Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

Subdivided Module Catalogue

for the Subject

Didactics in Mathematics (Secondary School)

as Didaktikfach

with the degree "Erste Staatsprüfung für das Lehramt für Sonderpädagogik"

Examination regulations version: 2009
Responsible: Institute of Mathematics

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

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

Notes

Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the method of assessment to be used in the current semester by two weeks after the start of the course at the latest and will communicate this in the customary manner.

Should the module comprise more than one graded assessment, all assessments will be equally weighted, unless otherwise stated below.

Should the assessment comprise several individual assessments, successful completion of the module will require successful completion of all individual assessments.

In accordance with

the general regulations governing the degree subject described in this module catalogue:

LASPO2009

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

23-May-2012 (2012-81)

This module handbook seeks to render, as accurately as possible, the data that is of statutory relevance according to the examination regulations of the degree subject. However, only the FSB (subject-specific provisions) and SFB (list of modules) in their officially published versions shall be legally binding. In the case of doubt, the provisions on, in particular, module assessments specified in the FSB/SFB shall prevail.

The subject is divided into

Abbreviation	Module title	ECTS credits	Method of grading	page
Compulsory Courses (20 ECTS credits) Successful completion of modules worth 20 ECTS credits in each subject selected as Didaktikfach (subject studied with a focus on teaching methodology) is a prerequisite for admission to the Erste Staatsprüfung (First State Examination) in the subject Didaktiken einer Fächergruppe der Hauptschule (Didactics of a Group of Subjects of Hauptschule).				
10-M-MH1-092-m01	Mathematics in German Hauptschule (Arithmetic and Algebra)	10	NUM	8
10-M-MH2-092-m01	Mathematics in German Hauptschule (Geometry, use-oriented teaching and Stochastics)	10	NUM	10
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".				
10-M-DVHS-092-m01	Advanced Didactics of Mathematics (German Hauptschule)	2	B/NB	15
10-M-DCMU-092-m01	Computers in Mathematical Teaching	3	B/NB	4
10-M-DMHS-092-m01	Methodology of Teaching in Mathematics (German Hauptschule)	3	B/NB	13
10-M-DVHB-092-m01	E-Learning and Blended Learning in Mathematics at school	3	B/NB	5
10-M-VHBSto-092-m01	Stochastics in Sekundarstufe I (virtual course)	3	B/NB	14
10-M-VHBAri-092-m01	Basics in Arithmetics (virtual course)	3	B/NB	6
10-M-VHBGeo-092-m01	Basics in School Geometry (virtual course)	3	B/NB	7
10-M-VHBM10-092-m01	Mathematics in Class 10 (virtual course)	3	B/NB	12

Module title			Abbreviation
Computers in Mathematical Teaching			10-M-DCMU-092-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
3	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Discussion of possible ways to use computers in teaching mathematics as well as discussion of common computer tools.

Intended learning outcomes

The student is acquainted with basic possibilities for the employment of computers in the teaching of mathematics, as well as with the potential and limitations of computer tools.

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

V (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

project (type and expenditure of time to be specified by the lecturer at the beginning of the course)
Assessment offered: every two years, summer semester

Allocation of places

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Additional information

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

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Module title			Abbreviation
E-Learning and Blended Learning in Mathematics at school			10-M-DVHB-092-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
3	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	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. 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 successfully completed, the lecturer will put the registration for assessment into effect at the end of the course.	

Contents

In a course offered by Virtuelle Hochschule Bayern (vhb), the student becomes acquainted with and reflects on techniques in e-learning and blended learning for teaching mathematics.

Intended learning outcomes

The student is acquainted with basic methods of e-learning and blended learning in teaching methematics, as well as their potentials and limitations.

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

Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

web-based project assignments and tests (length/expenditure of time to be announced at the beginning of the course)

Allocation of places

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Additional information

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

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Module title			Abbreviation
Basics in Arithmetics (virtual course)			10-M-VHBAri-092-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
3	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	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. 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 successfully completed, the lecturer will put the registration for assessment into effect at the end of the course.	

Contents

Basic topics on teaching arithmetics in school, e. g. divisability theory, prime numbers, set theory.

Intended learning outcomes

The student learns basic topics in the teaching of arithmetics and the related mathematical backgrounds and proofs. He/She is acquainted with the employment of new technologies for teaching arithmetic in school.

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

Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

web-based project assignments and tests (length/expenditure of time to be announced at the beginning of the course)

Allocation of places

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Additional information

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

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Module title			Abbreviation
Basics in School Geometry (virtual course)			10-M-VHBGeo-092-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
3	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	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. 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 successfully completed, the lecturer will put the registration for assessment into effect at the end of the course.	

Contents

Revision and consolidation of the fundamental topics in elementary geometry that are prerequisites for the subject-specific and didactic courses (in particular teaching degrees Grundschule, Hauptschule, Realschule) in geometry.

Intended learning outcomes

The student has basic knowledge of school geometry, as required for the study of mathematics and its didactics.He/She is acquainted with the employment of new technologies for teaching geometry in school.

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

Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

web-based project assignments and tests (length/expenditure of time to be announced at the beginning of the course)

Allocation of places

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Additional information

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

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Module title			Abbreviation
Mathematics in German Hauptschule (Arithmetic and Algebra)			10-M-MH1-092-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
2 semester	undergraduate	--	

Contents

Discussion of basic topics in teaching arithmetics and algebra in Hauptschule taking into account didactic aspects as well as possibilities of implementation in the classroom, also including modern technologies.

Intended learning outcomes

The student is acquainted with basic mathematical ways of thinking and working techniques in the fields of arithmetic and algebra. He/She knows about criteria to assess media and their employment in teaching mathematics, detects common difficulties and typical misconceptions of pupils and knows about adequate countermeasures and support. He/She knows teaching and learning strategies and can assess them.

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

This module comprises 3 module components. Information on courses will be listed separately for each module component.

- 10-M-MH1-P-092: M (no information on SWS (weekly contact hours) and course language available)
- 10-M-MH1-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available)
- 10-M-MH1-2-092: V + Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

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-MH1-P-092: Mathematics in German Hauptschule (Arithmetic and Algebra)

- 1 ECTS, Method of grading: numerical grade
- written examination (approx. 120 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 15 minutes) or an oral examination in groups (groups of 2: approx. 20 minutes, groups of 3: approx. 30 minutes) or by a written and/or multi-media portfolio (as announced)
- Only after successful completion of module components: Successful completion of the two module components 10-M-MH1-1 and 10-M-MH1-2 is a prerequisite for participation in module component 10-M-MH1-P.

Assessment in module component 10-M-MH1-1-092: Mathematics in German Hauptschule (Arithmetic) Mathematics in German Hauptschule (Arithmetic)

- 5 ECTS, Method of grading: (not) successfully 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.

Assessment in module component 10-M-MH1-2-092: Mathematics in German Hauptschule (Algebra) Mathematics in German Hauptschule (Algebra)

- 4 ECTS, Method of grading: (not) successfully 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.

Allocation of places

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Additional information
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Referred to in LPO I (examination regulations for teaching-degree programmes)
§ 38 (1) 1. Didaktik der Hauptschule Mathematik § 38 (1) 1. Didaktik der Mittelschule Mathematik

Module title			Abbreviation
Mathematics in German Hauptschule (Geometry, use-oriented teaching and Stochastics)			10-M-MH2-092-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
2 semester	undergraduate	--	

Contents

Discussion of basic topics in teaching geometry, stochastics and application-oriented mathematics in Hauptschule taking into account didactic aspects as well as possibilities of implementation in the classroom, also including modern technologies.

Intended learning outcomes

The student is acquainted with basic mathematical ways of thinking and working techniques in the fields of geometry, application-oriented mathematics and stochastics. He/She knows about criteria to assess media and their employment in teaching mathematics, detects common difficulties and typical misconceptions of pupils and knows about adequate countermeasures and support. He/She knows teaching and learning strategies and can assess them.

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

This module comprises 3 module components. Information on courses will be listed separately for each module component.

- 10-M-MH2-P-092: M (no information on SWS (weekly contact hours) and course language available)
- 10-M-MH2-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available)
- 10-M-MH2-2-092: V + Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

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-MH2-P-092: Mathematics in German Hauptschule (Geometry, use-oriented teaching and Stochastics)

- 1 ECTS, Method of grading: numerical grade
- written examination (approx. 120 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 15 minutes) or an oral examination in groups (groups of 2: approx. 20 minutes, groups of 3: approx. 30 minutes) or by a written and/or multi-media portfolio (as announced)
- Only after successful completion of module components: Successful completion of the two module components 10-M-MH2-1 and 10-M-MH2-2 is a prerequisite for participation in module component 10-M-MH2-P.

Assessment in module component 10-M-MH2-1-092: Mathematics in German Hauptschule (Geometry) Mathematics in German Hauptschule (Geometry)

- 5 ECTS, Method of grading: (not) successfully 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.

Assessment in module component 10-M-MH2-2-092: Mathematics in German Hauptschule (Exam in Geometry, used-oriented teaching and Stochastics) Mathematics in German Hauptschule (Exam in Geometry, used-oriented teaching and Stochastics)

- 4 ECTS, Method of grading: (not) successfully 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.

Allocation of places

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Additional information

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

§ 38 (1) 1. Didaktik der Hauptschule Mathematik
§ 38 (1) 1. Didaktik der Mittelschule Mathematik

Module title			Abbreviation
Mathematics in Class 10 (virtual course)			10-M-VHBM10-092-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
3	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	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. 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 successfully completed, the lecturer will put the registration for assessment into effect at the end of the course.	

Contents
Basic topics on teaching mathematics in tenth grade in Hauptschule, Realschule and Gymnasium.
Intended learning outcomes
The student learns basic topics in the teaching of mathematics in tenth form at German Mittelschule and Realschule, as well as the related mathematical backgrounds and proofs. He/She is acquainted with the employment of new technologies for teaching mathematics in tenth form.
Courses (type, number of weekly contact hours, language — if other than German)
Ü (no information on SWS (weekly contact hours) and course language available)
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
web-based project assignments and tests (length/expenditure of time to be announced at the beginning of the course)
Allocation of places
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Additional information
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Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module title			Abbreviation
Methodology of Teaching in Mathematics (German Hauptschule)			10-M-DMHS-092-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
3	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Discussion of selected methods for teaching mathematics in Hauptschule.

Intended learning outcomes

The student is acquainted with different methods of teaching mathematics at German Hauptschule, can assess their respective advantages and disadvantages, and can select and employ an appropiate method depending on the situation and the subject.

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

S (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) talk (approx. 45 minutes) or b) project (approx. 5 to 15 pages) or c) portfolio (approx. 5 to 15 pages)

Allocation of places

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Additional information

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

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Module title			Abbreviation
Stochastics in Sekundarstufe I (virtual course)			10-M-VHBSto-092-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
3	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	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. 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 successfully completed, the lecturer will put the registration for assessment into effect at the end of the course.	

Contents

Revision and consolidation of the fundamental topics in stochastics that are prerequisites for the subject-specific and didactic courses in stochastics.

Intended learning outcomes

The student has basic knowledge of stochastics, as required for the study of mathematics and its didactics.He/She is acquainted with the employment of new technologies for teaching stochastics in school.

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

Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

web-based project assignments and tests (length/expenditure of time to be announced at the beginning of the course)

Allocation of places

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Additional information

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

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Module title			Abbreviation
Advanced Didactics of Mathematics (German Hauptschule)			10-M-DVHS-092-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
2	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Discussion of topics in teaching mathematics in Hauptschule taking into account different aspects, in particular mathematical foundations, didactic analyses, contemporary discussions in mathematics didactics as well as possible approaches in the classroom.

Intended learning outcomes

The student is able to discuss central topics and issues on teaching mathematics in German Hauptschule, considering subject-specific, didactical and methodical aspects.

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

S (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) talk (approx. 60 minutes) or b) assignment to be completed at home (approx. 50 to 60 hours)

Allocation of places

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Additional information

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

§ 51 (1) 4. Mathematik Fachdidaktik