rated otherwise, succe ments. <b>n module component</b> a asium) Method of grading: nu examination (approx. a d by an oral examinati (groups of 2: approx. a portfolio (as annound er successful completi 5 10-M-M1GHR-1 and 10 HR-P. <b>n module component</b> a schule/Gymnasium) B n) Method of grading: (n	es the assessments in t ssful completion of the to-M-M1GHR-P-092: Ba merical grade t20 minutes); if announ on of one candidate ea 45 minutes, groups of ced) on of module compone to-M-M1GHR-2 is a prere to-M-M1GHR-1-092: Ba basics in Mathematics -	the individual mo module will requ sics in Mathemat aced by the lectur ach (approx. 30 n 3: approx. 60 min nts: Successful c equisite for partic sics in Mathemat Linear Algebra (G	tice successful completion of all ind tics (German Grundschule/Haupt- er, the written examination can be ninutes) or an oral examination in nutes) or by a written and/or mul- ompletion of the two module com- cipation in module component 10- cics - Linear Algebra (German Grund German Grundschule/Hauptschu-	
Assess low. Ul vidual Assess schule • 1 • 1 • 1 • 1 • 1 • 1 • 1 • 1 • 1 • 1	sment i nless st assess sment i e/Gymn 1 ECTS, written replace groups ti-media Only aft ponents M-M1GF sment i e/Haupt nnasiur 8 ECTS, exercise be succ success	n this module compris ated otherwise, succe ments. <b>n module component</b> a asium) Method of grading: nu examination (approx. a d by an oral examinati (groups of 2: approx. a a portfolio (as annound er successful completi s 10-M-M1GHR-1 and 10 HR-P. <b>n module component</b> a schule/Gymnasium) B n) Method of grading: (n es: At the beginning o essfully completed over fully completed.	es the assessments in t ssful completion of the to-M-M1GHR-P-092: Ba merical grade t20 minutes); if announ on of one candidate ea 45 minutes, groups of ced) on of module compone to-M-M1GHR-2 is a prere to-M-M1GHR-1-092: Ba tasics in Mathematics - ot) successfully complet f the course, the lecture er the course of the ser	the individual mo module will requ asics in Mathemat aced by the lectur ach (approx. 30 n 3: approx. 60 min nts: Successful c equisite for partic sics in Mathemat Linear Algebra (G eted rer will specify th nester for the mo	tice successful completion of all ind tics (German Grundschule/Haupt- er, the written examination can be ninutes) or an oral examination in nutes) or by a written and/or mul- ompletion of the two module com- cipation in module component 10- tics - Linear Algebra (German Grund German Grundschule/Hauptschu- ne type and scope of exercises to dule component to be considered	
Assession Unividual Assession Unividual Assession Schule Internet Assession Schule Internet Assession Asse	sment i nless st assess sment i e/Gymn 1 ECTS, written replace groups ti-media Only aft ponents M-M1GF sment i e/Haupt success sment i rundscie/Haupt	n this module compris ated otherwise, succe ments. <b>n module component</b> a asium) Method of grading: nu examination (approx. a d by an oral examinati (groups of 2: approx. a a portfolio (as annound er successful completi 5 10-M-M1GHR-1 and 10 HR-P. <b>n module component</b> a schule/Gymnasium) B n) Method of grading: (n essfully completed ov fully completed. <b>n module component</b> a hule/Hauptschule/Gym	es the assessments in t ssful completion of the to-M-M1GHR-P-092: Ba merical grade t20 minutes); if announ on of one candidate ea 45 minutes, groups of 3 ced) on of module compone to-M-M1GHR-2 is a prere tasics in Mathematics - ot) successfully comple f the course, the lecture or the course of the ser	the individual mo module will requ sics in Mathemat aced by the lectur ach (approx. 30 n 3: approx. 60 min nts: Successful c equisite for partic sics in Mathemat Linear Algebra (G eted rer will specify th nester for the mo sics in Mathemat thematics - Analy	tice successful completion of all ind tics (German Grundschule/Haupt- er, the written examination can be ninutes) or an oral examination in nutes) or by a written and/or mul- ompletion of the two module com- cipation in module component 10- cics - Linear Algebra (German Grund German Grundschule/Hauptschu-	

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#### Additional information

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#### Workload

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#### Teaching cycle

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

§ 51 (1) 1. Mathematik Differential- und Integralrechnung, Gewöhnliche Differentialgleichungen

§ 51 (1) 2. Mathematik Lineare Algebra und Analytische Geometrie

#### Module appears in

First state examination for the teaching degree Grundschule Mathematics (2009) First state examination for the teaching degree Hauptschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009)

Modul					Abbreviation	
Advan	ces in I	Mathematics (German (	Grundschule/Hauptsch	ule/Realschule)	10-M-M2GHR-092-m01	
Module coordinator				Module offered by		
Dean of Studies Mathematik (Mathematics)			matics)	Institute of Mathematics		
ECTS Method of grading			Only after succ. com			
18		rical grade				
Duratio	on	Module level	Other prerequisites			
3 semester undergraduate						
Conter	nts					
metry;	extens		e to several variables, b		s of linear algebra in analytic geo ifferential equations and applica	
Intend	ed lear	ning outcomes				
and se hem.	veral v	ariables, linear algebra	, analytic geometry and	the theory of ordin	ploy methods of analysis in one ary differential equations to solv	
Course	<b>es</b> (type	, number of weekly cor	ntact hours, language —	if other than Germ	an)	
<b>Metho</b> ster, in	<b>d of as</b> Iformat	ion on whether module	language — if other tha can be chosen to earn	a bonus)	ation offered — if not every seme wise, students must pass all of	
Assess schule	<b>sment i</b> ) (Asse LECTS (	<b>n module component 1</b> ssment Advanced Math credit, numerical gradir	nematics, Grundschule, ng	fbau Mathematik - I Hauptschule and R	Prüfung (Grund-, Haupt- und Rea Realschule) r, the written examination may	
t • (	oe repla n group i-media Only af	aced by an oral examin os (groups of 2: approx a portfolio (as announc ter successful complet	ation of one candidate . 45 minutes, groups of ed). ion of module compone	each (approx. 30 n 3: approx. 60 minu ents: Module comp	ninutes) or an oral examination tes) or by a written and/or mul- ponent 10-M-M2GHR-P can only	
k N	be take M2GHR	n by students who suc -2 and 10-M-M2GHR-3.	cessfully completed the	e three module com	nponents 10-M-M2GHR-1, 10-M- Analysis in mehreren Variablen	
(Grund schule gen (G and Re (Grund Realsc	I- , Hau and Re rund-, I ealschu I-, Haup hule) :	pt- und Realschule) (Ac ealschule), <b>in module c</b> Haupt- und Realschule) le), and <b>in module con</b> ot- und Realschule) (Ad	Ivanced Mathematics - omponent 10-M-M2GHI (Advanced Mathematic nponent 10-M-M2GHR-3 vanced Mathematics - [	Analysis in Several <b>R-3-092:</b> Aufbau Ma cs - Differential Equ <b>g-092:</b> Aufbau Math Differential Equation	Variables, Grundschule, Haupt- athematik - Differentialgleichun- ations, Grundschule, Hauptschu nematik - Differentialgleichungen ns, Grundschule, Hauptschule ar	
• €	exercise				type and scope of exercises to	

#### Additional information

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#### Workload

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#### Teaching cycle

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

§ 51 (1) 1. Mathematik Differential- und Integralrechnung, Gewöhnliche Differentialgleichungen

§ 51 (1) 2. Mathematik Lineare Algebra und Analytische Geometrie

#### Module appears in

First state examination for the teaching degree Grundschule Mathematics (2009) First state examination for the teaching degree Hauptschule Mathematics (2009) First state examination for the teaching degree Realschule Mathematics (2009)

Module	e title				Abbreviation		
Revisio	on Cour	se in Mathematics (Gern	nan Grundschule/Hau	ıptschule/Gymnasi-	10-M-M3GHR-092-m01		
um)							
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. com	npl. of module(s)			
3	(not) s	successfully completed					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	undergraduate	· · · · · · · · · · · · · · · · · · ·		alify for admission to as-		
			sessment. The lectu	rer will inform stude	nts about the respective details		
			at the beginning of the course. Registration for the course will be con-				
			sidered a declaratio	n of will to seek adm	nission to assessment. If stu-		
			dents have obtained	d the qualification fo	r admission to assessment over		
			the course of the se	mester, the lecturer	will put their registration for as-		
			sessment into effect	t. Students who mee	t all prerequisites will be admit-		
			ted to assessment in	n the current or in th	e subsequent semester. For as-		
			sessment at a later	date, students will h	ave to obtain the qualification for		
			admission to assess	sment anew.			
Conten	its						
		consolidation of the topic	s covered in module	s 10-M-M1GHR and 1	o-M-M2GHR by completing exer-		
		wering past state examin					
Intend	ed learr	ning outcomes					
The stu	ident ha	as advanced knowledge	in the topics stated ir	n LPO I (examination	regulations for teaching degree		
progra	mmes),	§51 (2) 1, 2, and is able	to apply them on the	level of the state exa	amination.		
Course	<b>s</b> (type	, number of weekly conta	ict hours, language –	- if other than Germa	n)		
Ü (no iı	nformat	tion on SWS (weekly con	tact hours) and cours	e language available	2)		
					tion offered — if not every seme-		
		on on whether module c	an be chosen to earn	a bonus)			
		5 minutes)					
Allocat	ion of p	olaces					
Additio	onal info	ormation					
Worklo	ad						
reachi	ng cycl	e					
 Defe							
Referre	ed to in	LPOI (examination regu	llations for teaching-o	legree programmes)			
Modula	e appea	ors in					
		mination for the teaching	g degree Grundschule	Mathematics (2000	)		
		mination for the teaching		-			
		mination for the teaching	,	-	<i>,</i>		
				-	)		
First state examination for the teaching degree Mittelschule Mathematics (2013)							

Modul					Abbreviation	
Basics	in Aritl	hmetics (virtual course)			10-M-VHBAri-092-r	n01
Modul	e coord	inator		Module offered by	<u> </u>	
Dean of Studies Mathematik (Mathema		atics)	Institute of Mathem	atics		
ECTS Method of grading Only after succ. compl. of module(s)						
3	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	undergraduate	sessment. The lectu at the beginning of t sidered a declaratio dents have obtained the course of the se sessment into effect ted to assessment in sessment at a later for admission to ass Hochschule Bayern porated into a modu identified by the wo the exercise must al course. This registra of will to seek admission	s must be met to qua rer will inform stude the course. Registrat n of will to seek adm d the qualification fo mester, the lecturer t. Students who mee n the current or in th date, students will h sessment anew. Cou (vhb) in the field of r ale with an exercise. rd virtuell (online) ac ways be made via S ation for the exercise ssion to assessment cturer will put the reg e course.	nts about the respe ion for the course w hission to assessme r admission to asse will put their registra t all prerequisites w e subsequent seme ave to obtain the qu rses offered online I nathematics are alw The respective mod dded in brackets. Re B@Home at the beg will be considered a	ctive details ill be con- nt. If stu- ssment over ation for as- vill be admit- ster. For as- talification by Virtuelle vays incor- ules can be egistration fo inning of the a declaration
Conter	nts					
Basic t	topics o	n teaching arithmetics ir	school, e. g. divisab	ility theory, prime nu	mbers, set theory.	
Intend	ed lear	ning outcomes				
		earns basic topics in the terms basic topics in the terms is acquainted with the				
Course	<b>es</b> (type	, number of weekly conta	act hours, language –	- if other than Germa	n)	
Ü (no i	nforma	tion on SWS (weekly con	tact hours) and cours	e language available	2)	
		<b>sessment</b> (type, scope, la ion on whether module c			tion offered — if not	every seme
web-ba course		oject assignments and te	ests (length/expendit	ure of time to be anr	ounced at the begin	nning of the
Allocat	tion of <sub>l</sub>	places				
Additio	onal inf	ormation				
Worklo	oad					
Teachi	ing cycl	e				
Referre	ed to in	LPOI (examination regu	llations for teaching-o	degree programmes)		
A Hauptso	chulen Ma	thematics (2009)	JMU Würzburg • ge	enerated 26-Aug-2024 • exan	n. reg. data re-	page 21 / 28
				schulen (Unterrichtsfach) Ma	-	

#### Module appears in

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

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

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

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

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2009)

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

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

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

Module title					Abbreviation	
Basics	s in Sch	ool Geometry (virtual cou	urse)		10-M-VHBGeo-092-mo1	
Module coordinator				Module offered by	<u>I</u>	
Dean d	of Studi	ies Mathematik (Mathem	atics)	Institute of Mathem	natics	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
3	(not)	successfully completed				
Durati	on	Module level	Other prerequisites			
1 seme	ester	undergraduate	sessment. The lectur at the beginning of the sidered a declaration dents have obtained the course of the set sessment into effect ted to assessment i sessment at a later for admission to asset Hochschule Bayern porated into a modul identified by the wo the exercise must all course. This registrat of will to seek admise ly completed, the let	rer will inform stude the course. Registrat of will to seek adm d the qualification for mester, the lecturer t. Students who mee on the current or in th date, students will h sessment anew. Cou (vhb) in the field of ule with an exercise. rd virtuell (online) ad ways be made via S ation for the exercise ssion to assessment cturer will put the re	alify for admission to as- ents about the respective details ion for the course will be con- hission to assessment. If stu- or admission to assessment over will put their registration for as- et all prerequisites will be admit- e subsequent semester. For as- ave to obtain the qualification rses offered online by Virtuelle mathematics are always incor- The respective modules can be dded in brackets. Registration for B@Home at the beginning of the will be considered a declaration c. If the exercise was successful- gistration for assessment into e	
			fect at the end of the	e course.		
	on and pecific a				hat are prerequisites for the sub Hauptschule, Realschule) in gec	
Intend	led lear	ning outcomes				
		as basic knowledge of so s acquainted with the em	- ,		of mathematics and its didac- g geometry in school.	
Course	es (type	e, number of weekly conta	act hours, language –	- if other than Germa	an)	
Ü (no i	informa	tion on SWS (weekly con	tact hours) and cours	e language available	e)	
		sessment (type, scope, la ion on whether module c			ition offered — if not every seme	
web-b course	•	roject assignments and te	ests (length/expendit	ure of time to be anr	nounced at the beginning of the	

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Additional information

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Workload

Teaching cycle

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LA Hauptschulen Mathematics (2009)	

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#### Module appears in

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

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

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

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

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2009)

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

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

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

Module title         Abbreviation					
Mather	matics i	in Class 10 (virtual cours	e)		10-M-VHBM10-092-m01
Module coordinator				Module offered by	1
Dean o	f Studie	es Mathematik (Mathema	atics)	Institute of Mathem	natics
ECTS		od of grading	Only after succ. con	pl. of module(s)	
3	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
		undergraduate	sessment. The lectur at the beginning of the sidered a declaration dents have obtained the course of the set sessment into effect ted to assessment i sessment at a later for admission to asset Hochschule Bayern porated into a modu- identified by the wo the exercise must all course. This registration of will to seek admission	rer will inform stude the course. Registrat n of will to seek adn d the qualification for mester, the lecturer t. Students who mee n the current or in th date, students will h date, students will h sessment anew. Cou (vhb) in the field of alle with an exercise. rd virtuell (online) a ways be made via S stion for the exercise ssion to assessment cturer will put the re	alify for admission to as- ents about the respective details tion for the course will be con- nission to assessment. If stu- or admission to assessment over will put their registration for as- et all prerequisites will be admit- te subsequent semester. For as- nave to obtain the qualification trses offered online by Virtuelle mathematics are always incor- The respective modules can be dded in brackets. Registration for B@Home at the beginning of the e will be considered a declaration t. If the exercise was successful- gistration for assessment into effort
Conten					
		n teaching mathematics	in tenth grade in Hau	ptschule, Realschul	e and Gymnasium.
		ning outcomes			<b>a</b>
schule,	, as wel		atical backgrounds ar	nd proofs. He/She is	German Mittelschule and Real- acquainted with the employme
Course	<b>s</b> (type,	, number of weekly conta	act hours, language –	- if other than Germa	an)
Ü (no ir	nformat	ion on SWS (weekly con	tact hours) and cours	e language availabl	e)
		e <b>ssment</b> (type, scope, la on on whether module c			ation offered — if not every seme
web-ba course)	•	oject assignments and te	ests (length/expendit	ure of time to be and	nounced at the beginning of the

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Additional information

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Workload

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Teaching cycle

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LA Hauptschulen Mathematics (2009)	LA	Haupts	schul	en M	ather	matics	(2009)	)
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#### Module appears in

First state examination for the teaching degree Hauptschule Mathematics (2009)

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

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

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

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

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

	e title				Abbreviation		
Stocha	stics in	Sekundarstufe I (virtual	course)		10-M-VHBSto-092-m01		
Module coordinator			Module offered by				
Dean of Studies Mathematik (Mathen							
ECTS Method of grading			Only after succ. compl. of module(s)				
3		successfully completed		• • • •			
Duratio	n	Module level	Other prerequisites				
ı seme:	ster	undergraduate	sessment. The lectu at the beginning of t sidered a declaratio dents have obtained the course of the set sessment into effect ted to assessment in sessment at a later of for admission to ass Hochschule Bayern porated into a modu identified by the wo the exercise must al course. This registra of will to seek admission	rer will inform stude he course. Registrat n of will to seek adm the qualification for mester, the lecturer Students who mee the current or in th date, students will h sessment anew. Cou (vhb) in the field of the with an exercise. rd virtuell (online) ac ways be made via S tion for the exercise ssion to assessment cturer will put the re	alify for admission to as- nts about the respective details ion for the course will be con- nission to assessment. If stu- or admission to assessment over will put their registration for as- et all prerequisites will be admit- e subsequent semester. For as- ave to obtain the qualification rses offered online by Virtuelle mathematics are always incor- The respective modules can be dded in brackets. Registration for B@Home at the beginning of the will be considered a declaration for the exercise was successful- gistration for assessment into e		
Conten	ts						
		consolidation of the fund c courses in stochastics.		chastics that are pre	erequisites for the subject-speci		
ntende	ed learr	ning outcomes					
		as basic knowledge of st acquainted with the em			thematics and its didac- g stochastics in school.		
Course	<b>s</b> (type,	, number of weekly conta	ict hours, language —	· if other than Germa	ın)		
Ü (no ir	nformat	ion on SWS (weekly cont	tact hours) and cours	e language available	e)		
		essment (type, scope, la on on whether module c			tion offered — if not every seme		
web-ba course)		pject assignments and te	ests (length/expendit	ure of time to be anr	nounced at the beginning of the		
Allocati	ion of p	olaces					
-							
Additio	nal info	ormation					
			-				
Worklo	ad						
Toachir	ng cycl	•					
	IS LVLL	•					

#### Module appears in

First state examination for the teaching degree Hauptschule Mathematics (2009)

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

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

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

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

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