

# Module Catalogue for the Subject

# **Mathematics**

with the degree "Erweiterungsprüfung für das Lehramt an Grundschulen" (ECTS credits)

Examination regulations version: 2015 Responsible: Faculty of Mathematics and Computer Science Responsible: Institute of Mathematics



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# The subject is divided into

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Area 1	12	16
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### **Abbreviations used**

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

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:

### LASP02015

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

### 05-Oct-2015 (2015-187)

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.



# **Scientific Discipline**

(54 ECTS credits)



### Area 1

(54 ECTS credits)



Module title					Abbreviation	
Elementary Number Theory					10-M-ELZT-152-m01	
Module coordinator N				Module offered by		
Dean o	f Studi	es Mathematik (Mather	natics)	Institute of Mathen	natics	
ECTS	TS Method of grading Only after succ. com		npl. of module(s)			
6	nume	rical grade				
Duratio	on	Module level	Other prerequisites	Other prerequisites		
1 seme:	ster	undergraduate		_	_	
Conten	ts					
Introduction to fundamental techniques in mathematics. Approach to the number as a basic theme in mathematics, 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 mathematical proof methods. He/She is able to apply these skills to basic problems in the fields of number theory and the structure of the number system.

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

 $V(4) + \ddot{U}(2)$ 

 $\textbf{Method of assessment} \ (\textbf{type}, \textbf{scope}, \textbf{language} - \textbf{if other than German, examination of fered} - \textbf{if not every semester, information on whether} \ (\textbf{type}, \textbf{scope}, \textbf{language} - \textbf{if other than German, examination of fered} - \textbf{if not every semester, information on whether} \ (\textbf{type}, \textbf{scope}, \textbf{language}) \ (\textbf{type}, \textbf{language})$ module is creditable for bonus)

written examination (approx. 60 to 90 minutes)

If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate) and written exercises (approx. 12 exercise sheets, approx. 3 exercises per sheet).

### Allocation of places

### **Additional information**

### Workload

180 h

### **Teaching cycle**

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



Module title				'	Abbreviation	
Elementary Geometry					10-M-ELGE-152-m01	
Module coordinator				Module offered by	у	
Dean	of Studi	es Mathematik (Math	ematics)	Institute of Mathe	Institute of Mathematics	
ECTS	Meth	od of grading	Only after succ.	compl. of module(s)		
6	nume	rical grade				
Duration Module level Other prerequi		Other prerequisi	tes			
1 semester undergraduate						
Conte	ntc.	-				

#### Contents

Fundamental topics in elementary and Euclidean geometry: axiomatic foundations of Euclidean geometry, congruence geometry, imaging geometry, similarity geometry, basics in analytic geometry in R^3, introduction to basic mathematical techniques.

### **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 Euclidean geometry.

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

 $V(4) + \ddot{U}(2)$ 

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 90 minutes)

If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate) and written exercises (approx. 12 exercise sheets, approx. 3 exercises per sheet).

### Allocation of places

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### **Additional information**

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### Workload

180 h

### **Teaching cycle**

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



		14.38	10 (BATOELD) (		, EC13 cledits
Module title Abbreviation					
Elemen	tary S	tochastics			10-M-ELST-152-m01
Module	coord	linator		Module offered by	I.
Dean o	f Studi	es Mathematik (Mather	natics)	Institute of Mathen	natics
ECTS	Meth	od of grading	Only after succ. cor	npl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites	3	
1 seme	ster	undergraduate			
Conten	ts				
		topics in elementary sto			y theory, combinatorics, inferenti es.
Intende	ed lear	ning outcomes			
		nows the basic ways of methods. He/She is ab			well as the fundamental mathens stochastics.
Course	<b>S</b> (type, i	number of weekly contact hours	s, language — if other than Ge	rman)	
V (3) +	Ü (1)				
<b>Method of assessment</b> (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)					
written examination (approx. 60 to 90 minutes)  If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates					

(approx. 15 minutes per candidate) and written exercises (approx. 12 exercise sheets, approx. 3 exercises per

Allocation of places

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sheet).

### **Additional information**

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### Workload

150 h

### **Teaching cycle**

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

§ 51 l Nr. 3



Module	e title		Abbreviation			
Basic L	inear A	Analysis		10-M-GRLA-152-m01		
Module coordinator				Module offered by		
Dean of Studies Mathematik (Mathematics)			nematics)	Institute of Mathematics		
ECTS	Meth	od of grading	Only after succ.	. compl. of module(s)		
9	nume	rical grade				
Duratio	on	Module level	Other prerequis	Other prerequisites		
1 semester undergraduate						
Conten	its					

Basics in linear algebra: groups, rings, fields, systems of linear equations, vector spaces, matrices and determinants, linear maps, examples and applications.

### Intended learning outcomes

The student is aquainted with the basic methods and concepts of linear algebra. He/She is able to comprehend the central proof methods, can perform easy mathematical arguments and present them in written form. He/She can analyse basic mathematical problems and employ methods of linear algebra to solve them.

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

 $V(4) + \ddot{U}(2)$ 

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 90 minutes)

If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).

creditable for bonus

### **Allocation of places**

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### **Additional information**

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### Workload

270 h

### **Teaching cycle**

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



Module title				Abbreviation	
Basic Analysis					10-M-GRAN-152-m01
Module coordinator				Module offered by	
Dean o	Dean of Studies Mathematik (Mathematics)			Institute of Mathematics	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
12	nume	rical grade			
Duration Module level		Other prerequisites			
2 semester undergraduate					
Conter	Contents				

Convergence and divergence of sequences and series, functions, continuity, differentiation and integration (Riemann integral), Taylor approximation and power series, functions in several variables, total and partial differentiability, inverse and implicit function theorem, curves in R^n, curve integrals, integration theorems in higher dimensions (Fubini's theorem, transformation rule), examples and applications.

### **Intended learning outcomes**

The student is aquainted with methods and concepts in analysis of one and several variables. He/She is able to comprehend the central proof methods, can perform easy mathematical arguments and present them in written form. He/She can analyse basic mathematical problems and employ methods of analysis in one and several variables to solve them.

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

 $V(4) + \ddot{U}(2) + V(2) + \ddot{U}(2)$ 

 $\textbf{Method of assessment} \ (\textbf{type}, \textbf{scope}, \textbf{language} - \textbf{if other than German, examination of fered} - \textbf{if not every semester, information on whether} \ (\textbf{type}, \textbf{scope}, \textbf{language} - \textbf{if other than German, examination of fered} - \textbf{if not every semester, information on whether} \ (\textbf{type}, \textbf{scope}, \textbf{language}) \ (\textbf{type}, \textbf{language})$ module is creditable for bonus)

written examination (approx. 60 to 120 minutes).

If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).

creditable for bonus

### Allocation of places

### **Additional information**

#### Workload

360 h

### Teaching cycle

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



Module title					Abbreviation	
Analytic Geometry					10-M-ANGE-152-m01	
Module coordinator				Module offered by		
Dean of Studies Mathematik (Mathematics)			nematics)	Institute of Math	Institute of Mathematics	
ECTS	Meth	od of grading	Only after succ. co	compl. of module(s)		
6	nume	rical grade				
Duratio	n	Module level	Other prerequisit	es		
1 semester undergraduate						
Contents						

Applications of linear algebra to analytic geometry: quadrics, characterisation of affine maps and isometries, discussion of Euclidean spaces (scalar products, arcs, orthonormal bases).

### Intended learning outcomes

The students is acquainted with advanced methods, concepts and results in linear algebra and analytic geometry. He/She is able to comprehend the central proof methods, can perform easy mathematical arguments and present them orally and in written form. He/She can analyse basic mathematical problems and employ methods of linear algebra and analytic geometry to solve them.

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

 $V(4) + \ddot{U}(2)$ 

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 90 minutes)

If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).

creditable for bonus

### Allocation of places

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#### **Additional information**

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### Workload

180 h

### **Teaching cycle**

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 $\textbf{Referred to in LPO I} \ \ (\text{examination regulations for teaching-degree programmes})$ 



Module title					Abbreviation	
Basic Differential Equations					10-M-GRDG-152-m01	
Module	coord	inator		Module offered by		
Dean o	Dean of Studies Mathematik (Mathematics)			Institute of Mathematics		
ECTS	Metho	od of grading	Only after succ. compl. of module(s)			
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semester undergraduate -						
Conten	Contents					

Examples and natural appearances of ordinary differential equations, existence and uniqueness theorems (Picard-Lindelöf, Peano), systems of linear differential equations, applications and examples.

### Intended learning outcomes

The student is aquainted with methods and concepts of ordinary differential equations. He/She is able to comprehend the central proof methods, can perform easy mathematical arguments and present them in written form. He/She can analyse basic mathematical problems and employ methods of differential equations to solve them.

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

V (3) + Ü (2)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 90 minutes)

If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).

creditable for bonus

### Allocation of places

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### **Additional information**

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### Workload

150 h

### **Teaching cycle**

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



Modul	e title	,	Abbreviation				
Review	v Cours	e Mathematics (German	10-M-M3GMR-152-m01				
Modul	e coord	inator					
Dean c	of Studi	es Mathematik (Mathema	atics)	Institute of Mathen	natics		
ECTS	Meth	od of grading	Only after succ. comp	pl. of module(s)			
5	(not)	successfully completed					
Duratio	on	Module level	Other prerequisites				
1 seme	ester	undergraduate					
Conter	nts		•				
		consolidation of the topic ompleting exercises and		•	ons, linear algebra and analytic ions.		
Intend	ed lear	ning outcomes					
		as advanced knowledge §51 (2) 1, 2, and is able			regulations for teaching degree amination.		
Course	<b>es</b> (type, r	number of weekly contact hours,	anguage — if other than Germ	nan)			
Ü (4)							
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, ex	kamination offered — if no	ot every semester, information on whether		
		x. 45 minutes) or to 15 pages)					
Allocat	tion of <sub> </sub>	olaces					
Additio	onal inf	ormation					
Workload							
150 h							
Teachi	Teaching cycle						
Referre	ed to in	LPO I (examination regulation	s for teaching-degree program	nmes)			
§ 51 sp	§ 51 special branch of science without assignment						



# **Teaching**

(12 ECTS credits)



### Area 1

(12 ECTS credits)



		186.19	5 (623-33) 8	33 <i>9.</i> ~19	, ECIS credits	
Module	e title				Abbreviation	
Didacti	ics of M	lathematics - Geometry (	German Grundschule	e)	10-M-DGGS1-152-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)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	its					
of geor	metry, s ilities o	patial visualisation abili	ty, planar figures, syn	nmetries, 3-dimensi	ctic aspects into account (aims onal solids, geometric drawing). and media, including modern	
Intend	ed lear	ning outcomes				
psycho ant mo She/he	ology ar dels, p e knows	nd didactics of mathemat resentations and media	cics, fundamentals in which can be employ ies and problems of p	elementary school r ed in elementary sch oupils in the acquisi	nool, basics in developmental mathematics, as well as importnool teaching of mathematics. tion of mathematical skills, and es.	
Course	<b>S</b> (type, r	number of weekly contact hours,	anguage — if other than Ger	rman)		
V (2) +	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	
If anno examir prox. 1	written examination (approx. 60 to 90 minutes)  If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).  creditable for bonus					
Allocat	Allocation of places					
Additio	nal inf	ormation				

### Workload

150 h

### **Teaching cycle**

 $\textbf{Referred to in LPO I} \ \ (\text{examination regulations for teaching-degree programmes})$ 



Modul	e title	,	Abbreviation			
1	ics of N rundsc	Nathematics - Arithm hule)	10-M-DGGS2-152-m01			
Modul	e coord	linator		Module offered by		
Dean c	of Studi	es Mathematik (Math	nematics)	Institute of Mather	ematics	
ECTS	Meth	od of grading	Only after succ. co	Only after succ. compl. of module(s)		
7	nume	rical grade				
Duratio	on	Module level	Other prerequisite	Other prerequisites		
2 seme	2 semester undergraduate					
Conter	Contents					

In-depth discussion of topics in teaching arithmetics and application-oriented mathematics in Grundschule, taking didactic aspects into account (aims of teaching arithmetics, didactic principles, sets, numbers, positional notations, arithmetic models, elementary arithmetic, mental calculation, half-written and written calculations, aims of teaching applications of mathematics, treatment of quantities, representation of data, possibilities of teaching application-oriented mathematics, heuristic principles, strategies and tools, modelling, mappings, typical difficulties in solving text problems, possibilities of promoting competences in applied calculation). Possibilities of implementation in the classroom and employment of materials and media, including modern technologies.

### **Intended learning outcomes**

The student knows about the objectives of teaching mathematics in elementary school, basics in developmental psychology and didactics of mathematics, fundamentals in elementary school mathematics, as well as important models, presentations and media which can be employed in elementary school teaching of mathematics. She/he knows about common difficulties and problems of pupils in the acquisition of mathematical skills, and can employ and assess didactical principles and teaching and learning strategies.

 $\textbf{Courses} \ (\textbf{type}, \textbf{number of weekly contact hours}, \textbf{language} - \textbf{if other than German})$ 

 $V(2) + \ddot{U}(1) + V(2) + \ddot{U}(2)$ 

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

- a) oral examination of one candidate each (approx. 30 minutes) or
- b) oral examination in groups (groups of 2, approx. 15 minutes per candidate) or
- c) written examination (approx. 60 to 120 minutes)

### Allocation of places

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### **Additional information**

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#### Workload

210 h

### **Teaching cycle**

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



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

(0-15 ECTS credits)



### **Mathematics**

(ECTS credits)

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



module is creditable for bonus)  a) talk (approx. 45 minutes) or b) term paper (5 to 10 pages) or c) project (10 to 15 pages) Assessment offered: Every two years, winter semester	Module title Abbreviation						
Dean of Studies Mathematik (Mathematics)    Institute of Mathematics	Selected Topics in Didactics of Mathematics 1 (German Grundschule)  10-M-DAGS1-152-m01						
ECTS Method of grading    (not) successfully completed	Module	coord	inator		Module offered by	y .	
The student is acquainted with theoretical concepts in the didactics of mathematics, knows important aspec planning and analysing teaching of mathematics, masters different strategies for teaching and learning und assess and employ them.  Courses (type, number of weekly contact hours, language — if other than German, examination offered — if not every semester, information on whet module is creditable for bonus)  a) talk (approx. 45 minutes) or b) term paper (5 to 10 pages) or c) project (10 to 15 pages)  Assessment offered: Every two years, winter semester	Dean o	f Studie	es Mathematik (Mathema	atics)	Institute of Mathe	matics	
Duration Module level undergraduate  Contents  Discussion of basic topics in mathematics didactics with a focus on didactic aspects (e. g. dyscalculia, evaluation of teaching materials for mathematics in Grundschule, using computers for teaching mathematics in Grundschule, selected topics and research results in modern mathematics didactics, theoretical foundations of matics didactics, dealing with heterogeneity in the classroom, organising substantial learning environments.  Intended learning outcomes  The student is acquainted with theoretical concepts in the didactics of mathematics, knows important aspect planning and analysing teaching of mathematics, masters different strategies for teaching and learning und assess and employ them.  Courses (type, number of weekly contact hours, language — if other than German)  S (2)  Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whet module is creditable for bonus)  a) talk (approx. 45 minutes) or b) term paper (5 to 10 pages) or c) project (10 to 15 pages)  Assessment offered: Every two years, winter semester	ECTS	Metho	od of grading	Only after succ. com	ıpl. of module(s)		
The student is acquainted with theoretical concepts in the didactics of mathematics, knows important aspect planning and analysing teaching of mathematics, masters different strategies for teaching and learning und assess and employ them.  Courses (type, number of weekly contact hours, language — if other than German, examination offered — if not every semester, information on whet module is creditable for bonus)  a) talk (approx. 45 minutes) or b) term paper (5 to 10 pages) or c, project (10 to 15 pages)  Assessment offered: Every two years, winter semester	2	(not) s	successfully completed				
Discussion of basic topics in mathematics didactics with a focus on didactic aspects (e. g. dyscalculia, evaluation of teaching materials for mathematics in Grundschule, using computers for teaching mathematics in Grundschule, selected topics and research results in modern mathematics didactics, theoretical foundations of mathematics didactics, dealing with heterogeneity in the classroom, organising substantial learning environments.  Intended learning outcomes  The student is acquainted with theoretical concepts in the didactics of mathematics, knows important aspect planning and analysing teaching of mathematics, masters different strategies for teaching and learning und assess and employ them.  Courses (type, number of weekly contact hours, language – if other than German)  S (2)  Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whet module is creditable for bonus)  a) talk (approx. 45 minutes) or b) term paper (5 to 10 pages) or c) project (10 to 15 pages)  Assessment offered: Every two years, winter semester	Duratio	n	Module level	Other prerequisites			
Discussion of basic topics in mathematics didactics with a focus on didactic aspects (e. g. dyscalculia, evaluation of teaching materials for mathematics in Grundschule, using computers for teaching mathematics in Grundschule, selected topics and research results in modern mathematics didactics, theoretical foundations of mathematics didactics, dealing with heterogeneity in the classroom, organising substantial learning environments.  Intended learning outcomes  The student is acquainted with theoretical concepts in the didactics of mathematics, knows important aspect planning and analysing teaching of mathematics, masters different strategies for teaching and learning und assess and employ them.  Courses (type, number of weekly contact hours, language — if other than German)  S (2)  Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whet module is creditable for bonus)  a) talk (approx. 45 minutes) or b) term paper (5 to 10 pages) or c) project (10 to 15 pages)  Assessment offered: Every two years, winter semester	1 seme	ster	undergraduate				
on of teaching materials for mathematics in Grundschule, using computers for teaching mathematics in Grundschule, selected topics and research results in modern mathematics didactics, theoretical foundations of mathematics didactics, dealing with heterogeneity in the classroom, organising substantial learning environments.  Intended learning outcomes  The student is acquainted with theoretical concepts in the didactics of mathematics, knows important aspect planning and analysing teaching of mathematics, masters different strategies for teaching and learning und assess and employ them.  Courses (type, number of weekly contact hours, language — if other than German)  S (2)  Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whet module is creditable for bonus)  a) talk (approx. 45 minutes) or b) term paper (5 to 10 pages) or c) project (10 to 15 pages)  Assessment offered: Every two years, winter semester	Conten	ts		•			
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whet module is creditable for bonus)  a) talk (approx. 45 minutes) or b) term paper (5 to 10 pages) or c) project (10 to 15 pages) Assessment offered: Every two years, winter semester	The stu planning	ed leari dent is	ning outcomes  acquainted with theoret analysing teaching of ma	ical concepts in the d	lidactics of mather	natics, knows important aspects of	
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whet module is creditable for bonus)  a) talk (approx. 45 minutes) or b) term paper (5 to 10 pages) or c) project (10 to 15 pages) Assessment offered: Every two years, winter semester	Course	<b>S</b> (type, n	umber of weekly contact hours, I	anguage — if other than Ger	man)		
module is creditable for bonus)  a) talk (approx. 45 minutes) or b) term paper (5 to 10 pages) or c) project (10 to 15 pages) Assessment offered: Every two years, winter semester	S (2)						
b) term paper (5 to 10 pages) or c) project (10 to 15 pages) Assessment offered: Every two years, winter semester	<b>Method of assessment</b> (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)						
Allered Company	b) term paper (5 to 10 pages) or c) project (10 to 15 pages)						
Allocation of places							

**Additional information** 

Workload

60 h

**Teaching cycle** 

 $\textbf{Referred to in LPO I} \ \ (\text{exam} \text{ination regulations for teaching-degree programmes})$ 



Module title Abbreviation							
Metho	Methodology of Teaching in Mathematics 1 (German Grundschule)  10-M-DMGS1-152-m01						
Module	e coord	inator		Module offered by	,		
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mather	natics		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
3	(not)	successfully completed					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	its						
ly weal stantia	c or par	ticularly strong in matheng environments as well	matics, dealing with h	neterogeneity in the	t for pupils who are particular- e classroom, organisation of sub- e classroom, also including mo-		
Intend	ed learı	ning outcomes					
in teac	hing ma		it aspects in planning	and analysing the	für assessing media and their use teaching of mathematics. He/She s them.		
Course	<b>S</b> (type, r	number of weekly contact hours,	language — if other than Ger	man)			
S (2)							
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if n	not every semester, information on whether		
b) term c) proje	a) talk (approx. 45 minutes) or b) term paper (5 to 10 pages) or c) project (10 to 15 pages) Assessment offered: Every two years, winter semester						
Allocation of places							
Additional information							
Workload							
90 h	90 h						

 $\textbf{Referred to in LPO I} \ \ (\text{exam} \text{ination regulations for teaching-degree programmes})$ 

**Teaching cycle** 



Modul	Module title Abbreviation						
Selecto	Selected Topics in Didactics of Mathematics 2 (German Grundschule)  10-M-DAGS2-152-m01						
Modul	e coord	inator		Module offered by	1		
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mather	matics		
ECTS	Metho	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						
on of to schule	eaching , select	materials for mathemat ed topics and research re	ics in Grundschule, u esults in modern mat	sing computers for hematics didactics,	spects (e. g. dyscalculia, evaluati- teaching mathematics in Grund- theoretical foundations of mathe- tantial learning environments).		
Intend	ed lear	ning outcomes					
plannii	ng and				natics, knows important aspects of for teaching and learning und can		
Course	<b>S</b> (type, r	number of weekly contact hours,	anguage — if other than Ger	rman)			
S (2)							
		<b>sessment</b> (type, scope, langua ele for bonus)	ge — if other than German, o	examination offered — if r	not every semester, information on whether		
b) term c) proje	paper ect (10	x. 45 minutes) or (5 to 10 pages) or to 15 pages) ffered: Every two years, s	summer semester				
	Allocation of places						
Additional information							
Workload							
60 h							
Teachi	Teaching cycle						

 $\textbf{Referred to in LPO I} \ \ (\text{examination regulations for teaching-degree programmes})$ 



		14.741	O (CENTRO) C	00 6/4/1	, LC13 credits	
Module title Abbreviation						
Methodology of Teaching in Mathematics 2 (German Grundschule) 10-M-DMGS2-152-mo1					10-M-DMGS2-152-m01	
Module coordinator Module offered by						
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Math	ematics	
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	ster	undergraduate				
Conten	ıts					
ly weal stantia	k or pai	ticularly strong in mathe ng environments as well	matics, dealing with I	neterogeneity in th	ort for pupils who are particular- he classroom, organisation of sub- he classroom, also including mo-	
Intend	ed lear	ning outcomes				
The student knows about possibilities to promote mathematical skills, criteria für assessing media and their use in teaching mathematics and important aspects in planning and analysing the teaching of mathematics. He/She is acquainted with learning and teaching strategies and can employ and assess them.						
Courses (type, number of weekly contact hours, language — if other than German)						
S (2)						
<b>Method of assessment</b> (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)						
a) talk (approx At minutes) or						

a) talk (approx. 45 minutes) or

- b) term paper (5 to 10 pages) or
- c) project (10 to 15 pages)

Assessment offered: Every two years, summer semester

### **Allocation of places**

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### **Additional information**

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### Workload

90 h

### **Teaching cycle**

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



Module	Module title Abbreviation						
E-Learn	E-Learning and Blended Learning in Mathematical Teaching (virtual Course) 10-M-DVHB-152-mo1						
Module	,						
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathe	matics		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
3	(not)	successfully completed					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	ts						
		fered by Virtuelle Hochsc e-learning and blended	, , , , , , , , , , , , , , , , , , , ,		acquainted with and reflects on		
Intende	ed lear	ning outcomes					
		acquainted with basic notentials and limitations		and blended learn	ing in teaching methematics, as		
Course	<b>S</b> (type, r	number of weekly contact hours,	anguage — if other than Ge	rman)			
Ü (2)							
Course	type: 6	Learning, mostly Virtuell	e Hochschule Bayern	(vhb)			
		<b>sessment</b> (type, scope, langua ele for bonus)	ge — if other than German,	examination offered — if 1	not every semester, information on whether		
		pased, 15 to 20 hours) ffered: Once a year, wint	er semester				
Allocat	ion of	olaces					
Additio	nal inf	ormation					
Workload							
90 h							
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
§ 22 II Nr. 1 h)							
-	§ 22 II Nr. 2 f)						
Saa II Nr. a A							



Modul	Module title Abbreviation						
Basics	in Arit	hmetics (virtual course)			10-M-VHBAri-152-m01		
Modul	e coord	linator		Module offered by			
Dean c	of Stud	ies Mathematik (Mathema	atics)	Institute of Mathem	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	ester	undergraduate					
Conter	nts	•					
Basic t	opics	on teaching arithmetics in	school, e. g. divisab	ility theory, prime nu	umbers, set theory.		
Intend	ed lear	ning outcomes					
					athematical backgrounds and ching arithmetic in school.		
Course	S (type,	number of weekly contact hours, l	anguage — if other than Ger	man)			
		eLearning, mostly Virtuell					
		<b>sessment</b> (type, scope, langua ble for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether		
		based, 15 to 20 hours) offered: Once a year, wint	er semester				
Allocat	tion of	places					
Additio	onal in	formation					
Worklo	oad						
6o h							
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
§ 22	§ 22    Nr. 1 h) § 22    Nr. 2 f) § 22    Nr. 3 f)						



Module coordinator  Dean of Studies Mathe  ECTS Method of grace  (not) successfue  Duration Module  1 semester undergrace  Contents  Revision and consolidation	ematik (Mathema		Module offered by	10-M-VHBGeo-152-m01	
Dean of Studies Mather  ECTS Method of grade  (not) successful  Duration Module  1 semester undergrade  Contents	`	atics)	Module offered by		
Method of grade (not) successful Module (not) successful Module (not) successful Module (not) semester (not) undergrade (not) successful Module (not)	`	atics)			
(not) successfit  Duration Module  1 semester undergr  Contents	ding	,	Institute of Mathem	natics	
Duration Module 1 semester undergr Contents		Only after succ. con	ıpl. of module(s)		
1 semester undergr	ully completed				
Contents	level	Other prerequisites			
	raduate				
Revision and consolida					
metry.  Intended learning out	. ,	arricular teaching de	grees Grundschule, r	Hauptschule, Realschule) in geo	
The student has basic tics.He/She is acquain				of mathematics and its didacg g geometry in school.	
Courses (type, number of w	veekly contact hours, l	anguage — if other than Ger	rman)		
Ü (2) Course type: eLearning	g, mostly Virtuell	e Hochschule Bayern	(vhb)		
<b>Method of assessment</b> (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)					
project (web-based, 15 to 20 hours) Assessment offered: Once a year, summer semester					
Allocation of places					

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### **Additional information**

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### Workload

60 h

### Teaching cycle

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### $\textbf{Referred to in LPO I} \ \ (\text{examination regulations for teaching-degree programmes})$

§ 22 II Nr. 1 h)

§ 22 II Nr. 2 f)



Module title Abbreviation						
Stochastics in Sekundarstufe I (virtual course) 10-M-VHBSto-152-mo1						
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	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts		•			
		consolidation of the fund ic courses in stochastics		chastics that are pr	erequisites for the subject-speci	
Intende	ed lear	ning outcomes				
		as basic knowledge of st acquainted with the em	•	,	athematics and its didac- ng stochastics in school.	
Course	<b>S</b> (type, ı	number of weekly contact hours,	anguage — if other than Ge	rman)		
Ü (2)						
Course	type:	Learning, mostly Virtuell	e Hochschule Bayerr	(vhb)		
		<b>sessment</b> (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) offered: Once a year, wint	er semester			
Allocat	ion of	places				
Additio	nal inf	ormation				
Worklo	ad					
60 h						
Teaching cycle						
<del>-</del>						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
§ 22      § 22	Nr. 1 h) Nr. 2 f)					



Module	Module title Abbreviation						
Mathe	Mathematics in grade 10 (virtual course) 10-M-VHBM10-152-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. com	npl. of module(s)			
2	(not) s	successfully completed					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	its						
Basic t	opics o	n teaching mathematics	in tenth grade in Hau	ptschule, Realschul	e and Gymnasium.		
Intend	ed learı	ning outcomes					
schule,	, as wel		atical backgrounds ar	nd proofs. He/She is	German Mittelschule and Real- acquainted with the employment		
Course	<b>S</b> (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)			
		eessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether		
		pased, 15 to 20 hours) ffered: Once a year, sum	mer semester				
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	Workload						
60 h							
Teaching cycle							
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
§ 22 II	§ 22    Nr. 1 h) § 22    Nr. 2 f) § 22    Nr. 3 f)						



Module title Abbreviation								
	Basics of Mathematics für German Grundschule 1: Arithmetics and Orders of Magnitude (virtual course)  10-M-VHBAuG-152-m01							
Module	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	n	Module level	Other prerequisites					
1 seme	ster	undergraduate						
Conten	ts							
arithme	etic law				ation, elementary arithmetics, mathematics on the quantities co-			
Intende	ed lear	ning outcomes						
They ar	e able uction.	to assess and value the i They know various fields	mportance of digital	technology with res	of arithmetic in elementary school. pect to todays and future design nd are able to perform modelling			
Course	<b>S</b> (type, r	number of weekly contact hours, I	anguage — if other than Ger	rman)				
Ü (2) Course	type: 6	eLearning, mostly Virtuell	e Hochschule Bayern	(vhb)				
		sessment (type, scope, langua	ge — if other than German, o	examination offered — if n	ot every semester, information on whether			
project (web-based, 15 to 20 hours) Assessment offered: Once a year, winter semester								
Allocation of places								
<del></del>								
Additional information								
<del></del>								
Workload								
60 h								
Teachi	Teaching cycle							

 $\textbf{Referred to in LPO I} \ \ (\text{examination regulations for teaching-degree programmes})$ 



Modul	Module title Abbreviation						
Basics of Mathematics für German Grundschule 2: Geometry and Stochastics (virtual course)  10-M-VHBGuS-152-mo1							
Modul	e coord	linator		Module offered by			
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mathem	natics		
ECTS	Meth	od of grading	Only after succ. com	pl. of module(s)			
2	(not)	successfully completed					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	its						
		topics in teaching geome natics (statistics, probab	, ,	. •	nd symmetry) and application-ori		
Intend	ed lear	ning outcomes					
Intended learning outcomes  The students know the subject-related contents in geometry in elementary school, and are able to structure the notions and methods within a conceptual map. They know the subject-related contents in application-oriented mathematics related to statistics, probability and combinatorics, and are able to structure the notions and methods within a conceptual map. They know strategies for development of understanding of the central notions of geometry and application-oriented mathematics in elementary school. They are able to assess and value the importance of digital technology with respect to todays and future design of instruction. They know various fields of application of geometry and application-oriented mathematics concepts, and are able to perform modelling independently.							

 $\textbf{Courses} \ (\textbf{type}, \, \textbf{number of weekly contact hours, language} - \textbf{if other than German})$ 

Ü (2)

Course type: eLearning, mostly Virtuelle Hochschule Bayern (vhb)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

project (web-based, 15 to 20 hours)

Assessment offered: Once a year, summer semester

### **Allocation of places**

### **Additional information**

### Workload

60 h

### Teaching cycle

### $\textbf{Referred to in LPO I} \ \ (\text{examination regulations for teaching-degree programmes})$



§ 22 II Nr. 1 h) § 22 II Nr. 2 f)

Module title					Abbreviation	
Basic Notions and Methods of Mathematical Reasoning					10-M-GBM-152-m01	
Modul	e coord	inator		Module offered by		
Dean o	f Studi	es Mathematik (Mathem	atics)	Institute of Mathem	natics	
ECTS	Metho	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				
Conter	nts					
Introdu	uction to	o the basic notions and p	proof techniques in m	athematics: approa	ch to sets, formal logic and maps	
Intend	ed lear	ning outcomes				
		ets acquainted with the b degree study programm		ues which are prere	quisites for the further courses in	
Course	<b>S</b> (type, r	number of weekly contact hours,	language — if other than Ger	rman)		
V (1) +	Ü (1)					
		<b>sessment</b> (type, scope, langua ele 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			
	tion of p		<u> </u>			
Additio	onal inf	ormation				
Additional information on module duration: block taught prior to the beginning of the lecture period.						
Workload						
60 h						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						



Modul	e title				Abbreviation	
Didact	ics of G	eometry (virtual course)			10-M-VHBDG-152-m01	
Module coordinator				Module offered by		
Dean of Studies Mathematik (Mathematic			atics)	Institute of Mathematics		
ECTS	Meth	od of grading	Only after succ. con	ompl. of module(s)		
2	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 semester undergraduate						
Contents						
Geome	•	_		•	es on topics which are central and	

Geometry didactics is about learning and teaching geometry. This course focuses on topics which are central and important for all of geometry and mathematics, namely proving and problem solving. It also addresses topics which are usually discussed only briefly or not at all in university lectures and in the literature. Among these are chapters on space geometry, trigonometry and similarity geometry.

### **Intended learning outcomes**

The students are acquainted with the subject-specific contents of school geometry, and are able to structure the notions and methods within a conceptual map. They know strategies of short, middle and long term development of understanding of the central concepts of geometry in teaching mathematics. They are able to develop and justify learning units and learning sequences for the important topics in school geometry independently. They are able to assess and value the importance of digital technology with respect to todays and future design of instruction. They know various fields of application of geometric concepts, and are able to perform modelling (in the sense of modelling cycles) independently.

 $\textbf{Courses} \ (\text{type, number of weekly contact hours, language} - \text{if other than German})$ 

Ü (2)

Course type: eLearning, mostly Virtuelle Hochschule Bayern (vhb)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

project (web-based, 15 to 20 hours)

Assessment offered: Once a year, summer semester

### **Allocation of places**

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### **Additional information**

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### Workload

60 h

### **Teaching cycle**

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

§ 22 II Nr. 1 h)

§ 22 II Nr. 2 f)



Module title					Abbreviation
Didactics of Algebra (virtual course)					10-M-VHBDA-152-m01
Module	coord	inator	Module offered by		
Dean of	f Studi	es Mathematik (Mathem	atics)	Institute of Mathematics	
ECTS	Metho	od of grading	Only after succ. cor	ompl. of module(s)	
2	(not)	successfully completed			
Duratio	n	Module level	Other prerequisites	1	
1 semes	1 semester undergraduate				
Conten	ts				
Algebra	didac	tics is about learning and	teaching algebra T	nis course focuses o	n the central and importa

### **Intended learning outcomes**

The students are acquainted with the subject-specific contents of school algebra, and are able to structure the notions and methods within a conceptual map. They know strategies of short, middle and long term development of understanding of the central concepts of algebra in teaching mathematics. They are able to develop and justify learning units and learning sequences for the important topics in school algebra independently. They are able to assess and value the importance of digital technology with respect to todays and future design of instruction. They know various fields of application of algebraic concepts, and are able to perform modelling (in the sense of modelling cycles) independently.

pics in school algebra: extensions of number domains, variables and terms, equations and functions.

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

Ü (2)

Course type: eLearning, mostly Virtuelle Hochschule Bayern (vhb)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

project (web-based, 15 to 20 hours)

Assessment offered: Once a year, winter semester

### Allocation of places

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### **Additional information**

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#### Workload

60 h

#### **Teaching cycle**

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

§ 22 | Nr. 1 h), § 22 | Nr. 2 f)



Module	Module title Abbreviation						
Exam T	Exam Tutorial Didactics of Mathematics (virtual course) 10-M-VHBEx-152-m01						
Module	coord	inator		Module offered by			
Dean of Studies Mathematik (Mathematics)				Institute of Mathem	natics		
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)			
2	(not)	successfully completed					
Duratio	n	Module level	Other prerequisites	ner prerequisites			
1 seme	ster	undergraduate					
Conten	ts						
the Ers	tes Sta c 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 state examination in Bavaria).		
		ning outcomes					
The stu	dent le	earns about the structure	of the state exams a	nd different method:	s for solving the exam problems.		
-	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)			
Ü (2) Course	type: 6	Learning, mostly Virtuell	e Hochschule Bayern	(vhb)			
		<b>sessment</b> (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether		
		pased, 15 to 20 hours) ffered: Once a year, wint	er semester				
Allocat		<u> </u>					
Additio	nal inf	ormation					
Worklo	ad						
60 h							
Teachi	ng cycl	e					
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)			
§ 22      § 22      § 22	Nr. 1 h) Nr. 2 f)						



Module	e title	-			Abbreviation		
Mathe	Mathematics 1 (virtual course) 10-M-VHBMa1-152-mo1						
Module	e coord	linator		Module offered by			
Dean o	f 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	its						
		basic topics on teaching concerning the organisa		mnasium, in particu	llar verbal and subject-specific		
Intend	ed lear	ning outcomes					
		s able to discuss selected oth subject-related and n		s on teaching mathe	ematics at German Gymnasium,		
Course	S (type,	number of weekly contact hours, I	anguage — if other than Ger	man)			
Ü (2) Course	type:	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		
		based, 15 to 20 hours) offered: Every two years, v	vinter semester				
Allocat	ion of	places					
Additio	nal inf	ormation					
Worklo	ad						
60 h	1						
Teachi	ng cycl	e					
	-						
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)			
§ 22    § 22    § 22	Nr. 1 h) Nr. 2 f)						



Module title Abbreviation						
Mathematics 2 (virtual course) 10-M-VHBMa2-152-m01						
Module	e coord	linator	Module offered by			
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mather	matics	
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					
		central topics on teachin lementation in the classr		Gymnasium, in parti	cular didactic analyses and possi	
Intend	ed lear	ning outcomes				
		s able to discuss and ana rom a didactical point of v		and questions on te	aching mathematics at German	
Course	S (type,	number of weekly contact hours,	language — if other than Ge	rman)		
Ü (2)						
Course	type:	eLearning, mostly Virtuell	e Hochschule Bayerr	(vhb)		
		<b>sessment</b> (type, scope, langua ole for bonus)	ge — if other than German,	examination offered $-$ if $n$	ot every semester, information on whether	
		based, 15 to 20 hours) offered: Every two years, s	summer semester			
Allocat						
Additio	nal inf	ormation				
Worklo	ad					
60 h						
Teachi	ng cycl	le	-			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	ammes)		
§ 22    § 22    § 22	Nr. 1 h) Nr. 2 f)					



Module title Abbreviation							
Method	Methods and Media in Teaching Mathematics 1 (German Grundschule) 10-M-MMMG1-152-m01						
Module coordinator Module offe					by		
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Mat	hematics		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
3	(not)	successfully completed					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	ts						
cularly environ	weak i	n mathematics, dealing v	vith heterogeneity in the classroom (e. g.	the classroom, o	who are particularly strong or parti- organisation of substantial learning use of computers) are discussed		
Intende	ed lear	ning outcomes					
		nows the possibilities, line aching mathematics.	nitations, advantage	s and disadvanta	ages of methods and media for em-		
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)			
S (2)							
		sessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered —	- if not every semester, information on whether		
a) talk (approx. 45 minutes) or b) term paper (5 to 10 pages) or c) project (10 to 15 pages) Assessment offered: Every two years, winter semester							
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Workload							
90 h							
Teachi	ng cycl	e					

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



Module title Abbreviation						
Methods and Media in Teaching Mathematics 2 (German Grundschule) 10-M-MMMG2-152-m01						
Module	coord	inator		Module offered by		
Dean o	f Studi	es Mathematik (Mathema	atics)	Institute of Matl	hematics	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
3	(not)	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
		in the methodology of te sroom) are discussed an		(e.g. learning m	aterials, in-depth employment of me-	
Intende	ed lear	ning outcomes				
		nows the possibilities, lind bloyment in teaching mat		s and disadvanta	ages of comprehensive methods and	
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)		
S (2)	,					
		<b>sessment</b> (type, scope, langua ble for bonus)	ge — if other than German,	examination offered —	if not every semester, information on whether	
b) term c) proje	paper ect (10	x. 45 minutes) or (5 to 10 pages) or to 15 pages) ffered: Every two years, s	summer semester			
Allocat	ion of <sub>l</sub>	places				
Additio	nal inf	ormation				
Worklo	ad					
90 h			,			
Teachir	ng cycl	е				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	ammes)		



Module	title		Abbreviation			
School Mathematics from a Higher Perspective					10-M-SCH-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	ıpl. of module(s)		
5	(not)	successfully completed				
Duratio	n	Module level	Other prerequisites	ites		
1 seme	ster	undergraduate				
Conten	ts					
		selected topics in schoolimplementation at both s			ation into wider theories and	
Intende	ed lear	ning outcomes				
	vanced	I mathematical theories.			between school mathematics athematical, didactical and me	
Course	<b>S</b> (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)		
V (2) +	Ü (2)					
		sessment (type, scope, langua ele for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whethe	

a) talk (approx. 45 minutes) or

- b) term paper (10 to 15 pages) or
- c) project work (15 to 25 hours)

Language of assessment: German and/or English

Assessment offered: In the semester in which the course is offered and in the subsequent semester

### **Allocation of places**

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### **Additional information**

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### Workload

150 h

### **Teaching cycle**

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

§ 22 II Nr. 1 h)

§ 22 II Nr. 2 f)