

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: 2015
Examination regulations version: 2015

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:

LASPO2015

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

03-Nov-2015 (2015-190)

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 specified in the form X (y) with course type X abbreviated as specified above and number of weekly contact hours y					
	Method of assessment							
	Only after successful completion of		if applicable					
	Other prerequisites		if applicable					
	Participants and allocation of places		if applicable					
	Additional information		if applicable					
	Referred to in LPO I		if applicable (examination regulations for teaching-degree programmes)					

Scientific Discipline (92 ECTS credits)								
Compulsory Courses (28 ECTS credits)								
10-M-MDAL-152-mo1	Introduction into Mathematical Thinking and Working for Teaching Degree (German Gymnasium)							
	ECTS	5	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses		V (1) + Ü (1) + V (1) + Ü (1)					
	Method of assessment		project (10 to 15 pages) Language of assessment: German and/or English					
	Additional Information		Additional information on module duration: includes block taught sessions prior to the beginning of the lecture period.					
	Referred to in LPO I		§ 73 I Nr. 2 (1 ECTS credits) § 73 I Nr. 3 (2 ECTS credits) § 73 I Nr. 5 (2 ECTS credits)					
10-M-LNL-Ü-152-mo1	Overview Linear Algebra and Number Theory for Teaching Degree (German Gymnasium)							
	ECTS	10	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V (6) + Ü (2)					
	Method of assessment		oral examination of one candidate each (20 to 40 minutes) Assessment will have reference to the contents of modules 10-M-LNL1 and 10-M-LNL2. Language of assessment: German and/or English					
	Referred to in LPO I		§ 73 I Nr. 2					
	10-M-ANL-Ü-152-mo1	Overview Analysis for Teaching Degree (German Gymnasium)						
ECTS		8	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
Courses		V (4) + Ü (2)						
Method of assessment		oral examination of one candidate each (20 to 40 minutes) Assessment will have reference to the contents of modules 10-M-ANL1 and 10-M-ANL2. Language of assessment: German and/or English						
Referred to in LPO I		§ 73 I Nr. 1						
10-M-RE-PL-152-mo1		Review Course for Teaching Degree (German Gymnasium)						
	ECTS	5	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses		S (2)					
	Method of assessment		a) talk (approx. 45 minutes) or b) project (10 to 15 pages) Language of assessment: German and/or English					
	Referred to in LPO I		§ 73 I special branch of science without assignment					

Compulsory Electives (64 ECTS credits)								
Subfield Basics of Linear Algebra and Number Theory (8 ECTS credits)								
10-M-LNL1-152-m01	Linear Algebra 1 for Teaching Degree (German Gymnasium)							
	ECTS	8	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses		V (4) + Ü (2)					
	Method of assessment		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 I Nr. 2					
10-M-LNL2-152-m01	Linear Algebra 2 for Teaching Degree (German Gymnasium)							
	ECTS	8	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses		V (4) + Ü (2) + V (2)					
	Method of assessment		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 I Nr. 2					
Subfield Basics of Analysis (7 ECTS credits)								
10-M-ANL1-152-m01	Analysis 1 for Teaching Degree (German Gymnasium)							
	ECTS	7	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses		V (4) + Ü (2)					
	Method of assessment		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 I Nr. 1					
10-M-ANL2-152-m01	Analysis 2 for Teaching Degree (German Gymnasium)							
	ECTS	7	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses		V (4) + Ü (2)					
	Method of assessment		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 I Nr. 1					

Subfield Basics of Higher Analysis (7 ECTS credits)								
10-M-DGLL-152-m01	Ordinary Differential Equations for Teaching Degree (German Gymnasium)							
	ECTS	7	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses		V (4) + 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 I Nr. 1					
10-M-FT-HL-152-m01	Introductory Complex Analysis for Teaching Degree (German Gymnasium)							
	ECTS	7	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses		V (4) + 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 I Nr. 1					
10-M-VANL-152-m01	Advanced Analysis for Teaching Degree (German Gymnasium)							
	ECTS	5	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses		V (4) + Ü (2)					
	Method of assessment		written exercises (approx. 10 exercise sheets with approx. 4 exercises each) Language of assessment: German and/or English					
	Referred to in LPO I		§ 73 I Nr. 1					
Subfield Basics of Algebra and Geometry (8 ECTS credits)								
10-M-AL-GL-152-m01	Introductory Algebra for Teaching Degree (German Gymnasium)							
	ECTS	8	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses		V (4) + 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 I Nr. 2 (4 ECTS credits) § 73 I Nr. 4 (4 ECTS credits)					

10-M-DGEL-152-m01	Introductory Differential Geometry for Teaching Degree (German Gymnasium)							
	ECTS	8	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	V (4) + 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 I Nr. 2 (4 ECTS credits) § 73 I Nr. 4 (4 ECTS credits)						
10-M-PGEL-152-m01	Introductory Projective Geometry for Teaching Degree (German Gymnasium)							
	ECTS	8	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	V (4) + 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 I Nr. 2 (4 ECTS credits) § 73 I Nr. 4 (4 ECTS credits)						
Subfield Basics of Stochastic and Applied Mathematics (6 ECTS credits)								
10-M-STL-152-m01	Stochastics for Teaching Degree (German Gymnasium)							
	ECTS	6	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	V (4) + 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 I Nr. 3 (3 ECTS credits) § 73 I Nr. 5 (3 ECTS credits)						

10-M-NUL1-152-m01	Numerical Mathematics 1 for Teaching Degree (German Gymnasium)							
	ECTS	6	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	V (4) + 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 I Nr. 3 (3 ECTS credits) § 73 I Nr. 5 (3 ECTS credits)						
10-M-DIML-152-m01	Introductory Discrete Mathematics for Teaching Degree (German Gymnasium)							
	ECTS	6	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	V (4) + 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 I Nr. 3 (3 ECTS credits) § 73 I Nr. 5 (3 ECTS credits)						
Subfield Overview Higher Analysis (10 ECTS credits)								
10-M-DFL-Ü-152-m01	Overview Differential Equations and Complex Analysis for Teaching Degree (German Gymnasium)							
	ECTS	10	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	V (4) + Ü (2)						
	Method of assessment	oral examination of one candidate each (20 to 40 minutes) Assessment will have reference to the contents of modules 10-M-DGLL and 10-M-FTHL. Language of assessment: German and/or English						
	Referred to in LPO I	§ 73 I Nr. 1						
10-M-FVL-Ü-152-m01	Overview Complex Analysis and Advanced Analysis for Teaching Degree (German Gymnasium)							
	ECTS	10	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	V (4) + Ü (2)						
	Method of assessment	oral examination of one candidate each (20 to 40 minutes) Assessment will have reference to the contents of modules 10-M-FTHL and 10-M-VANL. Language of assessment: German and/or English						
	Referred to in LPO I	§ 73 I Nr. 1						

Subfield Overview Algebra and Geometry (10 ECTS credits)								
10-M-ADGL-Ü-152-m01	Overview Algebra and Differential Geometry for Teaching Degree (German Gymnasium)							
	ECTS	10	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V (4) + Ü (2)					
	Method of assessment		oral examination of one candidate each (20 to 40 minutes) Assessment will have reference to the contents of modules 10-M-ALGL and 10-M-DGEL. Language of assessment: German and/or English					
	Referred to in LPO I		§ 73 I Nr. 2 (5 ECTS credits) § 73 I Nr. 4 (5 ECTS credits)					
10-M-APGL-Ü-152-m01	Overview Algebra and Projective Geometry for Teaching Degree (German Gymnasium)							
	ECTS	10	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V (4) + Ü (2)					
	Method of assessment		oral examination of one candidate each (20 to 40 minutes) Assessment will have reference to the contents of modules 10-M-ALGL and 10-M-PGEL. Language of assessment: German and/or English					
	Referred to in LPO I		§ 73 I Nr. 2 (5 ECTS credits) § 73 I Nr. 4 (5 ECTS credits)					
Subfield Overview Stochastics and Applied Mathematics (8 ECTS credits)								
10-M-SNL-Ü-152-m01	Overview Stochastics and Numerical Mathematics 1 for Teaching Degree (German Gymnasium)							
	ECTS	8	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V (4) + Ü (2)					
	Method of assessment		oral examination of one candidate each (20 to 40 minutes) Assessment will have reference to the contents of modules 10-M-STL and 10-M-NUL1. Language of assessment: German and/or English					
	Referred to in LPO I		§ 73 I Nr. 3 (4 ECTS credits) § 73 I Nr. 5 (4 ECTS credits)					
10-M-SDL-Ü-152-m01	Overview Stochastics and Discrete Mathematics for Teaching Degree (German Gymnasium)							
	ECTS	8	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V (4) + Ü (2)					
	Method of assessment		oral examination of one candidate each (20 to 40 minutes) Assessment will have reference to the contents of modules 10-M-STL and 10-M-DIML. Language of assessment: German and/or English					
	Referred to in LPO I		§ 73 I Nr. 3 (4 ECTS credits) § 73 I Nr. 5 (4 ECTS credits)					

Teaching (10 ECTS credits)								
Compulsory Courses (10 ECTS credits)								
10-M-DGY1-152-m01	Didactics of Mathematics: Geometry and Analysis (German Gymnasium)							
	ECTS	6	Duration	2 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V (2) + Ü (2) + V (2) + Ü (2)					
	Method of assessment		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 to 3 candidates, 10 to 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus					
	Referred to in LPO I		§ 73 I Nr. 6					
10-M-DGY2-152-m01	Didactics of Mathematics: Algebra (German Gymnasium)							
	ECTS	4	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses		V (2) + Ü (2)					
	Method of assessment		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 to 3 candidates, 10 to 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus					
	Referred to in LPO I		§ 73 I 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 programmes).								
10-M-SFDP-GY-152-m01	Practical Training in Classroom Teaching including Theory (German Gymnasium)							
	ECTS	4	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses		P (0) + S (2)					
	Method of assessment		a) presentation (30 to 45 minutes) with position paper (1 to 2 pages) or b) term paper (10 to 15 pages) Contents and duration of placement as specified in Section 34 Subsection 1 Sentence 1 No. 4 LPO I (examination regulations for teaching-degree programmes); participation in mandatory teaching practice, completion of all set tasks as specified by placement school.					
	Referred to in LPO 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 (general as well as subject-specific electives) -- subject specific)

Module Group Mathematics and Teaching of Mathematics

10-M-SCH-152-m01	School Mathematics from a Higher Perspective							
	ECTS	5	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	V (2) + Ü (2)						
	Method of assessment	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 LPO I	§ 22 II Nr. 1 h) § 22 II Nr. 2 f) § 22 II Nr. 3 f)						
10-M-DCMU-152-m01	Computers in Mathematical Teaching							
	ECTS	3	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	V (2)						
	Method of assessment	project (10 to 15 pages) Assessment offered: Every two years, winter semester						
	Referred to in LPO I	§ 22 II Nr. 2 f) § 22 II Nr. 1 h) § 22 II Nr. 3 f)						
10-M-PRM1-152-m01	Introduction to Hands-on Mathematics							
	ECTS	3	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	S (2)						
	Method of assessment	project (10 to 15 pages) Assessment offered: Every two years, winter semester						
	Referred to in LPO I	§ 22 II Nr. 2 f) § 22 II Nr. 3 f)						
10-M-PRM2-152-m01	Practical Course Hands-on Mathematics							
	ECTS	3	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	P (2)						
	Method of assessment	project: drawing up a project plan (5 to 10 pages) and practical implementation with pupils Assessment offered: Every two years, summer semester						
	Referred to in LPO I	§ 22 II Nr. 2 f) § 22 II Nr. 3 f)						

10-M-D3GY-152-mo1	Didactics of Mathematics: Analytic Geometry and Stochastics							
	ECTS	3	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	V (2)						
	Method of assessment	a) written examination (approx. 60 to 90 minutes) or b) oral examination of one candidate each (approx. 15 to 20 minutes) or c) oral examination in groups of up to 3 candidates (approx. 10 minutes per candidate) Assessment offered: Every two years, summer semester						
	Referred to in LPO I	§ 22 II Nr. 3 f)						
10-M-PRA-152-mo1	Hands-on Seminar Mathematics							
	ECTS	3	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	S (2)						
	Method of assessment	project: drawing up a project plan (10 to 15 pages) Assessment offered: Every two years, summer semester						
	Referred to in LPO I	§ 22 II Nr. 3 f)						
10-M-GES-152-mo1	Selected Topics in History of Mathematics							
	ECTS	5	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	V (2) + Ü (2)						
	Method of assessment	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 to in LPO I	§ 22 II Nr. 3 f)						
10-M-MSC-152-mo1	Mathematical Writing							
	ECTS	5	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	V (2) + Ü (2)						
	Method of assessment	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 to in LPO I	§ 22 II Nr. 3 f)						
10-M-SEM-152-mo1	Seminar Mathematics							
	ECTS	5	Duration	1 semester	Method of grading	numerical grade	Modul level	undergraduate
	Courses	S (2)						
	Method of assessment	talk (60 to 120 minutes) Language of assessment: German and/or English						
	Referred to in LPO I	§ 22 II Nr. 3 f)						

10-M-COM-152-mo1	Computational Mathematics							
	ECTS	4	Duration	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 to in LPO I	§ 22 II Nr. 3 f)						
10-M-PRG-152-mo1	Programming course for students of Mathematics and other subjects							
	ECTS	3	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	P (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, summer semester						
	Referred to in LPO I	§ 22 II Nr. 3 f)						
10-M-Tu-Ko-152-mo1	Exercise tutor or proof-reading in Mathematics							
	ECTS	5	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	T (o)						
	Method of assessment	Assessment of tutoring activities or correcting work by supervising lecturers or exercise supervisors (1 to 2 teaching units or approx. 5 pieces of correcting work)						
	Additional Information	Please direct application to teaching coordinator Mathematics, he/she will select participants.						
10-M-FAN-152-mo1	Introduction to Functional Analysis							
	ECTS	9	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	V (4) + 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	§ 22 II Nr. 3 f)						
10-M-GAN-152-mo1	Geometric Analysis							
	ECTS	9	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	V (4) + 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	§ 22 II Nr. 3 f)						

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10-M-ORS-152-mo1	Operations Research							
	ECTS	9	Duration	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate
	Courses	V (4) + 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 Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus						
	Referred to in LPO I	§ 22 II Nr. 3 f)						
Module Group VHB Courses								
10-M-DV-HB-152-mo1	E-Learning and Blended Learning in Mathematical Teaching (virtual Course)							
	ECTS	3	Duration	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: Once a year, winter semester						
	Referred to in LPO I	§ 22 II Nr. 1 h) § 22 II Nr. 2 f) § 22 II Nr. 3 f)						
10-M-VHBA-ri-152-mo1	Basics in Arithmetics (virtual course)							
	ECTS	2	Duration	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: Once a year, winter semester						
	Referred to in LPO I	§ 22 II Nr. 1 h) § 22 II Nr. 2 f) § 22 II Nr. 3 f)						
10-M-VHBGeo-152-mo1	Basics in School Geometry (virtual course)							
	ECTS	2	Duration	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: Once a year, summer semester						
	Referred to in LPO I	§ 22 II Nr. 1 h) § 22 II Nr. 2 f) § 22 II Nr. 3 f)						

10-M-VH-BSto-152-mo1	Stochastics in Sekundarstufe I (virtual course)							
	ECTS	2	Duration	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: Once a year, winter semester						
	Referred to in LPO I	§ 22 II Nr. 1 h) § 22 II Nr. 2 f) § 22 II Nr. 3 f)						
10-M-VHBM10-152-mo1	Mathematics in grade 10 (virtual course)							
	ECTS	2	Duration	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: Once a year, summer semester						
	Referred to in LPO I	§ 22 II Nr. 1 h) § 22 II Nr. 2 f) § 22 II Nr. 3 f)						
10-M-VHBDG-152-mo1	Didactics of Geometry (virtual course)							
	ECTS	2	Duration	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: Once a year, summer semester						
	Referred to in LPO I	§ 22 II Nr. 1 h) § 22 II Nr. 2 f) § 22 II Nr. 3 f)						
10-M-VHBDA-152-mo1	Didactics of Algebra (virtual course)							
	ECTS	2	Duration	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: Once a year, winter semester						
	Referred to in LPO I	§ 22 II Nr. 1 h), § 22 II Nr. 2 f) § 22 II Nr. 3 f)						

10-M-VH-BEx-152-mo1	Exam Tutorial Didactics of Mathematics (virtual course)							
	ECTS	2	Duration	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: Once a year, winter semester						
	Referred to in LPO I	§ 22 II Nr. 1 h) § 22 II Nr. 2 f) § 22 II Nr. 3 f)						
10-M-VH-BExA-152-mo1	Exam Tutorial Algebra (virtual course)							
	ECTS	2	Duration	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: Once a year, summer semester						
	Referred to in LPO I	§ 22 II Nr. 3 f)						
10-M-VHBMa1-152-mo1	Mathematics 1 (virtual course)							
	ECTS	2	Duration	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						
	Referred to in LPO I	§ 22 II Nr. 1 h) § 22 II Nr. 2 f) § 22 II Nr. 3 f)						
10-M-VHBMa2-152-mo1	Mathematics 2 (virtual course)							
	ECTS	2	Duration	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 II Nr. 1 h) § 22 II Nr. 2 f) § 22 II Nr. 3 f)						

10-M-VHBCom-152-mo1	Computer and Mathematics (virtual course)							
	ECTS	2	Duration	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 II Nr. 3 f)					
10-M-VH-BZth-152-mo1	Introduction to Elementary Number Theory (virtual course)							
	ECTS	2	Duration	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: Once a year, winter semester					
	Referred to in LPO I		§ 22 II Nr. 3 f)					
10-M-VH-BAnG-152-mo1	Analytic Geometry (virtual course)							
	ECTS	2	Duration	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: Once a year, summer semester					
	Referred to in LPO I		§ 22 II Nr. 3 f)					
10-M-VHBBR-152-mo1	Start-up Tutorial Mathematics (virtual course)							
	ECTS	2	Duration	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					
	Referred to in LPO I		§ 22 II 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-GY-152-m01	Thesis in Mathematics (Teaching Degree at German Gymnasium)							
	ECTS	10	Duration		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						