Module Catalogue
for the Subject
Mathematics
as Unterrichtsfach
with the degree "Erste Staatsprüfung für das Lehramt an Mittelschulen"

Examination regulations version: 2013
Responsible: Institute of Mathematics
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## The subject is divided into

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<tr>
<td>Thesis</td>
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**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)):

25-Sep-2014 (2014-53)

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

(54 ECTS credits)
<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tr>
<td>Elementary Mathematics 1 (German Grundschule/Hauptschule/Realschule)</td>
<td>10-M-EL1-092-m01</td>
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<tr>
<td>Dean of Studies Mathematik (Mathematics)</td>
<td>Institute of Mathematics</td>
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<th>Method of grading</th>
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<td>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.</td>
</tr>
</tbody>
</table>

**Contents**

Introduction to fundamental techniques in mathematics. Approach to the number as a basic theme in mathematics, basic topics in elementary number theory and the structure of the number system.

**Intended learning outcomes**

The student knows the basic ways of thinking and working in mathematics, as well as the fundamental mathematical proof methods. He/She is able to apply these skills to basic problems in the fields of number theory and the structure of the number system.

**Courses**

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

V + 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 is creditable for bonus)

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)

**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) 3. Mathematik Elementare Zahlentheorie, Elementare Stochastik, Elementargeometrie
### Module title
Elementary Mathematics 2 (German Grundschule/Hauptschule/Realschule)

### Abbreviation
10-M-EL2-092-m01

### Module coordinator
Dean of Studies Mathematik (Mathematics)

### Module offered by
Institute of Mathematics

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</table>

### Duration
2 semester

### Module level
undergraduate

### Other prerequisites
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### Contents
Introduction to fundamental and advanced techniques in mathematics. Basic topics in elementary and Euclidean geometry as well as stochastics.

### Intended learning outcomes
The student knows the basic ways of thinking and working in mathematics, as well as the fundamental mathematical proof methods. He/She is able to apply these skills to basic problems in the fields of Euclidean geometry and elementary stochastics.

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

- **10-M-EL2-P-092**: Elementary Mathematics 2 (German Grundschule/Hauptschule/Realschule)
  - 1 ECTS, 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, groups of 3: approx. 45 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-EL2-1 and 10-M-EL2-2 is a prerequisite for participation in module component 10-M-EL2-P.

- **10-M-EL2-1-092**: Elementary Mathematics 2: Geometry (German Grundschule/Hauptschule/Realschule)
  - 6 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.

- **10-M-EL2-2-092**: Elementary Mathematics 2: Stochastics (German Grundschule/Hauptschule/Realschule)
  - 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.

### 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-EL2-P-092:** Elementary Mathematics 2 (German Grundschule/Hauptschule/Realschule)

- 1 ECTS, 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, groups of 3: approx. 45 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-EL2-1 and 10-M-EL2-2 is a prerequisite for participation in module component 10-M-EL2-P.

**Assessment in module component 10-M-EL2-1-092:** Elementary Mathematics 2: Geometry (German Grundschule/Hauptschule/Realschule)

- 6 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-EL2-2-092:** Elementary Mathematics 2: Stochastics (German Grundschule/Hauptschule/Realschule)

- 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)

§ 51 (1) 3. Mathematik Elementare Zahlentheorie, Elementare Stochastik, Elementargeometrie
Module title

Basics in Mathematics (German Grundschule/Hauptschule/Gymnasium)

Abbreviation

10-M-M1GHR-092-m01

Module coordinator

Dean of Studies Mathematik (Mathematics)

Module offered by

Institute of Mathematics

ECTS

15

Method of grading

numerical grade

Only after succ. compl. of module(s)

10-M-M1GHR-092: M (no information on SWS (weekly contact hours) and course language available)

10-M-M1GHR-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available)

10-M-M1GHR-2-092: V + Ü (no information on SWS (weekly contact hours) and course language available)

Duration

2 semester

Module level

undergraduate

Contents

Introduction to the two most important basic fields of mathematics: linear algebra and analysis.

Intended learning outcomes

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

Courses

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

- 10-M-M1GHR-P-092: M (no information on SWS (weekly contact hours) and course language available)
- 10-M-M1GHR-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available)
- 10-M-M1GHR-2-092: V + Ü (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-M1GHR-P-092: Basics in Mathematics (German Grundschule/Hauptschule/Gymnasium)

- 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. 30 minutes) or an oral examination in groups (groups of 2: approx. 45 minutes, groups of 3: approx. 60 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-M1GHR-1 and 10-M-M1GHR-2 is a prerequisite for participation in module component 10-M-M1GHR-P.

Assessment in module component 10-M-M1GHR-1-092: Basics in Mathematics - Linear Algebra (German Grundschule/Hauptschule/Gymnasium)

- 8 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-M1GHR-2-092: Basics in Mathematics - Analysis in one Variable (German Grundschule/Hauptschule/Gymnasium)

- 6 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)

§ 51 (1) 1. Mathematik Differential- und Integralrechnung, Gewöhnliche Differentialgleichungen

§ 51 (1) 2. Mathematik Lineare Algebra und Analytische Geometrie
Module title | Abbreviation
---|---
Advances in Mathematics (German Grundschule/Hauptschule/Realschule) | 10-M-M2GHR-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)
---|---|---
18 | numerical grade | --

Duration | Module level | Other prerequisites
---|---|---
3 semester | undergraduate | --

Contents
Advanced topics in the two most important fields of mathematics: applications of linear algebra in analytic geometry; extension of analysis from one to several variables, basics in ordinary differential equations and application of methods of analysis and linear algebra in this field.

Intended learning outcomes
The students is acquainted with advanced methods, concepts and results in linear algebra and analytic geometry, as well as in analysis in several variables and the theory of ordinary differential equations. He/She is able to comprehend the central proof methods, can perform easy mathematical arguments and present them orally and in written form. He/She can analyse basic mathematical problems and employ methods of analysis in one and several variables, linear algebra, analytic geometry and the theory of ordinary differential equations to solve them.

Courses
This module has 4 components; information on courses listed separately for each component.
- 10-M-M2GHR-P-092: M (no information on language and number of weekly contact hours available)
- 10-M-M2GHR-1-092, 10-M-M2GHR-2-092, and 10-M-M2GHR-3-092: V + Ü (no information on language and number of weekly contact hours available)

Method of assessment
This module has the following 4 assessment components. Unless stated otherwise, students must pass all of these assessment components to pass the module as a whole.

Assessment in module component 10-M-M2GHR-P-092: Aufbau Mathematik - Prüfung (Grund-, Haupt- and Realschule) (Assessment Advanced Mathematics, Grundschule, Hauptschule and Realschule)
- 1 ECTS credit, numerical grading
- written examination (approx. 120 minutes); if announced by the lecturer, the written examination may be replaced by an oral examination of one candidate each (approx. 30 minutes) or an oral examination in groups (groups of 2: approx. 45 minutes, groups of 3: approx. 60 minutes) or by a written and/or multi-media portfolio (as announced).
- Only after successful completion of module components: Module component 10-M-M2GHR-P can only be taken by students who successfully completed the three module components 10-M-M2GHR-1, 10-M-M2GHR-2 and 10-M-M2GHR-3.

- 5 ECTS credits (10-M-M2GHR-2-092: 7 ECTS credits), pass / fail
- 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.
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## Module Catalogue for the Subject Mathematics

### LA Mittelschulen

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<td>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.</td>
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### Contents

Revision and consolidation of the topics covered in modules 10-M-M1GHR and 10-M-M2GHR by completing exercises and answering past state examination questions.

### Intended learning outcomes

The student has advanced knowledge in the topics stated in LPO I (examination regulations for teaching degree programmes), §51 (2) 1, 2, and is able to apply them on the level of the state examination.

### 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 is creditable for bonus)

| talk (approx. 45 minutes) |

### Allocation of places

| -- |

### Additional information

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

| -- |
Teaching

(12 ECTS credits)
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<th>Module title</th>
<th>Abbreviation</th>
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<td>Didactics of Mathematics (German Hauptschule/Realschule)</td>
<td>10-M-DGHR-092-m01</td>
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**Module coordinator**

Dean of Studies Mathematik (Mathematics)

**Module offered by**

Institute of Mathematics

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**Duration**

3 semester

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</table>

**Contents**

Discussion of basic topics in teaching mathematics in Hauptschule and Realschule 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 mathematical ways of thinking and working techniques, and is able to take into account the students' perception of mathematical topics. He/She knows important aspects of planning and analysing teaching of mathematics, masters different strategies for teaching and learning und can assess them.

**Courses**

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

This module has 4 components; information on courses listed separately for each component.

- 10-M-DGHR-P-092: M (no information on language and number of weekly contact hours available)
- 10-M-DGHR-1-092, and 10-M-DGHR-2-092: V + Ü (no information on language and number of weekly contact hours available)
- 10-M-DGHR-3-092: V (no information on language and number of weekly contact hours available)

**Method of assessment**

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

This module has the following 4 assessment components. Unless stated otherwise, students must pass all of these assessment components to pass the module as a whole.

**Assessment in module component 10-M-DGHR-P-092:** Didaktik der Mathematik - Prüfung (Haupt- und Realschule) (Assessment Mathematics Didactics, Hauptschule and Realschule)

- 1 ECTS credit, numerical grading
- written examination (approx. 120 minutes); if announced by the lecturer, the written examination may be replaced by an oral examination of one candidate each (approx. 30 minutes) or an oral examination in groups (groups of 2: approx. 45 minutes, groups of 3: approx. 60 minutes) or by a written and/or multimedia portfolio (as announced).
- Only after successful completion of module components: Module component 10-M-DGHR-P can only be taken by students who successfully completed the three module components 10-M-DGHR-1 and 10-M-DGHR-2 and 10-M-DGHR-3.

**Assessment in module component 10-M-DGHR-1-092:** Didaktik der Mathematik - Algebra (Haupt- und Realschule) (Mathematics Didactics - Algebra, Hauptschule and Realschule), and in module component 10-M-DGHR-2-092: Didaktik der Mathematik - Geometrie (Haupt- und Realschule) (Mathematics Didactics - Geometry, Hauptschule and Realschule):

- 4 ECTS credits, pass / fail
- 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-DGHR-3-092:** Didaktik der Mathematik - Stochastik (Haupt- und Realschule) (Mathematics Didactics - Stochastics, Hauptschule and Realschule)

- 1 ECTS credit, pass / fail
- 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.
**Module Catalogue for the Subject Mathematics**

**LA Mittelschulen**

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**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 Didaktik

§ 51 (1) 4. Mathematik Fachdidaktik
<table>
<thead>
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<th>Module title</th>
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<td>Advanced Didactics of Mathematics (German Hauptschule)</td>
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<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</table>

**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**

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

**Method of assessment**

- 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 (i) 4. Mathematik Fachdidaktik
Freier Bereich (general as well as subject-specific electives) (0-15 ECTS credits)

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
(ECTS credits)

(Freier Bereich (general as well as subject-specific electives) -- subject specific)
<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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</thead>
<tbody>
<tr>
<td>Computers in Mathematical Teaching</td>
<td>10-M-DCMU-092-m01</td>
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<table>
<thead>
<tr>
<th>Module coordinator</th>
<th>Module offered by</th>
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<tr>
<td>Dean of Studies Mathematik (Mathematics)</td>
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<tr>
<th>ECTS</th>
<th>Method of grading</th>
<th>Only after succ. compl. of module(s)</th>
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<tr>
<td>3</td>
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<table>
<thead>
<tr>
<th>Duration</th>
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<tr>
<td>1 semester</td>
<td>undergraduate</td>
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**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 is creditable for 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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<table>
<thead>
<tr>
<th>Module title</th>
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<tbody>
<tr>
<td>Methodology of Teaching in Mathematics (German Hauptschule)</td>
<td>10-M-DMHS-092-m01</td>
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**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 appropriate 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 is creditable for 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
E-Learning and Blended Learning in Mathematics at school

### Abbreviation
10-M-DVHB-092-m01

### Module coordinator
Dean of Studies Mathematik (Mathematics)

### Module offered by
Institute of Mathematics

### ECTS
3

### Method of grading
Only after succ. compl. of module(s)

### (not) successfully completed
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### Duration
1 semester

### Module level
undergraduate

### 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 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 mathematics, 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 is creditable for 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
Stochastics in Sekundarstufe I (virtual course)

### Abbreviation
10-M-VHBSto-092-m01

### Module coordinator
Dean of Studies Mathematik (Mathematics)

### Module offered by
Institute of Mathematics

### ECTS
3

### Method of grading
Only after succ. compl. of module(s)

### Duration
1 semester

### Module level
undergraduate

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

### Method of assessment
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: Basics in Arithmetics (virtual course)
Abbreviation: 10-M-VHBAri-092-m01

Module coordinator: Dean of Studies Mathematik (Mathematics)
Module offered by: Institute of Mathematics

ECTS: 3
Method of grading: Only after succ. compl. of module(s)

Duration: 1 semester
Module level: undergraduate
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 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 is creditable for 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 is creditable for 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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<table>
<thead>
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<tbody>
<tr>
<td>Mathematics in Class 10 (virtual course)</td>
<td>10-M-VHBM10-092-m01</td>
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**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 is creditable for 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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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 Sonderpädagogik may write this thesis in the subject they selected as sonderpädagogische Fachrichtung (special education specialization). Pursuant to Section 29 Subsection 1 Sentence 2 LPO I, students may also choose to write an interdisciplinary thesis.
<table>
<thead>
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<th>Module title</th>
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<tbody>
<tr>
<td>Thesis in Mathematics (teaching degree at German Hauptschule)</td>
<td>10-M-HMHS-092-m01</td>
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### Module coordinator
Dean of Studies Mathematik (Mathematics)

### Module offered by
Institute of Mathematics

### ECTS
<table>
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<tr>
<th>Duration</th>
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</table>

### Method of grading
- numerical grade
- Only after succ. compl. of module(s)
- Where applicable, specific modules/module components as specified by supervisor.

### Intended learning outcomes
The student is able to work independently on a given mathematical topic and apply the skills and methods obtained during his/her studies in the teaching degree programme. He/She can write down the result of his/her work in a suitable form, incorporating aspects of the didactics of mathematics.

### Courses
no courses assigned

### Method of assessment
- written thesis (approx. 250 to 300 hours total)
- Language of assessment: German, exceptions in accordance with Section 29 Subsection 4 LPO I (examination regulations for teaching degree programmes)

### Allocation of places
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### Additional information
Additional information on module duration: 1 to 2 semesters.

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