

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: Institute of Mathematics

Examination regulations version: 2009

Abbreviations used: Course types: **E** = field trip, **K** = colloquium, **O** = conversatorium, **P** = placement/lab course, **R** = project, **S** = seminar, **T** = tutorial, **Ü** = exercise, **V**

= lecture

Term: **SS** = summer semester, **WS** = winter semester

Methods of grading: NUM = numerical grade, B/NB = (not) successfully completed

Regulations: (L)ASPO = general academic and examination regulations (for teaching-degree programmes), FSB = subject-specific provisions, SFB

= list of modules

Other: A = thesis, LV = course(s), PL = assessment(s), TN = participants, VL = prerequisite(s)

Conventions for the modules in this SFB:

Unless otherwise stated, courses and assessments will be held in German, assessments will be offered every semester and modules are not creditable for bonus.

Information on assessment procedures:

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 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:

LASP02009

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

11-Jul-2012 (2012-79)

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	o 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	fapplicable							
	Other prereq	uisites	if applica	if applicable							
	Participants on of places		ocati- if applica	if applicable							
	Additional in	format	ion if applica	if applicable							
	Referred to in	n LPO I	if applica	if applicable (examination regulations for teaching-degree programmes)							

Scientific Disciplin	Scientific Discipline (92 ECTS credits)											
Compulsory Courses (76 ECTS credits)												
10-M-PPM-082-	10-M-PPM-082- Propaedeutics of Mathematics											
mo1	ECTS	CTS 2 Duration 1 semester Method of grading (not) successfully completed Modul level undergraduate										
	Course	S		V + Ü	(no information on S	WS (weekly contact	hours) and course language av	ailable)				
	Method	d of asse	essment	Asses	project assignments (type and expenditure of time to be specified by the lecturer at the beginning of the course) Assessment offered: once a year, winter semester Language of assessment: German, English if agreed upon with the examiner							
	other p	rerequis	sites	Admis	ssion prerequisite to	assessment: regula	r attendance of courses (as spe	cified at the beg	ginning of the course).			

10-M-GEO-082-	Introd	uction to Ge	ometry							
mo1	ECTS	8 D	uration	1 semester	Method of grading numerical grade	Modul level	undergraduate			
	Course	es		• 10-M-GEO-1-082:	onents; information on courses listed separate V + Ü (no information on language and number V + Ü (no information on language and number	of weekly contact ho	ours available)			
	Metho	d of assess		module has the foll essment component	owing 2 assessment components. To pass the ns.	nodule as a whole st	cudents must pass one of the two			
				Assessment component to module component 10-M-GEO-1-082: Einführung in die Projektive Geometrie 8 ECTS credits, method of grading: numerical grade written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: English, German if agreed upon with the examiner Other prerequisites: Admission prerequisite to assessment: successful completion of approx. 50% of exercises. Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew. Assessment component to module component 10-M-GEO-2-082: Einführung in die Differentialgeometrie 8 ECTS credits, method of grading: numerical grade written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: English, German if agreed upon with the examiner Other prerequisites: Admission prerequisite to assessment: successful completion of approx. 50% of exercises. Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered						
	othern	orerequisite	s Byw		e to obtain the qualification for admission to ass ditional prerequisites are listed in the section or					
		ed to in LPO		§ 73 (1) 4. Mathematik Geometrie						

10-M-ZAL-082-m01	Number Theory	y and Alge	ebra								
	ECTS 13	Duration	2 semester	Method of grading n	umerical grade	Modul level	undergraduate				
	Courses		This module comprises 3 module components. Information on courses will be listed separately for each module component. • 10-M-ZAL-1-082: V + Ü (no information on SWS (weekly contact hours) and course language available) • 10-M-ZAL-2-082: V + Ü (no information on SWS (weekly contact hours) and course language available) • 10-M-ZAL-P-082: M (no information on SWS (weekly contact hours) and course language available)								
	Method of asse		Assessment in this mod stated otherwise, success that dotherwise, success that dotherwise, success that dotherwise, success that does not be a seen to state of the state of the success that does not be a seen to see the success that does not be a seen to see the success that does not be a seen to see that does not be a seen that does not be a	dule comprises the assest essful completion of the respective details at will to seek admission (approx. 90 minutes); of component (approx. 90 minutes); of one candidate each (approx. 90 minutes); of one candidate each (approx. 90 minutes); of component (approx. 90 minutes); of grading: (not) successfion (approx. 90 minutes); of one candidate each (approx. 91 minutes); of grading: numerical gr	sments in the individual monodule will require success p82: Introduction to Number fully completed if announced by the lecture approx. 20 minutes) or an other individual monodule will require success approx. 20 minutes) or an other individual monodule in the deginning of the course of assessment. If students his ster, the lecturer will put the admitted to assessment in mave to obtain the qualification of the course of a secondule if announced by the lecture approx. 20 minutes) or an other individual monodule in the deginning of the course of assessment. If students his ster, the lecturer will put the admitted to assessment in the admitted to assessment in the qualification of the course of assessment in the proposed in the qualification of the course of assessment in the qualification of the course of assessment in the qualification of the course of the proposed in the qualification of the course of the proposed in the qualification of the proposed in the proposed in the proposed in the qualification of the proposed in the propose	odule component ful completion of r Theory Introducer, the written exact or al examination was examiner dmission to asset examined the current or in the current or in the written exact or al examination was examiner dmission to asset examination was examiner dmission to asset examiner dmission for admission for admission for admission to asset examiner dmission for admission for admiss	tion to Number Theory mination can be replaced by an in groups (groups of 2, approx. ssment. The lecturer will inform the course will be considered equalification for admission to or assessment into effect. Stuthe subsequent semester. For n to assessment anew. Algebra mination can be replaced by an in groups (groups of 2, approx. ssment. The lecturer will inform the course will be considered equalification for admission to or assessment into effect. Stuthe subsequent semester. For n to assessment into effect. Stuthe subsequent semester. For n to assessment anew.				
			module compone	ent 10-M-ZAL-2 is a prere	quisite for participation in r	nodule compone					
· -	other prerequis		<u> </u>		e listed in the section on as						
	Referred to in L	PO I	§ 73 (1) 2. Mathematik I	ineare Algebra, Algebra	und Elemente der Zahlenth	eorie					

10-M-NM1-082-	Numerical Mathematics 1										
mo1	ECTS	8	Duration	1	1 semester	Method of grading	numerical grade	N	Modul level	undergraduate	
	Course	S		V + Ü (no information on SWS (weekly contact hours) and course language available)							
	Method	d of asse	essment	written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: German, English if agreed upon with the examiner							
	other p	rerequis		tive do on to the le sessm	etails at the beginnir assessment. If stude cturer will put their ro	ng of the course. Reg ents have obtained tl egistration for asses in the subsequent s	istration for the cour ne qualification for a sment into effect. Stu	rse will be cor dmission to a udents who n	nsidered a de assessment o neet all prerec	form students about the respec- claration of will to seek admissi- ver the course of the semester, quisites will be admitted to as- nts will have to obtain the quali-	
	Referre	d to in L	PO I	§ 73 (1) 5. Mathematik Ang	gewandte Mathemat	k				

10-M-LNA-082-	Linear Algebra												
mo1	ECTS	14	Duratio	n	2 semester	Method of gradin	g numerical grade	Modul level	undergraduate				
	Course	S		•	10-M-LNA-1-082: 10-M-LNA-2-082:	V + Ü (no informatio V + Ü (no informatio	ts. Information on cours n on SWS (weekly conta n on SWS (weekly conta n SWS (weekly contact l	ict hours) and course la act hours) and course la	anguage available)				
	Method	d of ass	essment						nts as specified below. Unless of all individual assessments.				
				Asses	7 ECTS, Method of written examination and examination 30 minutes) Language of assection of variety and ecclaration of variety who meet assessment at a second in module of the property of the	of grading: (not) succion (approx. 90 minus of one candidate earlies sesment: German, Eres: Certain prerequishe respective details will to seek admission the course of the seall prerequisites will later date, students component 10-M-LN of grading: (not) succion (approx. 90 minus of one candidate earlies on (approx. 90 minus of one candidate earlies one (approx. 90 mi	tes); if announced by the ch (approx. 20 minutes) glish if agreed upon wit ites must be met to quate at the beginning of the onto assessment. If studenester, the lecturer will be admitted to assess will have to obtain the quates and the completed tes); if announced by the ch (approx. 20 minutes)	e lecturer, the written ex) or an oral examination that the examiner lify for admission to assect that the examins of the course. Registration for the current or the curre	xamination can be replaced by an n in groups (groups of 2, approx. sessment. The lecturer will inform for the course will be considered he qualification for admission to a for assessment into effect. Stuin the subsequent semester. For ion to assessment anew. xamination can be replaced by an n in groups (groups of 2, approx.				
				Asses	Language of asses Other prerequisit students about the adeclaration of values assessment over dents who meet assessment at a sement in module of a ECTS, Method of a lexamination Language of asses or module compo	es: Certain prerequishe respective details will to seek admission the course of the stall prerequisites will later date, students component 10-M-LN of grading: numerication of one candidate eassment: German, Ersful completion of ronent 10-M-LNA-2 is	s at the beginning of the on to assessment. If sturmer will be admitted to assess will have to obtain the quadrate and a series. A-P-082: Examination in grade ch (approx. 30 minutes) glish if agreed upon with a prerequisite for participation to a prerequisite for participation to assess the components: Sugar prerequisite for participation to assess the components of the components.	lify for admission to assect course. Registration of the dents have obtained to the dents have obtained to the dents have obtained to ment in the current or qualification for admissing Linear Algebra the the examiner accessful completion of the dent in module completion of the dent in module completion of the dent in module completion of the course of t	for the course will be considered the qualification for admission to for assessment into effect. Stuin the subsequent semester. For ion to assessment anew. If module component 10-M-LNA-1 ponent 10-M-LNA-P.				
		rerequi		<u> </u>	<u> </u>		s are listed in the section						
	Referre	d to in I	LPO I	§ 73 (1) 2. Mathematik L	ineare Algebra, Alge	bra und Elemente der Z	ahlentheorie					

10-M-VKM-082- Preparatory Course Mathematics											
mo1	ECTS										
	Course	Courses V + Ü (no information on SWS (weekly contact hours) and course language available)									
	Method of assessment project assignments (type and expenditure of time to be specified by the lecturer at the beginning of the course) Assessment offered: once a year, winter semester Language of assessment: German, English if agreed upon with the examiner other prerequisites Admission prerequisite to assessment: regular attendance of courses (as specified at the beginning of the course).										

10-M-DFT-082-m01	Ordinary Differential Eq	uations and Complex Analysis							
	ECTS 13 Duratio	n 2 semester Method of grading numerical grade Modul level undergraduate							
	Courses	This module comprises 3 module components. Information on courses will be listed separately for each module component. • 10-M-DFT-1-082: V + Ü (no information on SWS (weekly contact hours) and course language available) • 10-M-DFT-2-082: V + Ü (no information on SWS (weekly contact hours) and course language available) • 10-M-DFT-P-082: M (no information on SWS (weekly contact hours) and course language available)							
	Method of assessment	Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments. Assessment in module component 10-M-DFT-1-082: Ordinary Differential Equations Ordinary Differential Equations 4 ECTS, Method of grading: (not) successfully completed written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: German, English if agreed upon with the examiner Other prerequisites: Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment in module component 10-M-DFT-2-082: Introduction to Complex Analysis Introduction to Complex Analysis 7 ECTS, Method of grading: (not) successfully completed written examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: German, English if agreed upon with the examiner Other prerequisites: Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessmen							
		assessment at a later date, students will have to obtain the qualification for admission to assessment anew. Assessment in module component 10-M-DFT-P-082: Examination in Ordinary Differential Equations and Complex Analysis 2 ECTS, Method of grading: numerical grade oral examination of one candidate each (approx. 30 minutes) Language of assessment: German, English if agreed upon with the examiner Only after successful completion of module components: Successful completion of module component 10-M-DFT-1 or module component 10-M-DFT-2 is a prerequisite for participation in module component 10-M-DFT-P.							
! —	other prerequisites	By way of exception, additional prerequisites are listed in the section on assessments.							
	Referred to in LPO I	§ 73 (1) 1. Mathematik Analysis							

10-M-ANL-092-	Analysis for students teaching at a German Gymnasium												
mo1	ECTS 17	Duration	า	2 semester	Method of grading r	numerical grade	Modul level	undergraduate					
	Courses		•	 This module comprises 3 module components. Information on courses will be listed separately for each module component. 10-M-ANA-P-082: M (no information on SWS (weekly contact hours) and course language available) 10-M-ANL-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available) 10-M-ANL-2-092: V + Ü (no information on SWS (weekly contact hours) and course language available) 									
	Method of asse	ssment				ssments in the individual mod module will require successful							
				2 ECTS, Method or oral examination clanguage of asset Only after success		miner npletion of any	one of the module components module component 10-M-ANA-						
			Assessment in module component 10-M-ANL-1-092: Analysis 1 for students teaching at a German Gymnasium Analysis students teaching at a German Gymnasium • 6 ECTS, Method of grading: (not) successfully completed • written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced be oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx 30 minutes) • Language of assessment: German, English if agreed upon with the examiner • Other prerequisites: Certain prerequisites must be met to qualify for admission to assessment. The lecturer will instudents about the respective details at the beginning of the course. Registration for the course will be consided a declaration of will to seek admission to assessment. If students have obtained the qualification for admission assessment over the course of the semester, the lecturer will put their registration for assessment into effect. In the subsequent semester assessment at a later date, students will have to obtain the qualification for admission to assessment assessment at a later date, students will have to obtain the qualification for admission to assessment anew. Assessment in module component 10-M-ANL-2-092: Analysis 2 for students teaching at a German Gymnasium Analysis students teaching at a German Gymnasium • 9 ECTS, Method of grading: (not) successfully completed • written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced be oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approximates) or an oral examination in groups (groups of 2, approximates). • Language of assessment: German, English if agreed upon with the examiner • Other prerequisites: Certain prerequisites must be met to qualify for admission to assessment. The lecturer will instudents about the respective details at the beginning of the course. Registration for the course will be consid										
	other prerequis	ites	By wa			have to obtain the qualification e listed in the section on asses							
	Referred to in LI	PO I	§ 73	(1) 1. Mathematik Aı	nalysis								

Compulsory Electiv	es (16 ECT	S cred	lits)									
10-M-BSA-072-	Seminar	in Ana	lysis									
mo1	ECTS 5	,	Duration	ı	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses		•	S (no information on SWS (weekly contact hours) and course language available)								
	Method o	of asse	essment	Asses	talk (approx. 60 minutes) Assessment offered: in the semester in which the course is offered Language of assessment: German, English if agreed upon with the examiner							
	Referred	to in L	PO I	§ 73 (ı) 1. Mathematik An	alysis						
10-M-BSL-072-m01	Seminar	in Line	ear Algeb	ra				'				
	ECTS 5	5	Duration	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses			S (no	information on SWS	(weekly contact hou	rs) and course language ava	ilable)				
	Method of assessment Referred to in LPO I			Asses Langu	age of assessment:		greed upon with the examine					
				§ 73 (§ 73 (1) 2. Mathematik Lineare Algebra, Algebra und Elemente der Zahlentheorie							
10-M-BSE-072-	Seminar	in Algo	ebra									
mo1	ECTS 5		Duration	ı	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses			S (no	information on SWS	(weekly contact hou	rs) and course language ava	ilable)				
	Method of assessment			talk (approx. 60 minutes) Assessment offered: in the semester in which the course is offered Language of assessment: German, English if agreed upon with the examiner								
	Referred to in LPO I			§ 73 (1) 2. Mathematik Lineare Algebra, Algebra und Elemente der Zahlentheorie								
10-M-BSG-072-	Seminar	in Geo	metry									
mo1	ECTS 5	5	Duration	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses			S (no information on SWS (weekly contact hours) and course language available)								
	Method of assessment			talk (approx. 60 minutes) Assessment offered: in the semester in which the course is offered Language of assessment: German, English if agreed upon with the examiner								
	Referred	to in L	PO I	§ 73 (1) 4. Mathematik Geometrie								
10-M-BSZ-072-	Seminar	in Nun	nber The	ory				'				
mo1	ECTS 5	5	Duration	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate			
	Courses			S (no	information on SWS	(weekly contact hou	rs) and course language ava	ilable)				
	Method of assessment			talk (approx. 60 minutes) Assessment offered: in the semester in which the course is offered Language of assessment: German, English if agreed upon with the examiner								
	Referred to in LPO I			§ 73 (ı) 2. Mathemat <mark>ik Li</mark> r	neare Algebra, A <mark>lgebr</mark>	a und Elemente der Zahlenth	neorie				

10-M-BSW-072-	Seminar in Ordinary Differential Equations											
mo1	ECTS	5	Duratio	n	1 semester	Method of grading numerical grade	Modul level	undergraduate				
	Course	S		S (no	information on SWS	(weekly contact hours) and course languag	ge available)					
	Method	d of ass	essment	Asses	talk (approx. 60 minutes) Assessment offered: in the semester in which the course is offered Language of assessment: German, English if agreed upon with the examiner							
	Referre	d to in I	LPO I	§ 73 (1) 1. Mathematik An	alysis						
10-M-BSC-072-	Semina	ar in Co	mplex An	alysis	,		'					
mo1	ECTS 5 Duration			n	1 semester	Method of grading numerical grade	Modul level	undergraduate				
	Course	S		S (no	information on SWS	\mathbf{S} (weekly contact hours) and course languag	ge available)					
	Method	d of ass	essment	Asses	talk (approx. 60 minutes) Assessment offered: in the semester in which the course is offered Language of assessment: German, English if agreed upon with the examiner							
	Referre	d to in I	LPO I	§ 73 (1) 1. Mathematik An	alysis						
10-M-BSN-072-	Seminar in Numerical Mathematics											
mo1	ECTS 5 Duration			n	1 semester	Method of grading numerical grade	Modul level	undergraduate				
	Course	S		S (no	S (no information on SWS (weekly contact hours) and course language available)							
	Method of assessment			Asses	talk (approx. 60 minutes) Assessment offered: in the semester in which the course is offered Language of assessment: German, English if agreed upon with the examiner							
	Referre	d to in I	LPO I	§ 73 (1) 5. Mathematik An	gewandte Mathematik						
10-M-BSS-072-	Semina	ar in Sto	chastics									
mo1	ECTS	5	Duratio	n	1 semester	Method of grading numerical grade	Modul level	undergraduate				
	Courses			S (no	information on SWS	(weekly contact hours) and course language	ge available)					
	Method of assessment			Asses	talk (approx. 60 minutes) Assessment offered: in the semester in which the course is offered Language of assessment: German, English if agreed upon with the examiner							
				-45		Jestinan, English in agreed apon man and s						

10-M-EDM-072- 1101	Introduction t	o Discrete	Mathematic	cs	,					
mo1	ECTS 5	Duration	1 ser	nester	Method of grading	numerical grade	Modul le	el undergr	aduate	
	Courses		V + Ü (no in	formation on	SWS (weekly contac	t hours) and course la	nguage available)			
	Method of ass	sessment	examinatio	written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: German, English if agreed upon with the examiner						
	other prerequ	isites	tive details on to asses the lecturer sessment in	Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.						
	Referred to in	LPO I	§ 73 (1) 2. N	Nathematik L	ineare Algebra, Algel	ora und Elemente der 2	Zahlentheorie			
10-M-FAN-072-m01	Introduction t	o Function	al Analysis							
	ECTS 5	Duration	1 ser	nester	Method of grading	numerical grade	Modul le	vel undergr	aduate	
	Courses		V + Ü (no in	formation on	SWS (weekly contac	t hours) and course la	nguage available)			
	Method of ass	sessment	examinatio Language o	written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: German, English if agreed upon with the examiner						
	other prerequ	isites	Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.							
	Referred to in	LPO I	§ 73 (1) 1. Mathematik Analysis							
10-M-ORS-072-	Operations Re	esearch					,	,		
mo1	ECTS 5	Duration	1 ser	nester	Method of grading	numerical grade	Modul le	el undergr	aduate	
	Courses		V + Ü (no in	formation on	SWS (weekly contac	t hours) and course la	nguage available)			
	Method of ass		examinatio Language o	written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: German, English if agreed upon with the examiner						
	other prerequ		Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.							
	Referred to in	LPO I	§ 73 (1) 5. N	Nathematik A	ngewandte Mathema	atik				

10-M-NLD-072-	Non-Lir	near Dy	namics									
mo1	ECTS	5	Duration	1	1 semester	Method of grading nume	rical grade	Modul level	undergraduate			
	Course	S		V + Ü	V + Ü (no information on SWS (weekly contact hours) and course language available)							
	Method	d of ass	essment	written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: German, English if agreed upon with the examiner								
	other p	rerequi	sites	tive don to the lessessm	Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.							
	Referre	d to in I	LPO I	§ 73 (1) 1. Mathematik A	Analysis						
10-M-COMg-082-	Compu	Computational Mathematics, advanced										
mo1	ECTS	4	Duratio	1	1 semester	Method of grading (not)	successfully completed	Modul level	undergraduate			
	Course	s		Ü + V	(no information o	n SWS (weekly contact hours)	and course language av	ailable)				
				project in the form of programming exercises (type and expenditure of time to be specified by the lecturer at the beginning of the course) Assessment offered: once a year, summer semester Language of assessment: German, English if agreed upon with the examiner								
	other prerequisites			Admission prerequisite to assessment: regular attendance of exercises (attendance monitored, a maximum of one incident of unexcused absence).								
	Referre	d to in I	LPO I	§ 73 (1) 5. Mathematik Angewandte Mathematik								
10-M-PRGk-082-		mming	course fo	r stude	nts of Mathemati	cs and other subjects, simple	<u> </u>					
mo1	ECTS	2	Duration		1 semester	Method of grading (not)		Modul level	undergraduate			
	Course			_		VS (weekly contact hours) and						
	Method of assessment			project in the form of programming exercises (type and expenditure of time to be specified by the lecturer at the beginning of the course) Language of assessment: German, English if agreed upon with the examiner								
	other prerequisites			Admission prerequisite to assessment: regular attendance (attendance monitored, a maximum of one incident of unexcused absence).								
	Referred to in LPO I			§ 73 (1) 5. Mathematik A	Angewandte Mathematik						

10-M-ST1-082-m01	Stochas	stics 1										
	ECTS	8	Duration	1	1 semester	Method of grading	numerical grade		Modul level	undergraduate		
	Courses	5		V + Ü	(no information on	SWS (weekly contac	t hours) and course	language av	ailable)	-		
	Method	l of asse	essment	exan	tten examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral mination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) guage of assessment: German, English if agreed upon with the examiner							
	other prerequisites				ertain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admiss in to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, a lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qual cation for admission to assessment anew.							
	Referred	d to in L	PO I	§ 73	(1) 3. Mathematik S	tochastik						
10-M-NM2-082-	Numeri	cal Matl	hematics	2								
mo1	ECTS	5	Duration	1	1 semester	Method of grading	numerical grade		Modul level	undergraduate		
	Courses	5		V + Ü	(no information or	SWS (weekly contact	t hours) and course	language av	ailable)			
	Method of assessment			written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: German, English if agreed upon with the examiner								
	other pr	rerequis		on to the le	Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.							
	Referred	d to in L	PO I	§ 73 (1) 5. Mathematik Angewandte Mathematik								
10-M-ST2-082-m01	Stochas	stics 2										
	ECTS	5	Duration		1 semester	Method of grading			Modul level	undergraduate		
	Courses					SWS (weekly contac						
	<u>.</u>			exan Lang	ination of one can uage of assessmen	didate each (approx. a t: German, English if	20 minutes) or an or agreed upon with th	ral examinati e examiner	on in groups (g	tion can be replaced by an oral roups of 2, approx. 30 minutes)		
	other pi			Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.								
	Referre	d to in L	PO I	§ 73	(1) 3. Mathematik S	tochastik						

10-M-PRG-082-	Programming course for students of Mathematics and other subjects											
mo1	ECTS 3	Duratio	n 1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate					
	Courses		P (no information on SWS (weekly contact hours) and course language available)									
	Method of as	sessment	project in the form of programming exercises (as specified at the beginning of the course) Language of assessment: German, English if agreed upon with the examiner									
	other prerequ	uisites	Admission prerequisi absence).	Admission prerequisite to assessment: regular attendance (attendance monitored, a maximum of one incident of unexcused absence).								
	Referred to in	n LPO I	§ 73 (1) 5. Mathemati	73 (1) 5. Mathematik Angewandte Mathematik								
10-M-COM-082-	Computeroriented Mathematics											
mo1	ECTS 3	Duratio	n 1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate					
	Courses		V + Ü (no information	on SWS (weekly contact	hours) and course language av	ailable)						
	Method of as	sessment	project in the form of programming exercises (as specified at the beginning of the course) Assessment offered: once a year, summer semester Language of assessment: German, English if agreed upon with the examiner									
	other prerequ	uisites	Admission prerequisi unexcused absence).		ar attendance of exercises (atten	dance monitor	ed, a maximum of one incident of					
	Referred to in	ı LPO I	§ 73 (1) 5. Mathemati	§ 73 (1) 5. Mathematik Angewandte Mathematik								
10-M-VAN-082-	Advanced Analysis											
mo1	ECTS 8	Duratio	n 1 semester	Method of grading	numerical grade	Modul level	undergraduate					
	Courses		Ü + V (no information on SWS (weekly contact hours) and course language available)									
	Method of as	sessment	written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: German, English if agreed upon with the examiner									
	other prerequ		Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.									
	Referred to in	n LPO I	§ 73 (1) 1. Mathematil	k Analysis								

10-M-STI-002-m01	Stocha	tochastics for students teaching at a German Gymnasium											
1 ' 1		9	Duration		1 semester	Method of grading	numerical grade	Modul level	undergraduate				
H	Courses	<u> </u>	_ = = = = = = = = = = = = = = = = = = =	-			t hours) and course language av	ļ.					
! -			essment	written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral									
				examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes) Language of assessment: German, English if agreed upon with the examiner									
	other prerequisites			tive do on to the le sessm	Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.								
	Referred to in LPO I			§ 73 (ı) 3. Mathematik S	tochastik							
10-M-RCL-092-m01	Reading	Reading Course for students teaching at a German Gymnasium											
Ī	ECTS	2	Duration	1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate				
	Courses			A (no information on SWS (weekly contact hours) and course language available)									
	Method of assessment			talk (approx. 30 minutes) or written elaboration (approx. 5 to 10 pages) Language of assessment: German, English if agreed upon with the examiner									
Teaching (10 ECTS o	redits)												
10-M-D1GY-092-	Didacti	cs of Ma	thematic	s: Alg	ebra (German Gym	nasium)							
mo1	ECTS	3	Duration	1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate				
	Courses	5		V (no	information on SW	S (weekly contact ho	urs) and course language availa	ble)	-				
	555555			a) written examination (approx. 60 minutes) or b) oral examination of one candidate each (approx. 15 minutes) or c) oral examination in groups (groups of 3, approx. 30 minutes) or d) written elaboration (approx. 5 to 10 pages) or e) project (as specified at the beginning of the course)									
	Referre	d to in L	PO I	§ 73 (1) 6. Mathematik D	idaktik							

10-M-D2GY-092-	Didactio	cs of Mather	natics: Ge	ometry/Calculus (Ge	erman Gymnasium)					
mo1	ECTS	7 Dur	ation	2 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Courses	5		This module comprises 3 module components. Information on courses will be listed separately for each module component. • 10-M-D2GY-P-092: M (no information on SWS (weekly contact hours) and course language available) • 10-M-D2GY-2-092: V + Ü (no information on SWS (weekly contact hours) and course language available) • 10-M-D2GY-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available)						
	Method	of assessm		Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.						
			Asser um)		omponent 10-M-D2GY grading: numerical gr	•	ics: Exam Geom	netry/Calculus (German Gymnasi-		
			•	oral examination o 40 minutes) Only after success	f one candidate each ful completion of mo	c); if announced by the lecturer, (approx. 20 minutes) or an ora dule components: Successful (l examination i completion of t	n groups (groups of 2, approx. he module components 10-M-		
				D2GY-1 and 10-M-D2GY-2 is a prerequisite for participation in module component 10-M-D2GY-P. Assessment in module component 10-M-D2GY-2-092: Didactics of Mathematics: Calculus (German Gymnasium) Didactics of Mathematics: Calculus (German Gymnasium) • 2 ECTS, Method of grading: (not) successfully completed						
			Asso	exercises: At the b completed over the	eginning of the cours e course of the semes	e, the lecturer will specify the ty ter for the module component t	o be considere			
			Math	ematics: Geometry (4 ECTS, Method of	German Gymnasium) grading: (not) succes	sfully completed				
			•	 exercises: At the beginning of the course, the lecturer will specify the type and scope of exercises to be successfully completed over the course of the semester for the module component to be considered successfully completed. 						
F D (Referred	d to in LPO I		(1) 6. Mathematik Di	daktik					

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 (general as well as subject-specific electives) -- subject specific) Computers in Mathematical Teaching 10-M-DCMU-092mo1 ECTS Method of grading (not) successfully completed 3 Duration 1 semester Modul level undergraduate V (no information on SWS (weekly contact hours) and course language available) Courses project (type and expenditure of time to be specified by the lecturer at the beginning of the course) Method of assessment Assessment offered: every two years, summer semester

10-M-D3GY-092-	Didact	ics of N		s: Ana	lytic Geometry/Sto	chastics (German Gymnasium)	,				
mo1	ECTS	3	Duration	1	1 semester	Method of grading (not) successfully completed	Modul level	undergraduate			
	Course	es		V (no	V (no information on SWS (weekly contact hours) and course language available)						
	Metho	d of as	sessment	amina fied a	a) written examination (approx. 60 minutes) or b) oral examination of one candidate each (approx. 15 minutes) or c) oral examination in groups (groups of 3, approx. 30 minutes) or d) written elaboration (approx. 5 to 10 pages) or e) project (as specified at the beginning of the course) Assessment offered: every two years, summer semester						
10-M-DV-	Advanced Didactics of Mathematics (German Gymnasium)										
GY-092-m01	ECTS	2	Duration		1 semester	Method of grading (not) successfully completed	Modul level	undergraduate			
	Course	es		S (no	information on SWS	(weekly contact hours) and course language availa	ble)				
	Method of assessment				talk (approx. 60 minutes) Assessment offered: once a year, summer semester						
10-M-PRM-092-	Hands	-on Ma	thematics								
mo1	ECTS	8	Duration	1	2 semester	Method of grading numerical grade	Modul level	undergraduate			
	Courses			P + S	(no information on S	GWS (weekly contact hours) and course language av	ailable)				
	Method of assessment			project and implementation thereof: drawing up a project plan (approx. 10 pages) and practical implementation with pupils (type and expenditure of time to be specified by the lecturer at the beginning of the course)							
10-M-DV-	E-Lear	ning an	d Blended	Learn	ing in Mathematics	ics at school					
HB-092-m01	ECTS	3	Duration	า	1 semester	Method of grading (not) successfully completed	Modul level	undergraduate			
	Course	es		Ü (no information on SWS (weekly contact hours) and course language available)							
	Metho	d of as	sessment	web-based project assignments and tests (length/expenditure of time to be announced at the beginning of the course)							
	other p	orerequ	isites	tive d on to the le sessn fication matic (online This r	etails at the beginni assessment. If stud- cturer will put their in nent in the current of on for admission to a s are always incorpo ne) added in bracket egistration for the ex	It be met to qualify for admission to assessment. Thing of the course. Registration for the course will be dents have obtained the qualification for admission the registration for assessment into effect. Students who is in the subsequent semester. For assessment at a leassessment anew. Courses offered online by Virtuelly orated into a module with an exercise. The respectives. Registration for the exercise must always be made exercise will be considered a declaration of will to see the lecturer will put the registration for assessment in	considered a do assessment of the assessment of the all preresented attentions and the assessment of t	eclaration of will to seek admissi- over the course of the semester, equisites will be admitted to as- ents will have to obtain the quali- Bayern (vhb) in the field of mathe- be identified by the word virtuell e at the beginning of the course.			

10-M-VH-	Stochast	Stochastics in Sekundarstufe I (virtual course)											
BSto-092-m01	ECTS 3	3	Duration	1	1 semester	Method of grading	(not) successfully complete	ed Modul level	undergraduate				
	Courses			Ü (no	information on SW	S (weekly contact ho	urs) and course language ava	ailable)	•				
	Method o	of asse	ssment	web-b	ased project assig	nments and tests (le	ngth/expenditure of time to b	e announced at th	ne beginning of the c	ourse)			
	other pre	requis	ites	tive d on to the le sessn fication matic (online This r	ertain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, are lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualication for admission to assessment anew. Courses offered online by Virtuelle Hochschule Bayern (vhb) in the field of matheatics are always incorporated into a module with an exercise. The respective modules can be identified by the word virtuell online) added in brackets. Registration for the exercise must always be made via SB@Home at the beginning of the course. The registration for the exercise will be considered a declaration of will to seek admission to assessment. If the exercise was accessfully completed, the lecturer will put the registration for assessment into effect at the end of the course.								
10-M-VHBA-	Basics in	Arithr	netics (vi	rtual c	ourse)								
ri-092-m01	ECTS 3	3	Duration	1	1 semester	Method of grading	(not) successfully complete	ed Modul level	undergraduate				
	Courses			Ü (no	information on SW	'S (weekly contact ho	urs) and course language ava	ailable)					
	Method o	of asse	ssment	web-b	ased project assig	nments and tests (le	ngth/expenditure of time to b	e announced at th	ne beginning of the c	ourse)			
				tive details at the beginning of the course. Registration for the course will be considered a declaration of will to son to assessment. If students have obtained the qualification for admission to assessment over the course of the the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admission to the current or in the subsequent semester. For assessment at a later date, students will have to obtain fication for admission to assessment anew. Courses offered online by Virtuelle Hochschule Bayern (vhb) in the financial material materials are always incorporated into a module with an exercise. The respective modules can be identified by the (online) added in brackets. Registration for the exercise must always be made via SB@Home at the beginning of This registration for the exercise will be considered a declaration of will to seek admission to assessment. If the successfully completed, the lecturer will put the registration for assessment into effect at the end of the course.						e semester, itted to as- ain the quali- eld of mathe- word virtuell the course.			
10-M-	Basics in School Geometry (virtual course)												
VHBGeo-092-mo1	ECTS 3	3	Duration		1 semester		(not) successfully complete		undergraduate				
	Courses						urs) and course language ava						
	Method o				web-based project assignments and tests (length/expenditure of time to be announced at the beginning of the course)								
	other pre	requis	ites	tive d on to the le sessn fication matic (online This r	etails at the beging assessment. If stu- cturer will put thein nent in the current on for admission to s are always incorp e) added in bracke egistration for the	ning of the course. Redents have obtained or registration for asset or in the subsequent assessment anew. Coorated into a module ets. Registration for the exercise will be considerated.	or admission to assessment. gistration for the course will lend qualification for admissions admissions and the qualification for admissions and the course of the courses of the courses of the courses of the courses of the course. The respect of the course with an exercise. The respect of the course of the co	be considered a do on to assessment of who meet all prere a later date, stude uelle Hochschule E tive modules can ade via SB@Home seek admission to	eclaration of will to sover the course of the equisites will be adments will have to obtated by the file identified by the eat the beginning of assessment. If the eater the course were the course of	eek admissi- e semester, itted to as- ain the quali- eld of mathe- word virtuell the course.			
LA Gymnasien Mathema	tics (2009)						JMU Würzburg • generated 26-Au	g-2024 • exam. reg. data	record L5 105 - - H 2009	page 20 / 21			

10-M-	Mathe	Mathematics in Class 10 (virtual course)												
VHBM10-092-m01	ECTS	3	Duratio	n	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate					
	Course	es		Ü (no	Ü (no information on SWS (weekly contact hours) and course language available)									
	Metho	d of asse	essment	web-b	ased project assign	ments and tests (len	gth/expenditure of time to be a	announced at th	e beginning of the course)					
	other p	orerequis	sites	tive do on to the lessessm fication matics (onlin) This re-	ertain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, are lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualication for admission to assessment anew. Courses offered online by Virtuelle Hochschule Bayern (vhb) in the field of mathematics are always incorporated into a module with an exercise. The respective modules can be identified by the word virtuell online) added in brackets. Registration for the exercise must always be made via SB@Home at the beginning of the course. This registration for the exercise will be considered a declaration of will to seek admission to assessment. If the exercise was auccessfully completed, the lecturer will put the registration for assessment into effect at the end of the course.									

Thesis (10 ECTS credits)

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

10-M-HM-	Thesis	Thesis in Mathematics (teaching degree at German Gymnasium)											
GY-092-m01	ECTS	10	Duration	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate				
	Courses no courses assigned												
	Metho	d of asse	essment	PO I (examination regulations for									
	Modules successfully where applicable, specific modules/module components as specified by supervisor. completed												
	Additional Information			Additional information on module duration: 1 to 2 semesters.									