

Annex SFB

Studienfachbeschreibung (subject description, SFB) for the subject Mathematics as vertieft studiertes Fach (studied with a focus on the scientific discipline) with the degree "Erste Staatsprüfung für das Lehramt an Gymnasien"

Responsible: Faculty of Mathematics and Computer Science

Responsible: Institute of Mathematics

Examination regulations version: 2023

Examination regulations version: 2023

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

= 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 for the

Unless otherwise stated, courses and assessments will be held in German, assessments will be offered every semester and modules are not cre-

modules in this SFB: ditable for bonus.

Information on Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the meassessment procedures: thod 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 a 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)):

31-Jan-2023 (2023-7)

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.

Every module will be described using the following form:

Abbreviation	Module title										
	ECTS		Duration	(in semesters)	Method of grading		Module level				
	Courses		To be spe	To be specified in the form X (y) with course type X abbreviated as specified above and number of weekly contact hours y							
	Method of as	ssessm	ent								
	Only after su completion of		ıl if applica	f applicable							
	Other prereq	uisites	if applica	if applicable							
	Participants on of places		ocati- if applica	if applicable							
	Additional information		ion if applica	if applicable							
	Referred to in	n LPO I	if applica	if applicable (examination regulations for teaching-degree programmes)							

Scientific Disciplin	e (92 ECTS credi	its)									
Compulsory Course	es (46 ECTS cred	lits)									
10-M-MDAL-152-	Introduction in	to Mathe	matica	l Thinking and Worl	king for Teaching De	gree (German Gymnasium)					
mo1	ECTS 5	Duration	n	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Courses		V (1) +	$V(1) + \ddot{U}(1) + V(1) + \ddot{U}(1)$							
	Method of assessment			project (10 to 15 pages) Language of assessment: German and/or English							
	Additional Info	rmation	Additi	onal information on	module duration: in	cludes block taught sessions p	orior to the begi	nning of the lecture period.			
	Referred to in LPO I		§ 73 I	§ 73 Nr. 2 (1 ECTS credits) § 73 Nr. 3 (2 ECTS credits) § 73 Nr. 5 (2 ECTS credits)							
10-M-LNL-Ü-191-	Overview Linea	ar Algebra	for Te	aching Degree (Ger	man Gymnasium)						
mo1	ECTS 13	Duratio	n	2 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses		V (4) +	- V (4) + Ü (2)							
			Langu	age of assessment:	andidate each (20 to German and/or Engl rence to the content		o-M-LNL2.				
	Referred to in L	PO I	§ 73 l	Nr. 2							
10-M-ANL-Ü-191-	Overview Analysis for Teaching Degree (German Gymnasium)										
mo1	ECTS 16	Duration	n	2 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses		V (4) +	- V (4) + Ü (2)							
	Method of asse	essment	Langu	oral examination of one candidate each (20 to 40 minutes) Language of assessment: German and/or English Assessment will have reference to the contents of modules 10-M-ANL1 and 10-M-ANL2.							
	Referred to in L	PO I	§ 73 l	Nr. 1							
10-M-DFL-Ü-191-	Overview Diffe	rential Eq	uation	s and Complex Anal	ysis for Teaching De	gree (German Gymnasium)					
mo1	ECTS 12	Duratio	n	2 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses		V (4) +	- V (4) + Ü (2)							
	Method of asse	essment	oral examination of one candidate each (20 to 40 minutes) Language of assessment: German and/or English Assessment will have reference to the contents of modules 10-M-DGLL and 10-M-FTHL.								
	Referred to in L	PO I	§ 73 l	Nr. 1							

Compulsory Elect	ives (46 E	CTS cre	dits)									
Subfield Basics in	Linear Al	gebra (5 ECTS cr	edits)								
10-M-LNL1-191-	Linear A	Algebra	1 for Tea	ching	ning Degree (German Gymnasium)							
mo1	ECTS	5	Duratio	n 1 semester		Method of grading	(not) successfully completed	Modul level	undergraduate			
	Courses			Ü (2)	_							
	Method	d of ass	essment	each)	written examination (approx. 90 to 180 minutes) and written exercises (approx. 10 exercise sheets with approx. 4 exercises each) Language of assessment: German and/or English							
	Referred to in LPO I			§ 73 l	Nr. 2							
10-M-LNL2-191-	Linear /	Algebra	2 for Tea	ching	Degree (German Gy	/mnasium)						
mo1	ECTS	5	Duratio	n	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Course	S		Ü (2)	*							
	Method of assessment			each)	written examination (approx. 90 to 180 minutes) and written exercises (approx. 10 exercise sheets with approx. 4 exercises each) Language of assessment: German and/or English							
	Referre	d to in I	LPO I	§ 73 l	Nr. 2							
Subfield Basics in	sics in Analysis (5 ECTS credits											
10-M-ANL1-191-	Analysi	is 1 for	Teaching	Degre	Degree (German Gymnasium)							
mo1	ECTS	5	Duratio	n -	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Course	S	•	Ü (2)								
	Method	d of ass	essment	written examination (approx. 90 to 180 minutes) and written exercises (approx. 10 exercise sheets with approx. 4 exercises each) Language of assessment: German and/or English								
	Referre	d to in I	LPO I	§ 73 l	Nr. 1			,				
10-M-ANL2-191-	Analysi	s 2 for	Teaching	Degre	e (German Gymnas	ium)						
mo1	ECTS	5	Duratio	1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Course	S	•	Ü (2)		•		•				
	Method	d of ass	essment	each)	written examination (approx. 90 to 180 minutes) and written exercises (approx. 10 exercise sheets with approx. 4 exercises each) Language of assessment: German and/or English							
	Referre	d to in I	LPO I	§ 73 l	Nr. 1							

Subfield Basics in	Higher Analysis (5 ECTS	redits)								
10-M-DGLL-191-	Ordinary Differential Eq	uations for Teaching Degree (German Gymnasium)								
mo1	ECTS 5 Duratio	1 semester Method of grading (not) successfully completed Modul level undergraduate								
	Courses	Ü (2)								
	Method of assessment	n) written examination (approx. 90 to 180 minutes, usually chosen) or n) oral examination of one candidate each (15 to 30 minutes) or n) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) nanguage of assessment: German and/or English reditable for bonus								
	Referred to in LPO I	§ 73 Nr. 1								
10-M-FT-	Introductory Complex A	nalysis for Teaching Degree (German Gymnasium)								
HL-191-m01	ECTS 5 Duratio	n 1 semester Method of grading (not) successfully completed Modul level undergraduate								
	Courses	Ü (2)								
	Method of assessment	written examination (approx. 90 to 180 minutes, usually chosen) or oral examination of one candidate each (15 to 30 minutes) or oral examination in groups (groups of 2, 10 to 15 minutes per candidate) nguage of assessment: German and/or English editable for bonus								
	Referred to in LPO I	§ 73 Nr. 1								
Subfield Stochast	ics and Basics in Algebra	and Applied Mathematics (11 ECTS credits)								
Focus Basics in Al	gebra and Applied Mathe	matics (5 ECTS credits)								
10-M-AL-	Introductory Algebra for Teaching Degree (German Gymnasium)									
GL-191-m01	ECTS 5 Duratio	n 1 semester Method of grading (not) successfully completed Modul level undergraduate								
	Courses	Ü (2)								
	Method of assessment	a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus								
	Referred to in LPO I	§ 73 Nr. 2 (2 ECTS credits), § 73 Nr. 5 (3 ECTS credits)								
10-M-AALL-191-	Applied Algebra for Tea	ching Degree (German Gymnasium)								
mo1	ECTS 5 Duratio	1 semester Method of grading (not) successfully completed Modul level undergraduate								
	Courses	Ü (2)								
	Method of assessment	 a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus 								
	Referred to in LPO I	§ 73 Nr. 2 (2 ECTS credits), § 73 Nr. 5 (3 ECTS credits)								
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10-M-NUL1-191-	Numeri	lumerical Mathematics 1 for Teaching Degree (German Gymnasium)																
mo1	ECTS	5	Duration	n .	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate									
	Course	S		Ü (2)														
	Method	of asse	essment				utes, usually chosen) or											
						e candidate each (15												
					c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) c.anguage of assessment: German and/or English													
					creditable for bonus													
	Referre	d to in L	PO I	§ 73 l	§ 73 Nr. 2 (2 ECTS credits), § 73 Nr. 5 (3 ECTS credits)													
Focus Stochastics	astics (6 ECTS credits)																	
10-M-STL-191-m01	191-m01 Stochastics for Teach			g Degr	ee (German Gymna:	sium)												
	ECTS	CTS 6 Duratio			1 semester	Method of grading	numerical grade	Modul level	undergraduate									
	Courses			V (4) ·	+ Ü (2)													
	Method	d of asse	essment			pprox. 90 to 180 min												
						e candidate each (15												
					c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English													
					able for bonus				_									
	Referre	d to in L	.PO I	§ 73 l	Nr. 3													
10-M-STOL-191-		,	,		ree (German Gymn													
mo1		6	Duration		1 semester	Method of grading	numerical grade	Modul level	undergraduate									
	Course			V (4) ·														
	Method	d of asse	essment			pprox. 90 to 180 min												
						e candidate each (15	to 30 minutes) or to 15 minutes per candidate)											
						: German and/or Engl												
				credit	able for bonus													
i .	Referred to in LPO I			§ 73 Nr. 3														
	L			§ 73 l	111. 3													
Subfield Geometrie	L			§ 73 l	111. 3													
10-M-EGEL-191-	(10 ECT	S credit	s)		hing Degree (Germa	an Gymnasium)												
	e (10 ECT	S credit	s)	r Teac	hing Degree (Germa	an Gymnasium) Method of grading	numerical grade	Modul level	undergraduate									
10-M-EGEL-191-	Element ECTS Course	S credit tary Ge 10	cs) ometry for Duration	or Teac	hing Degree (Germa 1 semester + Ü (2)	Method of grading		Modul level	undergraduate									
10-M-EGEL-191-	Element ECTS Course	S credit tary Ge 10	cs) ometry for Duration	r Teac 1 V (4) · a) wri	hing Degree (Germa 1 semester + Ü (2) tten examination (a	Method of grading	utes) or	Modul level	undergraduate									
10-M-EGEL-191-	Element ECTS Course	S credit tary Ge 10	cs) ometry for Duration	V (4) - a) wri	hing Degree (Germa 1 semester + Ü (2) tten examination (a Il examination of on	Method of grading pprox. 90 to 180 mine candidate each (15	utes) or to 30 minutes) or	Modul level	undergraduate									
10-M-EGEL-191-	Element ECTS Course	S credit tary Ge 10	cs) ometry for Duration	V (4) - a) wri b) ora c) ora	hing Degree (Germa 1 semester + Ü (2) tten examination (a I examination of on I examination in gro	pprox. 90 to 180 mine e candidate each (15 pups (groups of 2, 10	utes) or to 30 minutes) or to 15 minutes per candidate)	Modul level	undergraduate									
10-M-EGEL-191-	Element ECTS Course	S credit tary Ge 10	cs) ometry for Duration	V (4) - a) wri b) ora c) ora Langu	hing Degree (Germa 1 semester + Ü (2) tten examination (a I examination of on I examination in gro	Method of grading pprox. 90 to 180 mine candidate each (15	utes) or to 30 minutes) or to 15 minutes per candidate)	Modul level	undergraduate									

10-M-DGEL-191-	Introduct	tory Dif	ferential	Geometry for Teachin	g Degree (German Gymnasium)							
mo1	ECTS 1	10	Duration	1 semester	Method of grading numerical grade	Modul level	undergraduate					
	Courses			V (4) + Ü (2)								
	Method	of asses		b) oral examination o c) oral examination in Language of assessm) written examination (approx. 90 to 180 minutes) or) oral examination of one candidate each (15 to 30 minutes) or) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) anguage of assessment: German and/or English assessment offered: Only when announced in the semester in which the courses are offered and in the subsequent semester reditable for bonus							
	Referred	to in LP	1 09	§ 73 l Nr. 4								
10-M-PGEL-191-	Introduct	Introductory Projective Geometry for Teaching Degree (German Gymnasium)										
mo1	ECTS 1	10	Duration		Method of grading numerical grade	Modul level	undergraduate					
	Courses			V (4) + Ü (2)								
	method of assessment			a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English Assessment offered: Only when announced in the semester in which the courses are offered and in the subsequent semester creditable for bonus								
	Referred	to in LP	1 0	§ 73 l Nr. 4		,						
Subfield Overview	Algebra aı	gebra and Applied Mathematics (10 ECTS credits)										
10-M-AALL-Ü-191-	Overview	v Algebi	ra and A	pplied Algebra for Tea	ching Degree (German Gymnasium)							
mo1	ECTS 1	10	Duration	2 semester	Method of grading numerical grade	Modul level	undergraduate					
	Courses			V (4) + V (4) + Ü (2)								
				oral examination of one candidate each (20 to 40 minutes) Language of assessment: German and/or English Assessment will have reference to the contents of modules 10-M-ALGL und 10-M-AALL								
	Referred	to in LP	1 0	§ 73 Nr. 2 (5 ECTS cre	edits), § 73 I Nr. 5 (5 ECTS credits)		_					
10-M-ANUL-Ü-191-	Overview	v Algebi	ra and N	umerical Mathematics	1 for Teaching Degree (German Gymnasium)							
mo1	ECTS 1	10	Duration	2 semester	Method of grading numerical grade	Modul level	undergraduate					
	Courses			V (4) + V (4) + Ü (2)								
				oral examination of one candidate each (20 to 40 minutes) Language of assessment: German and/or English Assessment will have reference to the contents of modules 10-M-ALGL und 10-M-NUL1								
	Referred				edits), § 73 Nr. 5 (5 ECTS credits)							

Teaching (10 ECTS credits)										
Compulsory Courses (10 ECTS credits)										
10-M-DGY1-232-	Didactics of Mathematics: Algebra and Analysis (German Gymnasium)									
mo1	ECTS 6 Duration		1	2 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Courses		V (2) +	+ Ü (2) + V (2) + Ü (2)						
	Method of asse		written examination (approx. 60 minutes) and written exercises (approx. 10 exercise sheets with approx. 3 exercises each from the didactics of algebra and approx. 10 exercise sheets with approx. 3 exercises each from the didactics of analysis) Language of assessment: German and/or English creditable for bonus							
	Referred to in L	.PO I	§ 73 l	Nr. 6						
10-M-DGY2-191-	Didactics of Mathematics: Geometry (German Gymnasium)									
mo1	ECTS 4	Duration	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Courses		$V(2) + \ddot{U}(2)$							
	Method of asse		a) written examination (60 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus							
	Referred to in L	.PO I	§ 73 l	Nr. 6						

Paper (4 ECTS credits)

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

ching degree progr	u 11111113).									
10-M-SFDP-	Practical Training in Classroom Teaching including Theory (German Gymnasium)									
GY-152-m01	ECTS 4 Duration		Duration	n [1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate	
	Courses			P (o) +	(0) + S (2)					
	Method of assessment			b) terr Conter for tea	n paper (10 to 15 pag nts and duration of p	ges) olacement as specifi	n paper (1 to 2 pages) or ed in Section 34 Subsection 1 S n in mandatory teaching praction		LPO I (examination regulations of all set tasks as specified by	
	Referre	d to in L	PO I	§ 34 I	1 Nr. 4					

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

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

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

Mathematics (Freier Bereich (gen	neral as well as s	subject-si	oecific	electives) subject	t specific)						
Module Group Mat					1 /						
10-M-SCH-152-m01	School Mather	natics fro	m a Hi	gher Perspective							
-	ECTS 5	Duratio		1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Courses		V (2) ·	+ Ü (2)	<u>'</u>		•				
				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							
	Referred to in L	-PO I	§ 22 l	§ 22 Nr. 1 h) § 22 Nr. 2 f) § 22 Nr. 3 f)							
10-M-DCMU-152-	Computers in I	Mathema	tical Te	al Teaching							
mo1	ECTS 3	Duratio	n	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Courses		V (2)								
	Method of asso	essment	projec Asses	ct (10 to 15 pages) ssment offered: Eve	ry two years, winter se	emester					
	Referred to in L	PO I	§ 22 Nr. 2 f) § 22 Nr. 1 h) § 22 Nr. 3 f)								
10-M-PRM1-152-	Introduction to Hands-on Mathematics										
mo1	ECTS 3	Duratio	n	1 semester Method of grading (not) successfully completed Modul level undergraduate							
	Courses		S (2)								
	Method of asso	essment	project (10 to 15 pages) Assessment offered: Every two years, winter semester								
	Referred to in L	PO I	_	§ 22 Nr. 2 f § 22 Nr. 3 f)							
10-M-PRM2-152-	Practical Cours	se Hands	on Ma	on Mathematics							
mo1	ECTS 3	Duratio	n	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Courses		P (2)	,							
	Method of asso	essment			oject plan (5 to 10 pago ry two years, summer	es) and practical implementati semester	on with pupils				
	Referred to in L	-PO I		l Nr. 2 f				_			

§ 22 II Nr. 3 f)

10-M-PRA-152-m01	Hands-o	n Semi	nar Math	emati	cs							
	ECTS	3	Duration	n .	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Courses			S (2)								
	Method	of asse	ssment			ect plan (10 to 15 pag						
					· · · · · · · · · · · · · · · · · · ·	y two years, summer	semester					
	Referred				§ 22 Nr. 3 f)							
10-M-GES-152-m01												
	ECTS		Duration		1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Courses				+ Ü (2)							
	Method of assessment			b) ter c) pro Langu	a) talk (45 to 90 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							
	Referred			§ 22 l	l Nr. 3 f)							
10-M-MSC-152-	Mathem	atical V	Vriting									
mo1	ECTS 5 Duratio			1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate				
	Courses			V (2) ·	+ Ü (2)							
	Method of assessment		ssment	a) talk (45 to 90 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								
	Referred	l to in L	PO I	§ 22 Nr. 3 f)								
10-M-SEM-152-	Seminar	r Mathe	matics									
mo1	ECTS	5	Duration	า	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses			S (2)								
	Method	of asse	ssment	talk (60 to 120 minutes) Language of assessment: German and/or English								
	Referred	l to in L	PO I	§ 22 l	l Nr. 3 f)							
10-M-COM-152-	Comput	ational	Mathem	atics	,							
mo1	ECTS	4	Duration	1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Courses			V (1) +	- Ü (2)							
	Method of assessment			project in the form of programming exercises (approx. 20 to 25 hours) Language of assessment: German and/or English Assessment offered: Once a year, winter semester								
	Referred	l to in L	PO I	§ 22 l	l Nr. 3 f)							

10-M-PRG-152-m01	Prograi	mming	course for	stude	ents of Mathematics	and other subjects			-			
	ECTS	3	Duration	1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Course	S		P (2)	_							
	Method	l of ass	essment	Langu	lage of assessment	gramming exercises (a : German and/or Engli :e a year, summer sem						
	Referre	d to in	LPO I		I Nr. 3 f)							
10-M-Tu-	Exercis	e tutor	or proof-r	eading	g in Mathematics			1				
Ko-152-mo1	ECTS	5	Duration	1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Courses			T (o)					•			
					ssment of tutoring a ox. 5 pieces of corre		work by supervising lecturers o	or exercise supe	ervisors (1 to 2 teaching units or			
	Additional Information			Pleas	e direct application	to teaching coordinat	or Mathematics, he/she will se	elect participan	its.			
	Referre	d to in I	LPO I	§ 22 l	22 II Nr. 3 f)							
10-M-FAN-152-m01	Introduction to Functional Analysis											
	ECTS 9 Duratio				1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Courses			٠, ١,	+ Ü (2)							
	Method of assessment			a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus								
	Referre	d to in I	LPO I	§ 22 l	§ 22 II Nr. 3 f)							
10-M-ORS-152-m01	Operati	ions Re	search									
	ECTS	9	Duration		1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate			
	Course			` ' '	+ Ü (2)							
	Method	l of ass	essment	b) ora c) ora Langu Asses	al examination of on I examination in gro Jage of assessment	ne candidate each (15 toups (groups of 2, 10 toups (Grman and/or Engli	o 15 minutes per candidate)	subsequent se	emester			
	Referre	d to in	LPO I	§ 22 l	l Nr. 3 f)							

10-M-DV-	Advanc	ed Dida	ctics of N	/\athen	natics (German Gym	nasium)						
GY-191-m01	ECTS	2	Duratio	n	1 semester	Method of grading (not) successfully completed Modul level undergraduate						
	Courses	5		S (2)								
	Method	of asse	essment	Langu	talk (approx. 60 minutes) Language of assessment: German							
			_		Assessment offered: Once a year, summer term							
	Referre				§ 22 Nr. 3 f)							
10-M-RE-					egree (German Gymr							
PL-191-m01	ECTS 3 Duration				1 semester	Method of grading (not) successfully completed Modul level undergraduate						
	Courses			S (2)								
	Method of assessment			b) pro) talk (approx. 45 minutes) or) project (10 to 15 pages) anguage of assessment: German and/or English							
	Referre	d to in L	PO I	§ 22 l	Nr. 3 f)							
10-M-KRY-232-m01	01 Mathematical Aspects of Modern Cryptography											
	ECTS 5 Duratio		n	1 semester	Method of grading (not) successfully completed Modul level undergraduate							
	Courses			V (3) -	+ Ü (1)							
_	Method of assessment			b) ora c) ora Langu Asses	a) written examination (approx. 60 to 120 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English Assessment offered: in the semester in which the course is offered and in the subsequent semester creditable for bonus							
	Referre	d to in L	PO I	§ 22 l	Nr. 3 f)							
10-M-DGY-	Didacti	cs of Ma	themati	cs: Sto	chastics							
STO-232-m01	ECTS	3	Duratio	n	1 semester	Method of grading (not) successfully completed Modul level						
	Courses	5		V (2)								
	Method	Method of assessment		b) ora c) ora Asses	a) written examination (approx. 60 to 90 minutes, usually chosen) or b) oral examination of one candidate each (15 to 20 minutes) or c) oral examination in groups (groups of 2, approx. 10 minutes per candidate) Assessment offered: in the semester in which the course is offered and in the subsequent semester creditable for bonus							
	Referre	eferred to in LPO I §			22 Nr. 3 f)							

10-M-DGYA-	Didactics of	Didactics of Mathematics: Analytic Geometry												
GE-232-m01	ECTS 3	Duratio	1 semester	Method of grading	(not) successfully completed	Modul level								
	Courses		(2)											
	Method of a	ssessment												
			b) oral examination of			`								
			c) oral examination in groups (groups of 2, approx. 10 minutes per candidate) Assessment offered: in the semester in which the course is offered and in the subsequent semester											
			creditable for bonus											
	Referred to i	n LPO I	§ 22 II Nr. 3 f)											
Module Group Virtu	ual Courses													
10-M-DV-	E-Learning a	and Blended	Learning in Mathemati	cal Teaching (virtual Co	urse)									
HB-152-m01	ECTS 3	Duratio		Method of grading	(not) successfully completed	Modul level	undergraduate							
	Courses		Ü (2)		alanda Danama (dalah)									
] 	Mathad of a		Course type: eLearning, mostly Virtuelle Hochschule Bayern (vhb)											
	Method of a	ssessment	project (web-based, 15 to 20 hours) Assessment offered: Once a year, winter semester											
	Referred to i	n LPO I	§ 22 II Nr. 1 h)	, ,										
			§ 22 II Nr. 2 f)											
141/4/154			§ 22 II Nr. 3 f)											
10-M-VHBA- ri-152-m01	Basics in Arithmetics (virtual course)													
11-152-11101	ECTS 2	Duratio		Method of grading	(not) successfully completed	Modul level	undergraduate							
	Courses		Ü (2) Course type: eLearning, mostly Virtuelle Hochschule Bayern (vhb)											
<u> </u>	Method of a	ccaccmant	project (web-based, 15 to 20 hours)											
	Method of a	330331110111	Assessment offered: Once a year, winter semester											
	Referred to i	n LPO I	§ 22 II Nr. 1 h)											
			§ 22 II Nr. 2 f)											
141/4/15.0		1 10	§ 22 Nr. 3 f)											
10-M-VHBGeo-152- mo1			try (virtual course)											
	ECTS 2	Duratio		Method of grading	(not) successfully completed	Modul level	undergraduate							
	Courses		Ü (2) Course type: eLearning, mostly Virtuelle Hochschule Bayern (vhb)											
	Method of a	ssessment	project (web-based, 15 to 20 hours)											
	method of d	336331116116	Assessment offered: Once a year, summer semester											
	Referred to i	n LPO I	§ 22 II Nr. 1 h)											
			§ 22 II Nr. 2 f)											
			§ 22 II Nr. 3 f)											

10-M-VH-	Stochastics in Sekundarstufe I (virtual course)											
BSto-152-mo1	ECTS 2 Duration			ı	1 semester	Method of grading (not) successfully completed	Modul level	undergraduate				
	Course	S	,	Ü (2)								
						mostly Virtuelle Hochschule Bayern (vhb)						
	Method	d of ass	essment		ct (web-based, 15 t							
	D 6		1.00.1			ce a year, winter semester						
	Referre	d to in	LPO I		3 22 Nr. 1 h) 3 22 Nr. 2 f)							
					I Nr. 3 f)							
10-M-VHBM10-152-	Mather	natics i	n grade 10									
mo1		2	Duration		1 semester	Method of grading (not) successfully completed	Modul level	undergraduate				
	Course		1	Ü (2)		5 5 7 7						
				Cours	e type: eLearning,	mostly Virtuelle Hochschule Bayern (vhb)						
	Method	d of ass	essment		ct (web-based, 15 t							
		,				ce a year, summer semester						
	Referre	d to in	LPO I	§ 22 Nr. 1 h)								
					§ 22 II Nr. 2 f) § 22 II Nr. 3 f)							
10-M-VHBDG-191-												
mo1	ECTS 2 Duratio				1 semester	Method of grading (not) successfully completed	Modul level	undergraduate				
	Courses			Ü (2)	1 2 2 2 2 2 2	method of grading (not) adoptionally completed	,oudit to tot	Tanao.g.uuuut				
				project (web-based, 15 to 20 hours)								
	method of dosessment			Assessment offered: Once a year, summer semester								
				Other: E-Learning, Vhb								
	Referred to in LPO I			§ 22 II Nr. 3 f)								
10-M-VHBDAL-191-												
mo1	ECTS	2	Duration									
	Courses			Ü (2)								
	Method	d of ass	essment	project (web-based, 15 to 20 hours)								
				Assessment offered: Once a year, winter semester								
	Referred to in LPO I			Other: E-Learning, Vhb § 22 II Nr. 3 f)								
40 M VHDDAN 404				om a Didactical Point of View: Analysis online (virtual course)								
10-M-VHBDAN-191-												
	ECTS 2 Duratio			Ü (2)								
	Courses Method of assessment			• • •	ct (wob-based as t	o ao hours)		_				
	Method	ı 01 ass	essillelli		project (web-based, 15 to 20 hours) Assessment offered: Once a year, winter semester							
					: E-Learning, Vhb							
	Referred to in LPO I				§ 22 Nr. 3 f)							
LA Gymnasian Mathamat						IMII Würzburg • generated 10-Apr-200		record 5 105 L H 2022 D269 14 / 18				

10-M-VHBDST-191-	Didacti	Didactics of Stochastics (virtual course)												
mo1	ECTS	2	Duration)	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate					
	Course	S		Ü (2)										
	Method	of ass	essment	project (web-based, 15 to 20 hours)										
				Assessment offered: Once a year, winter semester										
	Deferre	ا د، : د ا	DO I		: E-Learning, Vhb									
14 1/11	Referre				I Nr. 3 f)									
10-M-VH- BEx-191-m01				of Mathematics (virtual course) 1 semester Method of grading (not) successfully completed Modul level undergraduate										
BEX 191 IIIO1		3	Duration		1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate					
	Course			Ü (2)					-					
	Method	d of asso	essment	project (web-based, 15 to 20 hours) Assessment offered: Once a year, winter semester Other: E-Learning, Vhb										
	Referre	d to in L	PO I	§ 22 l	l Nr. 3 f)			,						
10-M-VH-	Exam T	utorial	Algebra (v	irtual	course)	1		1	1					
BExA-191-mo1	ECTS	3	Duration)	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate					
	Course	S	·	Ü (4)	•	•		•						
	Method	of ass	essment	project (web-based, 15 to 20 hours)										
						ce a year, summer ser	nester							
	Referred to in LPO I			Other: E-Learning, Vhb										
				§ 22 Nr. 3 f)										
10-M-VHBMa1-152- mo1			(virtual c											
11101	ECTS 2 Duratio				1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate					
	Courses			Ü (2) Course type: eLearning, mostly Virtuelle Hochschule Bayern (vhb)										
	Method of assessment			project (web-based, 15 to 20 hours) Assessment offered: Every two years, winter semester										
	Referre	d to in l		§ 22 Nr. 1 h) § 22 Nr. 2 f) § 22 Nr. 3 f)										
10-M-	Mather	natics 2	(virtual c	course)										
VHBMa2-152-m01	ECTS 2 Duratio			1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate					
	Courses			Ü (2) Course type: eLearning, mostly Virtuelle Hochschule Bayern (vhb)										
	Method of assessment			project (web-based, 15 to 20 hours) Assessment offered: Every two years, summer semester										
	Referred to in LPO I			§ 22 Nr. 1 h) § 22 Nr. 2 f) § 22 Nr. 3 f)										
LA Gymnasien Mathemat	iss (agaa)						IMII Wiirzhurg • generated 10-Anr-2	aar • avam rog data	record I slage	nage 15 / 18				

10-M-	Computer and Mathematics (virtual course)												
VHBCom-152-mo1	ECTS	2	Duration		1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate				
	Courses	S		Ü (2) Cours	Ü (2) Course type: eLearning, mostly Virtuelle Hochschule Bayern (vhb)								
	Method	d of ass	essment	project (web-based, 15 to 20 hours) Assessment offered: Every two years, summer semester									
	Referre	d to in l	PO I	§ 22 Nr. 3 f)									
10-M-VHBBr-152-	Start-up Tutorial Mathematics (virtual course)												
mo1	ECTS	2	Duration)	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate				
	Courses	S		Ü (2) Cours	e type: eLearning,	mostly Virtuelle Hochs	schule Bayern (vhb)						
	Method of assessment			project (web-based, 15 to 20 hours) Assessment offered: Every two years, winter semester									
	Referre	d to in l	_PO I	§ 22 l	Nr. 3 f)								
10-M-VHBFT-191-	Exam T	utorial	Complex	Analys	analysis (virtual course)								
mo1	ECTS	3	Duration	1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate				
	Courses			Ü (4)									
	Method of assessment			project (web-based, 30 to 40 hours) Assessment offered: Once a year, winter semester Other: E-Learning, Vhb									
	Referred to in LPO I			§ 22 II Nr. 3 f)									
10-M-VHBD-	Exam Tutorial Ordinary Differential Equations (virtual course)												
GL-191-m01	ECTS 3 Duratio)	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate				
	Courses	S		Ü (3)									
	Method of assessment			project (web-based, 20 to 30 hours) Assessment offered: Once a year, summer semester Other: E-Learning, Vhb									
	Referre	d to in l	PO I	§ 22 Nr. 3 f)									
10-M-VHBHM-191-	History	of Mat	hematics	(virtua	l course)								
mo1	ECTS 5 Duratio)	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate				
	Courses	S		Ü (2) Module taught in: English									
	Method of assessment			Term paper (10 to 20 pages) Language of assessment: German and/or English Assessment offered: Once a year, summer term Other: E-Learning, Vhb									
	Referred to in LPO I			§ 22 l	Nr. 3 f)	,	,						

10-M-	Mather	natics 3	(virtual	course						
VHBMa3-232-mo1	ECTS	3	Duratio	า	1 semester	Method of grading (not) successfully completed	Modul level			
	Courses	S		Ü (2)						
						nostly Virtuelle Hochschule Bayern (vhb)				
	Method	d of asso	essment		ct (web-based, 15 to	20 hours) y two years, winter semester				
	Referre	d to in I	PO I		I Nr. 3 f)	y two years, writer semester				
10-M-			(virtual				-			
VHBMa4-232-mo1		3	Duration		1 semester	Method of grading (not) successfully completed	Modul level			
	Courses			Ü (2)		[S. S	1			
					e type: eLearning, m	nostly Virtuelle Hochschule Bayern (vhb)				
	Method	of ass	essment		ct (web-based, 15 to					
					Assessment offered: Every two years, winter semester					
	Referre		_		I Nr. 3 f)					
10-M-VHBZ-				tions of Analysis (virtual course)						
GA-232-m01	ECTS 2 Duration				1 semester	Method of grading (not) successfully completed	Modul level			
	Courses			Ü (2) Course type: eLearning, mostly Virtuelle Hochschule Bayern (vhb)						
	Method	Method of assessment			t (web-based, 15 to	20 hours)				
	Referred to in LPO I			§ 22 II Nr. 3 f)						
10-M-VHBMM-232-	Mather	natical	Modellin	g (virtu	al course)					
mo1	ECTS 3 Duratio			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						
	Courses	S		Ü (2)						
				Course type: eLearning, mostly Virtuelle Hochschule Bayern (vhb)						
			_	project (web-based, 15 to 20 hours)						
	Referre			§ 22 II Nr. 3 f)						
10-M-				d University Mathematics (virtual course)						
VHBGAH-232-mo1	ECTS 5 Duration			3						
	Courses	S		Ü (4) Course type: eLearning, mostly Virtuelle Hochschule Bayern (vhb)						
	Method	of ass	essment		ct (web-based, 15 to					
	Referred to in LPO I			<u> </u>	Nr. 3 f)					

Paper (10 ECTS credits)

Preparation of a written Hausarbeit (thesis) in accordance with the provisions of Section 29 LPO I (examination regulations for teaching-degree programmes) is a prerequisite for teaching degree students to be admitted to the Erste Staatsprüfung (First State Examination). In accordance with the provisions of Section 29 LPO I, students studying for a teaching degree Gymnasium may write this thesis in one of the subjects they selected as vertieft studiertes Fach (subject studied with a focus on the scientific dis-

cipline) or in the subject Erziehungswissenschaften (Educational Science). Pursuant to Section 29 Subsection 1 Sentence 2 LPO I, students may also choose to write an interdisciplinary thesis.											
10-M-HM-	Thesis in Mathematics (Teaching Degree at German Gymnasium)										
GY-152-m01	ECTS 10 Duratio			n [Method of grading	numerical grade	Modul level	undergraduate		
	Courses			No courses assigned to module							
	Method of assessment			Hausarbeit (thesis) pursuant to Section 29 LPO I (examination regulations for teaching-degree programmes) (250 to 300 hours) Language of assessment: German; exceptions pursuant to Section 29 Subsection 4 LPO I (examination regulations for teaching-degree programmes)							
	Referred to in LPO I			§ 29	§ 29						