

## Subdivided Module Catalogue for the Subject

# Mathematics

as Unterrichtsfach with the degree "Erste Staatsprüfung für das Lehramt an Mittelschulen"

> Examination regulations version: 2015 Responsible: Faculty of Mathematics and Computer Science Responsible: Institute of Mathematics

JMU Würzburg • generated 18-Apr-2025 • exam. reg. data record L7/105/-/-/H/2015

### Abbreviations used

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

#### LASPO2015

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

#### 05-Oct-2015 (2015-188)

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.

LA Mittelschulen Mathematics (2015)

## The subject is divided into

|   | Module title  | ECTS<br>credits   | Method of<br>grading  | page  |
|---|---|---|---|---|
| Scientific Discipline (54 E   | CTS credits)  |   |   |   |
| Cumpulsory Courses (54  | ECTS credits)   |   |   |   |
| 10-M-ELZT-152-m01   | Elementary Number Theory  | 6   | NUM   | 19  |
| 10-M-ELGE-152-m01   | Elementary Geometry   | 6   | NUM   | 17  |
| 10-M-ELST-152-m01   | Elementary Stochastics  | 5   | NUM   | 18  |
| 10-M-GRLA-152-m01   | Basic Linear Analysis   | 9   | NUM   | 24  |
| 10-M-GRAN-152-m01   | Basic Analysis  | 12  | NUM   | 22  |
| 10-M-ANGE-152-m01   | Analytic Geometry   | 6   | NUM   | 5   |
| 10-M-GRDG-152-m01   | Basic Differential Equations  | 5   | NUM   | 23  |
|   | Review Course Mathematics (German Grundschule/Mittelschu-   | -   |   |   |
| 10-M-M3GMR-152-m01  | le/Realschule)  | 5   | B/NB  | 26  |
| Teaching (12 ECTS credits   | ;)  |   |   | ,   |
| Compulsory Courses (12  | ECTS credits)   |   |   |   |
|   | Didactics of Mathematics - Geometry (German Mittelschu-   |   |   |   |
| 10-M-DGMR1-152-m01  | le/Realschule)  | 5   | NUM   | 8   |
|   | Didactics of Mathematics - Stochastics and Algebra (German  |   |   |   |
| 10-M-DGMR2-152-m01  | Mittelschule/Realschule)  | 7   | NUM   | 9   |
| neral academic and examinat   | Inted in the subject Erziehungswissenschaften pursuant to Secti<br>ion regulations for teaching-degree programms).<br>Practical Training in Classroom Teaching including Theory (Ger-<br>man Mittelschule)  | ion 10 Sub  | section 3 LASP<br>B/NB  | 0 (ge-  |
| Fraior Poraich (gaparal ac wa   | Il as subject-specific electives)   |   |   |   |
| Teaching degree students mu<br>ject-specific electives) (Sectio<br>To achieve the required numb<br>Freier Bereich interdisciplin  | st take modules worth a total of 15 ECTS credits in the area Freie<br>on 9 LASPO (general academic and examination regulations for to<br>per of ECTS credits, students may take any modules from the area   | er Bereich (<br>eaching-de  |   |   |
| nex "Ergänzende Bestimmung  | ary: The interdisciplinary additional offer for a teaching degree c<br>gen für den "Freien Bereich" im Rahmen des Studiums für ein Lel  | as below.<br>an be four   | egree programr  | nes)).  |
| nex "Ergänzende Bestimmung<br>Mathematics   | ary: The interdisciplinary additional offer for a teaching degree c<br>gen für den "Freien Bereich" im Rahmen des Studiums für ein Lel  | as below.<br>an be four   | egree programr  | nes)).  |
| nex "Ergänzende Bestimmung<br><b>Mathematics</b><br>(Freier Bereich (general as w   | ary: The interdisciplinary additional offer for a teaching degree c<br>gen für den "Freien Bereich" im Rahmen des Studiums für ein Lel<br>rell as subject-specific electives) subject specific)   | as below.<br>an be four<br>hramt".  | egree programr  | nes)).<br>ctive An  |
| nex "Ergänzende Bestimmung<br><b>Mathematics</b><br>(Freier Bereich (general as w<br>10-M-DCMU-152-m01  | ary: The interdisciplinary additional offer for a teaching degree c<br>gen für den "Freien Bereich" im Rahmen des Studiums für ein Lel<br>rell as subject-specific electives) subject specific)<br>Computers in Mathematical Teaching   | as below.<br>an be four   | egree programr  | nes)).  |
| nex "Ergänzende Bestimmung<br><b>Mathematics</b><br>(Freier Bereich (general as w<br>10-M-DCMU-152-m01  | ary: The interdisciplinary additional offer for a teaching degree c<br>gen für den "Freien Bereich" im Rahmen des Studiums für ein Lel<br>rell as subject-specific electives) subject specific)   | as below.<br>an be four<br>hramt".  | egree programr  | nes)).<br>ctive An  |
| nex "Ergänzende Bestimmung<br>Mathematics<br>(Freier Bereich (general as w<br>10-M-DCMU-152-m01<br>10-M-DMMS1-152-m01   | ary: The interdisciplinary additional offer for a teaching degree c<br>gen für den "Freien Bereich" im Rahmen des Studiums für ein Lel<br>rell as subject-specific electives) subject specific)<br>Computers in Mathematical Teaching<br>Methodology of Teaching in Mathematics 1 (German Mittel-   | as below.<br>an be four<br>hramt".<br>3   | egree programr<br>nd in the respec<br>B/NB  | nes)).<br>ctive An<br>6                                     |
| nex "Ergänzende Bestimmung<br>Mathematics<br>(Freier Bereich (general as w<br>10-M-DCMU-152-m01<br>10-M-DMMS1-152-m01<br>10-M-DMMS2-152-m01   | ary: The interdisciplinary additional offer for a teaching degree c<br>gen für den "Freien Bereich" im Rahmen des Studiums für ein Lel<br>rell as subject-specific electives) subject specific)<br>Computers in Mathematical Teaching<br>Methodology of Teaching in Mathematics 1 (German Mittel-<br>schule)<br>Methodology of Teaching in Mathematics 2 (German Mittel-  | as below.<br>an be four<br>hramt".<br>3<br>3  | egree programm<br>nd in the respect<br>B/NB<br>B/NB   | nes)).<br>ctive An<br>6<br>11                               |
| nex "Ergänzende Bestimmung<br>Mathematics<br>(Freier Bereich (general as w<br>10-M-DCMU-152-m01<br>10-M-DMMS1-152-m01<br>10-M-DMMS2-152-m01   | ary: The interdisciplinary additional offer for a teaching degree c<br>gen für den "Freien Bereich" im Rahmen des Studiums für ein Lel<br>rell as subject-specific electives) subject specific)<br>Computers in Mathematical Teaching<br>Methodology of Teaching in Mathematics 1 (German Mittel-<br>schule)<br>Methodology of Teaching in Mathematics 2 (German Mittel-<br>schule)   | as below.<br>an be four<br>hramt".<br>3<br>3<br>3   | egree programm<br>nd in the respect<br>B/NB<br>B/NB<br>B/NB                                 | nes)).<br>ctive An<br>6<br>11<br>12                         |
| nex "Ergänzende Bestimmung<br>Mathematics<br>(Freier Bereich (general as w<br>10-M-DCMU-152-m01<br>10-M-DMMS1-152-m01<br>10-M-DMMS2-152-m01<br>10-M-DVMS1-152-m01<br>10-M-DVMS2-152-m01                       | ary: The interdisciplinary additional offer for a teaching degree c<br>gen für den "Freien Bereich" im Rahmen des Studiums für ein Lel<br>rell as subject-specific electives) subject specific)<br>Computers in Mathematical Teaching<br>Methodology of Teaching in Mathematics 1 (German Mittel-<br>schule)<br>Methodology of Teaching in Mathematics 2 (German Mittel-<br>schule)<br>Advanced Didactics of Mathematics 1 (German Mittelschule)  | as below.<br>an be four<br>hramt".<br>3<br>3<br>3<br>2                                    | egree programm<br>nd in the respect<br>B/NB<br>B/NB<br>B/NB<br>B/NB                         | nes)).<br>ctive An<br>6<br>11<br>12<br>15                   |
| nex "Ergänzende Bestimmung<br>Mathematics<br>(Freier Bereich (general as w<br>10-M-DCMU-152-m01<br>10-M-DMMS1-152-m01<br>10-M-DVMS1-152-m01<br>10-M-DVMS1-152-m01<br>10-M-DVHB-152-m01                        | ary: The interdisciplinary additional offer for a teaching degree c<br>gen für den "Freien Bereich" im Rahmen des Studiums für ein Lel<br>rell as subject-specific electives) subject specific)<br>Computers in Mathematical Teaching<br>Methodology of Teaching in Mathematics 1 (German Mittel-<br>schule)<br>Methodology of Teaching in Mathematics 2 (German Mittel-<br>schule)<br>Advanced Didactics of Mathematics 1 (German Mittelschule)<br>Advanced Didactics of Mathematics 2 (German Mittelschule)<br>E-Learning and Blended Learning in Mathematical Teaching   | as below.<br>an be four<br>hramt".<br>3<br>3<br>3<br>2<br>2<br>2                          | egree programm<br>nd in the respect<br>B/NB<br>B/NB<br>B/NB<br>B/NB<br>B/NB                 | nes)).<br>ctive An<br>6<br>11<br>12<br>15<br>16             |
| nex "Ergänzende Bestimmung<br>Mathematics<br>(Freier Bereich (general as w<br>10-M-DCMU-152-m01<br>10-M-DMMS1-152-m01<br>10-M-DMMS2-152-m01<br>10-M-DVMS1-152-m01<br>10-M-DVHB-152-m01<br>10-M-VHBAri-152-m01 | ary: The interdisciplinary additional offer for a teaching degree c<br>gen für den "Freien Bereich" im Rahmen des Studiums für ein Lel<br>rell as subject-specific electives) subject specific)<br>Computers in Mathematical Teaching<br>Methodology of Teaching in Mathematics 1 (German Mittel-<br>schule)<br>Methodology of Teaching in Mathematics 2 (German Mittel-<br>schule)<br>Advanced Didactics of Mathematics 1 (German Mittelschule)<br>Advanced Didactics of Mathematics 2 (German Mittelschule)<br>E-Learning and Blended Learning in Mathematical Teaching<br>(virtual Course)   | as below.<br>an be four<br>hramt".<br>3<br>3<br>3<br>2<br>2<br>2<br>3                     | egree programm<br>nd in the respect<br>B/NB<br>B/NB<br>B/NB<br>B/NB<br>B/NB<br>B/NB         | nes)).<br>ctive An<br>6<br>11<br>12<br>15<br>16<br>13       |
| nex "Ergänzende Bestimmung<br>Mathematics<br>(Freier Bereich (general as w<br>10-M-DCMU-152-m01<br>10-M-DMMS1-152-m01<br>10-M-DMMS2-152-m01<br>10-M-DVMS1-152-m01<br>10-M-DVHB-152-m01<br>10-M-VHBAri-152-m01 | ary: The interdisciplinary additional offer for a teaching degree c<br>gen für den "Freien Bereich" im Rahmen des Studiums für ein Lel<br>rell as subject-specific electives) subject specific)<br>Computers in Mathematical Teaching<br>Methodology of Teaching in Mathematics 1 (German Mittel-<br>schule)<br>Methodology of Teaching in Mathematics 2 (German Mittel-<br>schule)<br>Advanced Didactics of Mathematics 1 (German Mittelschule)<br>Advanced Didactics of Mathematics 2 (German Mittelschule)<br>E-Learning and Blended Learning in Mathematical Teaching<br>(virtual Course)<br>Basics in Arithmetics (virtual course) | as below.<br>an be four<br>hramt".<br>3<br>3<br>3<br>2<br>2<br>2<br>3<br>2<br>2<br>3<br>2 | egree programm<br>nd in the respect<br>B/NB<br>B/NB<br>B/NB<br>B/NB<br>B/NB<br>B/NB<br>B/NB | nes)).<br>ctive An<br>6<br>11<br>12<br>15<br>16<br>13<br>30 |

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| Julius-Maximilians-<br>UNIVERSITÄT<br>WÜRZBURG | Subdivided Mo  | odule Catalogue for the Subject<br>Mathematics<br>LA Mittelschulen |      |    |
|--|--|--|------|----|
|  |  |  |      |    |
| 10-M-DGMS-152-m01                              | Didactics of Elementary School Mathematics for Teachers at | 2  | B/NB | 10 |

| 10-M-DGM5-152-1101      | German Mittelschule and Special Education                        | 2 | D/ND | 10 |
|-------------------------|--|---|------|----|
| 10-M-GBM-152-m01        | Basic Notions and Methods of Mathematical Reasoning              | 2 | B/NB | 20 |
| 10-M-VHBDG-152-m01      | 10-M-VHBDG-152-mo1 Didactics of Geometry (virtual course)        |   | B/NB | 34 |
| 10-M-VHBDA-152-m01      | Didactics of Algebra (virtual course)                            | 2 | B/NB | 32 |
| 10-M-VHBEx-152-m01      | Exam Tutorial Didactics of Mathematics (virtual course)          | 2 | B/NB | 36 |
| 10-M-VHBMa1-152-m01     | Mathematics 1 (virtual course)                                   | 2 | B/NB | 42 |
| 10-M-VHBMa2-152-m01     | 10-M-VHBMa2-152-mo1 Mathematics 2 (virtual course)               |   | B/NB | 44 |
| 10-M-SCH-152-m01        | School Mathematics from a Higher Perspective                     | 5 | B/NB | 27 |
| Paper (10 ECTS credits) | · ·  |   |      |    |
|                         | sarbeit (thesis) in accordance with the provisions of Section 29 |   |      |    |

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 Mittelschule may write this thesis in the subject Didaktik einer Fächergruppe der Mittelschule (Didactics of a Group of Subjects of Mittelschule), in the subject they selected as Unterrichtsfach (subject studied with a focus on the scientific discipline) or in the subject Erziehungswissenschaften (Educational Science). Pursuant to Section 29 Subsection 1 Sentence 2 LPO I, students may also choose to write an interdisciplinary thesis.

| 10-M-HMMS-152-m01Inesis in Mathematics (German Mittelschule)10NUM25 | 10-M-HMMS-152-mo1 Thesis in Mathematics (German Mittelschule) | 10 | NUM | 25 |
|---|---|----|-----|----|
|---|---|----|-----|----|

| Module   | e title  |  |   |  | Abbreviation   |
|--|--|--|---|--|--|
| Analyti  |  | -  |   |  | 10-M-ANGE-152-m01  |
| Module coordinator   |  |  |   | Module offered by                        |  |
| Dean o   | f Studie   | es Mathematik (Mathema   | atics)  | Institute of Mathem                      | atics  |
| ECTS   |  | od of grading  | Only after succ. com  | pl. of module(s)                         |  |
| 6  | L  | rical grade  |   |  |  |
| Duratio  |  | Module level   | Other prerequisites   |  |  |
| 1 seme   |  | undergraduate  |   |  |  |
| Conten   | ts   |  |   |  |  |
|  |  | of linear algebra to analyt<br>clidean spaces (scalar pro  |   |  | f affine maps and isometries, dis-   |
| Intende  | ed learı   | ning outcomes  |   |  |  |
| try. He/<br>presen   | She is them                                      | able to comprehend the   | central proof method<br>. He/She can analyse                            | s, can perform easy                      | ear algebra and analytic geome-<br>mathematical arguments and<br>l problems and employ methods         |
| Course   | <b>s</b> (type                                   | , number of weekly conta   | ct hours, language —  | if other than Germa                      | n)   |
| V (4) +  | Ü (2)  |  |   |  |  |
| ster, in<br>written<br>If anno<br>examin                   | formati<br>examin<br>unced<br>ation o<br>5 minut | on on whether module canation (approx. 60 to 90 n<br>by the lecturer at the beg<br>of one candidate each (ap<br>es per candidate). | an be chosen to earn<br>minutes)<br>inning of the course,               | a bonus)<br>the written examina          | tion offered — if not every seme-<br>tion may be replaced by an oral<br>in groups of 2 candidates (ap- |
| Allocat  | ion of p   | olaces   |   |  |  |
|  | •  |  |   |  |  |
| Additio  | nal inf  | ormation   |   |  |  |
|  |  |  |   |  |  |
| Worklo   | ad   |  |   |  |  |
| 180 h  |  |  |   |  |  |
| Teachi   |  | ۹  |   |  |  |
| reacini  | is cycu  | 6  |   |  |  |
| Referre  | d to in  | LPOI (examination regu   | lations for teaching-d  | legree programmes)                       |  |
| § 51   N   |  | · · · · · · · · · · · · · · · · · · ·  |   |  |  |
| Module   |  | ars in   |   |  |  |
| First sta<br>First sta<br>First sta<br>First sta<br>2015)) | ate exa<br>ate exa<br>ate exa<br>ate exa         | mination for the teaching<br>mination for the teaching<br>mination for the teaching  | g degree Realschule M<br>g degree Mittelschule<br>g degree Mittelschule | Nathematics (2015)<br>Mathematics (2015) |  |
|  |  |  |   |  |  |

| Module                              | title   |                          |                        | Abbreviation          |             |
|-------------------------------------|---|--------------------------|------------------------|-----------------------|-------------|
| Comput                              | ters in Mathematical Teachi   | ng                       |                        | 10-M-DCMU-152-m       | 01          |
| Module                              | coordinator   |                          | Module offered by      |                       |             |
|                                     | f Studies Mathematik (Mathe   | matics)                  | Institute of Mathem    | atics                 |             |
| ECTS                                | Method of grading   | Only after succ. con     |                        | alles                 |             |
| 3                                   | (not) successfully complete   | · _ · _ ·                |                        |                       |             |
| Duratio                             | T I I   | Other prerequisites      |                        |                       |             |
| 1 semes                             |   |                          |                        |                       |             |
| Conten                              |   | J                        |                        |                       |             |
| Discuss                             | ion of possible ways to use   | computers in teaching n  | nathematics as well a  | as discussion of con  | nmon com-   |
| puter to                            | ools.   |                          |                        |                       |             |
|                                     | ed learning outcomes  |                          |                        |                       |             |
|                                     | dent is acquainted with basi<br>well as with the potential ar                             |                          |                        | ters in the teaching  | of mathema- |
| Courses                             | <b>s</b> (type, number of weekly co   | ntact hours, language –  | - if other than Germa  | n)                    |             |
| V (2)                               |   |                          |                        |                       |             |
|                                     | l of assessment (type, scope<br>formation on whether modul                                |                          |                        | tion offered — if not | every seme- |
|                                     | (10 to 15 pages)  |                          |                        |                       |             |
|                                     | ment offered: Every two year  | s, winter semester       |                        |                       |             |
| Allocati                            | ion of places   |                          |                        |                       |             |
|                                     |   |                          |                        |                       |             |
| Additio                             | nal information   |                          |                        |                       |             |
|                                     |   |                          |                        |                       |             |
| Worklo                              | ad  |                          |                        |                       |             |
| 90 h                                |   |                          |                        |                       |             |
| -                                   | ıg cycle  |                          |                        |                       |             |
|                                     |   |                          |                        |                       |             |
| Referre                             | d to in LPO I (examination r  | egulations for teaching- | degree programmes)     |                       |             |
| § 22    N<br>§ 22    N<br>§ 22    N | Vr. 2 f)<br>Vr. 1 h)  | <u> </u>                 |                        |                       |             |
| Module                              | appears in  |                          |                        |                       |             |
|                                     | te examination for the teach  |                          |                        |                       |             |
|                                     | te examination for the teach  |                          | -                      |                       |             |
| First sta<br>(2015)                 | ate examination for the teach   | ling degree Sonderpada   | igogik Didactics in Ma | athematics (Middle    | School)     |
|                                     | ate examination for the teach   | ning degree Mittelschule | Mathematics (2015)     |                       |             |
|                                     | ate examination for the teach   |                          |                        |                       | ol) (2015)  |
| First sta                           | ate examination for the teach   | ning degree Gymnasium    | Mathematics (2019)     |                       |             |
|                                     | ate examination for the teach   | ing degree Mittelschule  | e Mathematics (2020    | (Prüfungsordnungs     | version     |
| 2015))<br>First sta                 | ate examination for the teach   | ning degree Mittelschule | e Didactics in Mathem  | natics (Middle Scho   | ol) (2020   |
|                                     | gsordnungsversion 2015))  |                          |                        |                       |             |
|                                     |   | ing dogroo Sondornäda    | gogik Didactics in Ma  | athematics (Middle    |             |
| First sta<br>(2020 (                | ate examination for the teach<br>Prüfungsordnungsversion 20<br>ge program Mathematics (20 | D15))                    |                        |                       | School)     |



First state examination for the teaching degree Gymnasium Mathematics (2023)

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|   | <u>e title</u>   |  |   |  | Abbreviation   |
|---|--|--|---|--|--|
| Didacti   | cs of M  | athematics - Geometry (  | German Mittelschule   | /Realschule)   | 10-M-DGMR1-152-m01   |
| Module  | e coord  | inator   |   | Module offered b   | y  |
| Dean o  | f Studie   | es Mathematik (Mathema   | atics)  | Institute of Math  | ematics  |
| ECTS  | Metho  | od of grading  | Only after succ. com  | pl. of module(s)   |  |
| 5   | nume   | rical grade  |   |  |  |
| Duratio   | n  | Module level   | Other prerequisites   |  |  |
| 1 seme  | ster   | undergraduate  |   |  |  |
| Conten  | ts   |  |   |  |  |
|   |  | netry at Mittelschule and<br>netry, constructions, proc  |   |  | ctic aspects into account: goals c<br>tion in geometry.  |
| Intende   | ed learn   | ning outcomes  |   |  |  |
| ning an<br>them.  | id analy   | ysing teaching of geomet   | ry, masters different   | strategies for teac  | knows important aspects of plar<br>hing and learning und can asses   |
| Course  | <b>s</b> (type,  | , number of weekly conta   | ict hours, language —   | if other than Geri   | nan)   |
| V (2) +   | Ü (2)  |  |   |  |  |
|   |  |  |   |  |  |
| ster, in  | formati  | on on whether module ca  | an be chosen to earn  |  | nation offered — if not every sem  |
| ster, in<br>written<br>If anno<br>examin<br>prox. 1 <u>9</u>  | formati<br>examir<br>unced l<br>ation o<br>5 minut   | on on whether module canation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (appression)<br>es per candidate).  | an be chosen to earn<br>minutes)<br>inning of the course,   | a bonus)<br>the written exami  | nation offered — if not every sem<br>nation may be replaced by an ora<br>on in groups of 2 candidates (ap- |
| ster, in<br>written<br>If anno<br>examin<br>prox. 19<br>credita   | formati<br>examir<br>unced l<br>ation o<br>5 minut<br>ble for  | on on whether module canation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (ap<br>es per candidate).<br>bonus  | an be chosen to earn<br>minutes)<br>inning of the course,   | a bonus)<br>the written exami  | nation may be replaced by an ora   |
| ster, in<br>written<br>If anno<br>examin<br>prox. 19<br>credita   | formati<br>examir<br>unced l<br>ation o<br>5 minut<br>ble for  | on on whether module canation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (ap<br>es per candidate).<br>bonus  | an be chosen to earn<br>minutes)<br>inning of the course,   | a bonus)<br>the written exami  | nation may be replaced by an ora   |
| ster, in<br>written<br>If anno<br>examin<br>prox. 1 <u>9</u><br>credita<br>Allocat  | formati<br>examir<br>unced l<br>ation o<br>5 minut<br>ble for<br><b>ion of p</b>   | on on whether module ca<br>nation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (ap<br>es per candidate).<br>bonus<br>blaces  | an be chosen to earn<br>minutes)<br>inning of the course,   | a bonus)<br>the written exami  | nation may be replaced by an ora   |
| ster, in<br>written<br>If anno<br>examin<br>prox. 1 <u>9</u><br>credita<br>Allocat  | formati<br>examir<br>unced l<br>ation o<br>5 minut<br>ble for<br><b>ion of p</b>   | on on whether module canation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (ap<br>es per candidate).<br>bonus  | an be chosen to earn<br>minutes)<br>inning of the course,   | a bonus)<br>the written exami  | nation may be replaced by an ora   |
| ster, in<br>written<br>If anno<br>examin<br>prox. 1 <u>4</u><br>credita<br>Allocat<br><br>Additio   | formati<br>examir<br>unced l<br>ation o<br>5 minut<br>ble for<br>ion of p<br>nal infe  | on on whether module ca<br>nation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (ap<br>es per candidate).<br>bonus<br>blaces  | an be chosen to earn<br>minutes)<br>inning of the course,   | a bonus)<br>the written exami  | nation may be replaced by an ora   |
| ster, in<br>written<br>If anno<br>examin<br>prox. 1 <u>e</u><br>credita<br>Allocat<br><br>Additio<br><br>Worklo   | formati<br>examir<br>unced l<br>ation o<br>5 minut<br>ble for<br>ion of p<br>nal infe  | on on whether module ca<br>nation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (ap<br>es per candidate).<br>bonus<br>blaces  | an be chosen to earn<br>minutes)<br>inning of the course,   | a bonus)<br>the written exami  | nation may be replaced by an ora   |
| ster, in<br>written<br>If anno<br>examin<br>prox. 1 <u>4</u><br>credita<br>Allocat<br><br>Additio<br><br>Worklo<br>150 h  | formati<br>examir<br>unced l<br>ation o<br>5 minut<br>ble for<br>ion of p<br>nal info<br>ad  | on on whether module ca<br>nation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (ap<br>res per candidate).<br>bonus<br><b>blaces</b>  | an be chosen to earn<br>minutes)<br>inning of the course,   | a bonus)<br>the written exami  | nation may be replaced by an ora   |
| ster, in<br>written<br>If anno<br>examin<br>prox. 1 <u>e</u><br>credita<br>Allocat<br><br>Additio<br><br>Worklo   | formati<br>examir<br>unced l<br>ation o<br>5 minut<br>ble for<br>ion of p<br>nal info<br>ad  | on on whether module ca<br>nation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (ap<br>res per candidate).<br>bonus<br><b>blaces</b>  | an be chosen to earn<br>minutes)<br>inning of the course,   | a bonus)<br>the written exami  | nation may be replaced by an ora   |
| ster, in<br>written<br>If anno<br>examin<br>prox. 1 <u>4</u><br>credita<br>Allocat<br><br>Additio<br><br>Worklo<br>150 h<br>Teachin<br>   | formati<br>examir<br>unced l<br>ation o<br>5 minut<br>ble for<br>ion of p<br>nal info<br>ad  | on on whether module ca<br>nation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (ap<br>es per candidate).<br>bonus<br>blaces<br>ormation  | an be chosen to earn<br>minutes)<br>;inning of the course,<br>pprox. 20 minutes) or   | a bonus)<br>the written exami<br>an oral examinati   | nation may be replaced by an ora<br>on in groups of 2 candidates (ap-                                      |
| ster, in<br>written<br>If anno<br>examin<br>prox. 1 <u>4</u><br>credita<br>Allocat<br><br>Additio<br><br>Worklo<br>150 h<br>Teachin<br>   | formati<br>examir<br>unced l<br>ation o<br>5 minut<br>ble for<br>ion of p<br>nal info<br>ad  | on on whether module ca<br>nation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (ap<br>res per candidate).<br>bonus<br><b>blaces</b>  | an be chosen to earn<br>minutes)<br>;inning of the course,<br>pprox. 20 minutes) or   | a bonus)<br>the written exami<br>an oral examinati   | nation may be replaced by an ora<br>on in groups of 2 candidates (ap-                                      |
| ster, in<br>written<br>If anno<br>examin<br>prox. 1 <u>4</u><br>credita<br>Allocat<br><br>Additio<br><br>Worklo<br>150 h<br>Teachin<br><br>Referre  | formati<br>examir<br>unced l<br>ation o<br>5 minut<br>ble for<br>ion of p<br>mal info<br>ad  | on on whether module ca<br>nation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (ap<br>es per candidate).<br>bonus<br>blaces<br>ormation  | an be chosen to earn<br>minutes)<br>;inning of the course,<br>pprox. 20 minutes) or   | a bonus)<br>the written exami<br>an oral examinati   | nation may be replaced by an ora<br>on in groups of 2 candidates (ap-                                      |
| ster, in<br>written<br>If anno<br>examin<br>prox. 1 <u>4</u><br>credita<br>Allocat<br><br>Additio<br><br>Teachin<br><br>Referre<br>§ 51   N   | formati<br>examir<br>unced l<br>ation o<br>5 minut<br>ble for<br>ion of p<br>ion of p<br>nal info<br>ad<br>ng cyclo<br>r. 4  | on on whether module canation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate).<br>bonus<br>blaces<br>ormation  | an be chosen to earn<br>minutes)<br>;inning of the course,<br>pprox. 20 minutes) or   | a bonus)<br>the written exami<br>an oral examinati   | nation may be replaced by an ora<br>on in groups of 2 candidates (ap-                                      |
| ster, in<br>written<br>If anno<br>examin<br>prox. 1 <u>e</u><br>credita<br>Allocat<br><br>Additio<br><br>Worklo<br>150 h<br>Teachin<br><br>Referre<br>§ 51 l N<br>Module                                  | formati<br>examir<br>unced l<br>ation o<br>minut<br>ble for<br>ion of p<br>mal info<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>at o in<br>r. 4 | on on whether module canation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (approximation each (approximation))<br>bonus<br>bonus<br>blaces<br>ormation<br>e<br>LPO I (examination regunation)<br>mination for the teaching  | an be chosen to earn<br>minutes)<br>;inning of the course,<br>oprox. 20 minutes) or<br>   | a bonus)<br>the written exami<br>an oral examinati   | nation may be replaced by an ora<br>on in groups of 2 candidates (ap-                                      |
| ster, in<br>written<br>If anno<br>examin<br>prox. 1 <u>4</u><br>credita<br>Allocat<br><br>Additio<br><br>Worklo<br>150 h<br>Teachin<br><br>Referre<br>§ 51   N<br>Module<br>First sta<br>First sta        | formati<br>examir<br>unced l<br>ation o<br>minut<br>ble for<br>ion of p<br>mal info<br>ad<br>ad<br>ed to in<br>r. 4<br>e appea<br>ate exa<br>ate exa               | on on whether module canation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (approxed)<br>bonus<br>bonus<br>blaces<br>ormation<br>ormation<br>e<br>LPO I (examination regund<br>mination for the teaching<br>mination for the teaching | an be chosen to earn<br>minutes)<br>;inning of the course,<br>pprox. 20 minutes) or<br>   | a bonus)<br>the written exami<br>an oral examinati<br>degree programme<br>Mathematics (2015<br>Mathematics (2015 | nation may be replaced by an ora<br>on in groups of 2 candidates (ap-                                      |
| ster, in<br>written<br>If anno<br>examin<br>prox. 19<br>credita<br>Allocat<br><br>Additio<br><br>Yorklo<br>150 h<br>Teachin<br><br>§ 51   N<br>Referre<br>§ 51   N<br>First sta<br>First sta<br>First sta | formati<br>examir<br>unced l<br>ation o<br>minut<br>ble for<br>ion of p<br>mal info<br>ad<br>ad<br>ed to in<br>r. 4<br>e appea<br>ate exa<br>ate exa               | on on whether module canation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (approxed)<br>bonus<br>bonus<br>blaces<br>ormation<br>ormation<br>e<br>LPO I (examination regund<br>mination for the teaching<br>mination for the teaching | an be chosen to earn<br>minutes)<br>;inning of the course,<br>pprox. 20 minutes) or<br>   | a bonus)<br>the written exami<br>an oral examinati<br>degree programme<br>Mathematics (2015<br>Mathematics (2015 | nation may be replaced by an ora<br>on in groups of 2 candidates (ap-                                      |
| ster, in<br>written<br>If anno<br>examin<br>prox. 1 <u>4</u><br>credita<br>Allocat<br><br>Morklo<br>150 h<br>Teachin<br><br>§ 51 l N<br>Modula<br>First sta<br>First sta<br>2015))                        | formati<br>examir<br>unced l<br>ation o<br>minut<br>ble for<br>ion of p<br>mal info<br>ad<br>ad<br>ed to in<br>r. 4<br>e appea<br>ate exa<br>ate exa<br>ate exa    | on on whether module canation (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (approx. 60 to 90<br>by the lecturer at the beg<br>of one candidate each (approxed)<br>bonus<br>bonus<br>blaces<br>ormation<br>ormation<br>e<br>LPO I (examination regund<br>mination for the teaching<br>mination for the teaching | an be chosen to earn<br>minutes)<br>cinning of the course,<br>oprox. 20 minutes) or<br>lations for teaching-co<br>g degree Realschule A<br>g degree Mittelschule<br>g degree Mittelschule | a bonus)<br>the written exami<br>an oral examinati<br>degree programme<br>Mathematics (2015<br>Mathematics (2015 | nation may be replaced by an ora<br>on in groups of 2 candidates (ap-                                      |

| Module                         |                                 |   |   |  | Abbreviation  |
|--------------------------------|---------------------------------|---|---|--|---|
|                                |                                 | lathematics - Stochastics   | s and Algebra (Germa                            | an Mittelschule/Re-                          | 10-M-DGMR2-152-m01  |
| alschu                         |                                 |   |   |  |   |
| Module                         |                                 |   |   | Module offered by                            |   |
|                                |                                 | es Mathematik (Mathema  |   | Institute of Mathem                          | atics   |
| ECTS                           |                                 | od of grading   | Only after succ. com                            | pl. of module(s)                             |   |
| 7                              |                                 | rical grade   |   |  |   |
| Duratio                        |                                 | Module level  | Other prerequisites                             |  |   |
| 2 seme                         |                                 | undergraduate   |   |  |   |
| Conten                         |                                 |   |   |  |   |
| (goals o                       | of teacl                        |   | tive statistics, probab                         |  | s, equations) and stochastics<br>atorics, basics in inferential stati                               |
| Intende                        | ed lear                         | ning outcomes   |   |  |   |
| stics, a<br>aspects<br>ning ur | nd is a<br>s of pla<br>id can a | ble to take into account t<br>nning and analysing teac<br>assess them.              | he students' perception<br>thing of mathematics | ion of mathematical<br>, masters different s | niques in algebra and stocha-<br>topics. He/She knows important<br>trategies for teaching and lear- |
|                                |                                 | , number of weekly conta  | ict hours, language —                           | - if other than Germa                        | n)  |
| V (2) +                        | Ü (1) +                         | V (2) + Ü (2)   |   |  |   |
|                                |                                 | <b>sessment</b> (type, scope, la<br>ion on whether module ca                        |   |  | tion offered — if not every seme-   |
| b) oral                        | examir                          | nation of one candidate e<br>nation in groups (groups o<br>mination (60 to 120 minu | of 2, approx. 15 minut                          |  | ·   |
| Allocat                        | ion of p                        | olaces  |   |  |   |
|                                |                                 |   |   |  |   |
| Additio                        | nal inf                         | ormation  |   |  |   |
|                                |                                 |   |   |  |   |
| Worklo                         | ad                              |   |   |  |   |
| 210 h                          |                                 |   |   |  |   |
| Teachi                         | ng cycl                         | e   |   |  |   |
|                                |                                 |   |   |  |   |
| Referre                        | d to in                         | LPOI (examination regu  | lations for teaching-o                          | degree programmes)                           |   |
| § 51   N                       |                                 |   | 0   |  |   |
| Module                         |                                 | ars in  |   |  |   |
|                                |                                 | mination for the teaching   | g degree Realschule N                           | Aathematics (2015)                           |   |
|                                |                                 | mination for the teaching   | -   | -  |   |
|                                | ate exa                         | mination for the teaching   | g degree Mittelschule                           | Mathematics (2020                            | (Prüfungsordnungsversion  |
|                                |                                 |   |   |  |   |
| 2015))                         | ~~ ~~ ~                         | gram Mathematics (2023)   | <b>\</b>  |  |   |

LA Mittelschulen Mathematics (2015)

| Module            | e title        |   |                         |                      | Abbreviation  |
|-------------------|----------------|---|-------------------------|----------------------|---|
|                   |                | lementary School Mathe                              | matics for Teachers a   | t German Mittel-     | 10-M-DGMS-152-m01   |
|                   |                | ecial Education                                     |                         |                      |   |
|                   | e coord        |   |                         | Module offered by    |   |
|                   | 1              | es Mathematik (Mathem                               |                         | Institute of Mathen  | natics  |
| ECTS              |                | od of grading                                       | Only after succ. com    | pl. of module(s)     |   |
| 2                 | (not) s        | successfully completed                              |                         |                      |   |
| Duratio           |                | Module level  | Other prerequisites     |                      |   |
| ı seme            | ster           | undergraduate                                       |                         |                      |   |
| Conten            | ts             |   |                         |                      |   |
| Discus            | sion of        | selected methods for tea                            | aching mathematics in   | n Mittelschule.      |   |
| intende           | ed lear        | ning outcomes                                       |                         |                      |   |
| their re          | spectiv        |   |                         |                      | erman Mittelschule, can assess<br>appropiate method depending o |
| Course            | <b>s</b> (type | , number of weekly conta                            | act hours, language —   | if other than Germa  | an)   |
| S (2)             |                |   |                         |                      |   |
|                   |                |   |                         |                      | ation offered — if not every seme                               |
| ster, in          | formati        | on on whether module c                              | an be chosen to earn    | a bonus)             |   |
|                   |                | x. 45 minutes) or                                   |                         |                      |   |
|                   |                | (5 to 10 pages) or<br>to 15 pages)                  |                         |                      |   |
|                   |                | ffered: Every two years, v                          | winter semester         |                      |   |
|                   | ion of J       |   |                         |                      |   |
| Allocat           |                |   |                         |                      |   |
| Aditio            | nal inf        | ormation  |                         |                      |   |
| Auuitio           | nat iii        |   |                         |                      |   |
| Worklo            |                |   |                         |                      |   |
|                   | au             |   |                         |                      |   |
| 60 h              |                |   |                         |                      |   |
| Teachiı           | ng cycl        | e   |                         |                      |   |
|                   |                |   |                         |                      |   |
| Referre           | d to in        | LPOI (examination regu                              | ulations for teaching-c | legree programmes)   |   |
| § 22     <br>§ 22 |                |   |                         |                      |   |
| Module            | e appea        | ars in  |                         |                      |   |
|                   |                | mination for the teaching                           |                         |                      |   |
| (2015)            |                |   |                         |                      | lathematics (Middle School)                                     |
|                   |                | mination for the teaching                           |                         |                      | -   |
|                   |                |   |                         |                      | matics (Middle School) (2015)                                   |
| 2015))            |                |   |                         |                      | ) (Prüfungsordnungsversion                                      |
| (Prüfun           | igsordr        | ungsversion 2015))                                  |                         |                      | matics (Middle School) (2020                                    |
|                   |                | mination for the teaching<br>gsordnungsversion 2015 | , ,                     | gogik Didactics in N | lathematics (Middle School)                                     |
|                   |                | 0 0 9   | 0)                      |                      |   |

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| Module   | title               |   |                        |                      | Abbreviation   |
|--|---------------------|---|------------------------|----------------------|--|
| Methodology of Teaching in Mathematics 1 (German Mitte |                     |   |                        | schule)              | 10-M-DMMS1-152-m01   |
| Module   | e coord             | inator  |                        | Module offered by    |  |
| Dean o   | f Studie            | es Mathematik (Mathema  | atics)                 | Institute of Mathen  | natics   |
| ECTS   |                     | od of grading   | Only after succ. com   | pl. of module(s)     |  |
| 3  | (not) s             | successfully completed  |                        |                      |  |
| Duratio  | n                   | Module level  | Other prerequisites    |                      |  |
| 1 seme   | ster                | undergraduate   |                        |                      |  |
| Conten   | ts                  |   |                        |                      |  |
| Discuss  | sion of             | selected methods for tea  | ching mathematics in   | n Mittelschule.      |  |
| Intende  | ed learn            | ning outcomes   |                        |                      |  |
| their re<br>the situ                                   | spectiv<br>lation a | e advantages and disade<br>and the subject.   | vantages, and can se   | lect and employ an   | erman Mittelschule, can assess<br>appropiate method depending on |
|  | <b>s</b> (type,     | , number of weekly conta  | ct nours, language —   | If other than Germa  | an)  |
| S (2)  |                     |   |                        |                      |  |
|  |                     | s <b>essment</b> (type, scope, la<br>on on whether module ca                          |                        |                      | ation offered — if not every seme-                               |
| b) term<br>c) proje                                    | paper<br>ect (10 t  | k. 45 minutes) or<br>(5 to 10 pages) or<br>10 15 pages)<br>ffered: Every two years, v | vinter semester        |                      |  |
| Allocat  | ion of p            | olaces  |                        |                      |  |
|  |                     |   |                        |                      |  |
| Additio  | nal inf             | ormation  |                        |                      |  |
|  |                     |   |                        |                      |  |
| Worklo   | ad                  |   |                        |                      |  |
| 90 h   |                     |   |                        |                      |  |
| Teachi   | ng cycl             | e   |                        |                      |  |
|  |                     |   |                        |                      |  |
| Referre  | d to in             | LPOI (examination regu  | lations for teaching-o | legree programmes    | )  |
| § 22   |                     |   |                        |                      |  |
| Module   |                     | irs in  |                        |                      |  |
| First sta  |                     |   | g degree Sonderpäda    | gogik Didactics in N | Aathematics (Middle School)                                      |
| (2015)<br>First sta                                    | ate exa             | mination for the teaching   | degree Mittelschule    | Mathematics (2015    | )  |
| First sta  | ate exa             | mination for the teaching   | g degree Mittelschule  | Didactics in Mather  | ,<br>matics (Middle School) (2015)<br>o (Prüfungsordnungsversion |
| First sta<br>(Prüfun                                   | gsordn              | ungsversion 2015))  |                        |                      | matics (Middle School) (2020                                     |
| (2020 (  | Prüfun              | mination for the teaching<br>gsordnungsversion 2015)<br>gram Mathematics (2023)       | ))                     | gogik Didactics in N | lathematics (Middle School)                                      |

| Module                        | title                        | <u>.</u>   |                        |                       | Abbreviation   |
|-------------------------------|------------------------------|--|------------------------|-----------------------|--|
| Method                        | lology                       | of Teaching in Mathema   | schule)                | 10-M-DMMS2-152-m01    |  |
| Module coordinator            |                              |  |                        | Module offered by     |  |
| Dean o                        | f Studie                     | es Mathematik (Mathema   | atics)                 | Institute of Mathen   | natics   |
| ECTS                          |                              | od of grading  | Only after succ. com   | pl. of module(s)      |  |
| 3                             | · · · · · ·                  | successfully completed   |                        |                       |  |
| Duratio                       |                              | Module level   | Other prerequisites    |                       |  |
| 1 seme                        |                              | undergraduate  |                        |                       |  |
| Conten                        |                              |  |                        |                       |  |
| Discuss                       | sion of                      | selected methods for tea   | ching mathematics in   | n Mittelschule.       |  |
| Intende                       | ed learn                     | ning outcomes  |                        |                       |  |
| their re                      | spectiv                      |  |                        |                       | erman Mittelschule, can assess<br>appropiate method depending on |
| Course                        | <b>s</b> (type,              | number of weekly conta   | ct hours, language —   | if other than Germa   | an)  |
| S (2)                         |                              |  |                        |                       |  |
|                               |                              | essment (type, scope, la<br>on on whether module ca                                  |                        |                       | ation offered — if not every seme-                               |
| b) term<br>c) proje<br>Assess | paper<br>ect (10 t<br>ment o | x. 45 minutes) or<br>(5 to 10 pages) or<br>o 15 pages)<br>ffered: Every two years, s | ummer semester         |                       |  |
| Allocat                       |                              | naces  |                        |                       |  |
|                               |                              |  |                        |                       |  |
| Additio                       | nal Info                     | ormation   |                        |                       |  |
|                               |                              |  |                        |                       |  |
| Worklo                        | ad                           |  |                        |                       |  |
| 90 h                          |                              |  |                        |                       |  |
| Teachi                        | ng cycl                      | 9  |                        |                       |  |
|                               |                              |  |                        |                       |  |
| Referre                       | d to in                      | LPOI (examination regu   | lations for teaching-o | legree programmes)    | )  |
| § 22                          | Vr. 1 h)                     |  |                        |                       |  |
| Module                        |                              |  |                        |                       |  |
| First sta<br>(2015)           | ate exa                      | mination for the teaching  | g degree Sonderpäda;   | gogik Didactics in M  | lathematics (Middle School)                                      |
| First sta                     | ate exa                      | -  | g degree Mittelschule  | Didactics in Mather   | )<br>matics (Middle School) (2015)<br>o (Prüfungsordnungsversion |
| First sta<br>(Prüfun          | gsordn                       | ungsversion 2015))   |                        |                       | matics (Middle School) (2020                                     |
| (2020 (                       | Prüfun                       | gsordnungsversion 2015)<br>gram Mathematics (2023)                                   | ))                     | שטענונא אומכנונא וח M | lathematics (Middle School)                                      |

| Module   | title  |                            |                      | Abbreviation          |             |
|--|--|----------------------------|----------------------|-----------------------|-------------|
| E-Learn  | ing and Blended Learning ir                                    | Mathematical Teaching      | (virtual Course)     | 10-M-DVHB-152-m0      | 1           |
|  |  |                            |                      |                       |             |
|  | coordinator  |                            | Module offered by    |                       |             |
| ï  | Studies Mathematik (Mathe                                      | I                          | Institute of Mathem  | atics                 |             |
|  | Method of grading  | Only after succ. com       | pl. of module(s)     |                       |             |
| 3  | (not) successfully complete                                    |                            |                      |                       |             |
| Duratio  |  | Other prerequisites        |                      |                       |             |
| 1 semes  | ster undergraduate   |                            |                      |                       |             |
| Content  | ts   |                            |                      |                       |             |
|  | rse offered by Virtuelle Hocl<br>ues in e-learning and blend   |                            |                      | acquainted with and   | reflects on |
| Intende  | d learning outcomes  |                            |                      |                       |             |
|  | dent is acquainted with bas<br>their potentials and limitation |                            | and blended learnir  | ng in teaching methe  | matics, as  |
| Courses  | s (type, number of weekly co                                   | ntact hours, language —    | if other than Germa  | n)                    |             |
| Ü (2)  |  |                            |                      |                       |             |
| • •  | type: eLearning, mostly Virtu                                  | uelle Hochschule Bayern    | (vhb)                |                       |             |
| Method   | l of assessment (type, scope<br>formation on whether modul     | e, language — if other tha | in German, examina   | tion offered — if not | every seme- |
|  | (web-based, 15 to 20 hours)                                    |                            |                      |                       |             |
| Assess   | ment offered: Once a year, w                                   | inter semester             |                      |                       |             |
| Allocati   | ion of places  |                            |                      |                       |             |
|  |  |                            |                      |                       |             |
| Additio  | nal information  |                            |                      |                       |             |
|  |  |                            |                      |                       |             |
| Workloa  | ad   |                            |                      |                       |             |
| 90 h   |  |                            |                      |                       |             |
| Teachin  | ig cycle   |                            |                      |                       |             |
|  |  |                            |                      |                       |             |
| Referre  | d to in LPO I (examination r                                   | egulations for teaching-d  | egree programmes)    |                       |             |
| § 22    N<br>§ 22    N<br>§ 22    N<br>§ 22    N | Vr. 2 f)   |                            |                      |                       |             |
|  |  |                            |                      |                       |             |
|  | appears in   | ing dogroe Cruce de about- | Mathomatics (as      | )                     |             |
|  | te examination for the teach<br>te examination for the teach   |                            |                      |                       | (2015)      |
|  | ite examination for the teach                                  |                            |                      | natics (Finnary Sch   | 101) (2015) |
|  | ite examination for the teach                                  |                            |                      |                       |             |
|  | ate examination for the teach                                  |                            | -                    | athematics (Primary   | School)     |
| -  | te examination for the teach                                   | ning degree Sonderpädag    | gogik Didactics in M | athematics (Middle    | School)     |
|  | te examination for the teach                                   |                            |                      |                       |             |
|  | te examination for the teach                                   |                            |                      | natics (Middle Schoo  | ol) (2015)  |
|  | te examination for the teach                                   |                            | -                    |                       |             |
|  | te examination for the teach                                   | ning degree Mittelschule   | Mathematics (2020    | (Prüfungsordnungs     | version     |
| 2015))   |  |                            |                      |                       |             |

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

| Module             | e title             |   |   |                       | Abbreviation  |
|--------------------|---------------------|---|---|-----------------------|---|
| Advanc             | ed Did              | actics of Mathematics 1 (   | (German Mittelschule                          | e)                    | 10-M-DVMS1-152-m01  |
| <b>AA</b> - J. J.  |                     | •   |   | Mandala afferred has  |   |
| Module             |                     |   |   | Module offered by     | ·   |
|                    |                     | es Mathematik (Mathema  | <u>í í í í í í í í í í í í í í í í í í í </u> | Institute of Mathen   | natics  |
| ECTS               |                     | od of grading<br>successfully completed                                       | Only after succ. con                          | npl. of module(s)     |   |
| 2                  | <u> </u>            | , i   |   |                       |   |
| Duratio            |                     | Module level<br>undergraduate   | Other prerequisites                           |                       |   |
|                    |                     | undergraduate   |   |                       |   |
| Conten             |                     |   |   |                       |   |
| lar matl           | hemati              |   | analyses, contempo                            |                       | nt different aspects, in particu-<br>mathematics didactics as well as |
|                    |                     | ning outcomes   |   |                       |   |
|                    |                     |   | opics and issues on t                         | teaching mathemati    | cs in German Mittelschule, consi-                                     |
|                    |                     | -specific, didactical and   |   |                       |   |
| Course             | s (type             | , number of weekly conta  | ict hours, language –                         | - if other than Germa | an)   |
| S (2)              |                     | · · · ·   | · · · · · ·                                   |                       |   |
|                    | d of ass            | essment (type, scope, la  | nguage — if other tha                         | an German, examina    | ation offered — if not every seme-                                    |
|                    |                     | on on whether module ca   |   |                       | ·····,···,  |
| c) proje<br>Assess | ect (10 t<br>ment o | (5 to 10 pages) or<br>to 15 pages)<br>ffered: Every two years, v              | vinter semester                               |                       |   |
| Allocat            |                     | Jaces   |   |                       |   |
|                    |                     |   |   |                       |   |
| Additio            | nal inf             | ormation  |   |                       |   |
|                    |                     |   |   |                       |   |
| Worklo             | ad                  |   |   |                       |   |
| 60 h               |                     |   |   |                       |   |
| Teachir            | ıg cycl             | e   | <u>.</u>                                      |                       |   |
|                    |                     |   |   |                       |   |
| Referre            | d to in             | LPOI (examination regu  | lations for teaching-o                        | degree programmes)    | )   |
| § 22               | Nr. 1 h)            |   |   |                       |   |
| Module             | e appea             | ars in  |   |                       |   |
| First sta          | ate exa             | mination for the teaching   | g degree Sonderpäda                           | gogik Didactics in M  | lathematics (Middle School)   |
| (2015)             |                     |   |   |                       |   |
|                    |                     | mination for the teaching   |   |                       | -   |
|                    |                     | -   | -   |                       | matics (Middle School) (2015)<br>o (Prüfungsordnungsversion           |
| First sta          |                     | mination for the teaching<br>ungsversion 2015))                               | g degree Mittelschule                         | Didactics in Mather   | matics (Middle School) (2020  |
| (2020 (            | Prüfun              | mination for the teaching<br>gsordnungsversion 2015<br>gram Mathematics (2023 | ))  | gogik Didactics in M  | lathematics (Middle School)   |

| Module  | title                         |   |  |  | Abbreviation  |
|---|-------------------------------|---|--|--|---|
|   |                               | actics of Mathematics 2   | (German Mittelschule                           | e)                                       | 10-M-DVMS2-152-m01  |
|   |                               | •   |  |  |   |
| Module  |                               |   |  | Module offered by                        |   |
|   |                               | es Mathematik (Mathema  | , <u>, , , , , , , , , , , , , , , , , , </u>  | Institute of Mathem                      | natics  |
| <b>ECTS</b>                                   |                               | od of grading<br>successfully completed                                     | Only after succ. com                           | ipl. of module(s)                        |   |
| 2<br>Duratio                                  |                               | Module level  | Other prerequisites                            |  |   |
| 1 seme  |                               | undergraduate   |  |  |   |
| Conten  |                               |   |  |  |   |
| Discuss<br>lar mat                            | sion of<br>hemati             |   | analyses, contempo                             |  | nt different aspects, in particu-<br>mathematics didactics as well as |
| Intende                                       | ed lear                       | ning outcomes   |  |  |   |
|   |                               | able to discuss central t<br>t-specific, didactical and                     |  | eaching mathemation                      | cs in German Mittelschule, consi-                                     |
| Course  | <b>s</b> (type                | , number of weekly conta  | ict hours, language —                          | if other than Germa                      | an)   |
| S (2)   | -                             |   |  |  |   |
|   |                               | sessment (type, scope, la<br>ion on whether module ca                       |  |  | ation offered — if not every seme-                                    |
|   | ment o                        | to 15 pages)<br>ffered: Every two years, s<br><b>blaces</b>                 | ummer semester                                 |  |   |
| Additio                                       | nal inf                       | ormation  |  |  |   |
| Additio                                       | inat init                     |   |  |  |   |
| Worklo  | ad                            |   |  |  |   |
| 60 h  |                               |   |  |  |   |
| Teachi  | ng cycl                       | e   |  |  |   |
|   | .5 .,                         | •   |  |  |   |
| Referre                                       | d to in                       | LPOI (examination regu  | lations for teaching-o                         | legree programmes)                       | )   |
| § 22  |                               |   |  |  |   |
| Module  |                               | ars in  |  |  |   |
|   |                               |   | g degree Sonderpäda                            | gogik Didactics in M                     | athematics (Middle School)  |
| First sta<br>First sta<br>First sta<br>2015)) | ate exa<br>ate exa            | mination for the teaching   | g degree Mittelschule<br>g degree Mittelschule | Didactics in Mather<br>Mathematics (2020 | natics (Middle School) (2015)<br>) (Prüfungsordnungsversion           |
| (Prüfun<br>First sta<br>(2020 (               | igsordn<br>ate exa<br>(Prüfun | nungsversion 2015))<br>mination for the teaching<br>gsordnungsversion 2015) | g degree Sonderpäda<br>))                      |  | natics (Middle School) (2020<br>Iathematics (Middle School)           |
| exchan  | ge prog                       | gram Mathematics (2023  | )  |  |   |

| Module title Abbreviation   Elementary Geometry 10-M-ELGE-152-m01   Module coordinator Module offered by   Dean of Studies Mathematik (Mathematics) Institute of Mathematics   |           |
|--|-----------|
| Module coordinator Module offered by   | 1         |
|  |           |
|  |           |
| ECTS Method of grading Only after succ. compl. of module(s)  |           |
| 6 numerical grade  |           |
| Duration Module level Other prerequisites  |           |
| 1 semester undergraduate   |           |
| Contents   |           |
| Fundamental topics in elementary and Euclidean geometry: axiomatic foundations of Euclidean geomet<br>gruence geometry, imaging geometry, similarity geometry, basics in analytic geometry in R^3, introduct<br>sic mathematical techniques.   |           |
| Intended learning outcomes   |           |
| The student knows the basic ways of thinking and working in mathematics, as well as the fundamental matical proof methods. He/She is able to apply these skills to basic problems in Euclidean geometry.   | mathe-    |
| <b>Courses</b> (type, number of weekly contact hours, language — if other than German)   |           |
| V (4) + Ü (2)  |           |
| <b>Method of assessment</b> (type, scope, language — if other than German, examination offered — if not ever<br>ster, information on whether module can be chosen to earn a bonus)   | ery seme- |
| written examination (approx. 60 to 90 minutes)<br>If announced by the lecturer at the beginning of the course, the written examination may be replaced by<br>oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 cand<br>(approx. 15 minutes per candidate) and written exercises (approx. 12 exercise sheets, approx. 3 exercise<br>sheet). | didates   |
| Allocation of places   |           |
|  |           |
| Additional information   |           |
|  |           |
| Workload   |           |
| 180 h  |           |
| Teaching cycle   |           |
|  |           |
| <b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)   |           |
| § 51   Nr. 3   |           |
| Module appears in  |           |
| First state examination for the teaching degree Grundschule Mathematics (2015)   |           |
| First state examination for the teaching degree Realschule Mathematics (2015)  |           |
| First state examination for the teaching degree Mittelschule Mathematics (2015)<br>First state examination for the teaching degree Mittelschule Mathematics (2020 (Prüfungsordnungsvers<br>2015))  | ion       |
| exchange program Mathematics (2023)  |           |

| Module    |                |   |                        |                       | Abbreviation  |
|-----------|----------------|---|------------------------|-----------------------|---|
| Elemen    | itary S        | tochastics  |                        |                       | 10-M-ELST-152-m01   |
| Module    | e coord        | linator   |                        | Module offered by     |   |
| Dean o    | f Studi        | es Mathematik (Mathema                                  | atics)                 | Institute of Mathem   | natics  |
| ECTS      | 1              | od of grading   | Only after succ. con   | pl. of module(s)      |   |
| 5         | nume           | rical grade   |                        |                       |   |
| Duratio   | on             | Module level  | Other prerequisites    |                       |   |
| 1 seme    | ster           | undergraduate   |                        |                       |   |
| Conten    | ts             |   |                        |                       |   |
|           |                | topics in elementary stoc<br>tochastic modelling, intro |                        |                       | / theory, combinatorics, inferenti-<br>es                         |
|           |                | ning outcomes   |                        | <u></u>               |   |
|           |                |   | inking and working i   | n mathematics, as w   | vell as the fundamental mathe-                                    |
|           |                | methods. He/She is able                                 |                        |                       |   |
| Course    | <b>s</b> (type | , number of weekly conta                                | ct hours, language –   | - if other than Germa | n)  |
| V (3) +   | Ü (1)          |   |                        |                       |   |
| Method    | d of as        | <b>sessment</b> (type, scope, la                        | nguage — if other tha  | an German, examina    | tion offered — if not every seme-                                 |
|           |                | ion on whether module ca                                |                        |                       |   |
|           |                | nation (approx. 60 to 90                                |                        |                       |   |
|           |                |   |                        |                       | tion may be replaced by an  |
|           |                |   |                        |                       | ation in groups of 2 candidates<br>neets, approx. 3 exercises per |
| sheet).   | x. 15 III      | inutes per candidate) and                               | a witten exercises (a  | pprox. 12 exercise si | leets, applox. 3 exercises per                                    |
| Allocat   | ion of         | places  |                        |                       |   |
|           |                |   |                        |                       |   |
| Additio   | onal inf       | ormation  |                        |                       |   |
|           | _              |   |                        |                       |   |
| Worklo    | ad             |   |                        |                       |   |
| 150 h     |                |   |                        |                       |   |
| Teachi    | ng cycl        | e   |                        |                       |   |
|           |                |   |                        |                       |   |
| Referre   | ed to in       | LPOI (examination regu                                  | lations for teaching-o | degree programmes)    |   |
| § 51   N  | r. 3           |   |                        |                       |   |
| Module    | e appea        | ars in  |                        |                       |   |
| First sta | ate exa        | mination for the teaching                               | g degree Grundschule   | Mathematics (2015     | )   |
|           |                | mination for the teaching                               | -                      | -                     |   |
|           |                | mination for the teaching                               |                        |                       |   |
|           | ate exa        | mination for the teaching                               | g degree Mittelschule  | Mathematics (2020     | (Prüfungsordnungsversion  |
| 2015))    |                |   |                        |                       |   |

exchange program Mathematics (2023)

| Module  | title                         |  |   |  | Abbreviation  |
|---|-------------------------------|--|---|--|---|
| Elemen  | tary Nı                       | Imber Theory   |   |  | 10-M-ELZT-152-m01   |
| Module  | coord                         | inator   |   | Module offered by                        |   |
| Dean of                                       |                               | es Mathematik (Mathema                                       |   | Institute of Mathem                      | atics   |
| ECTS  |                               | od of grading  | Only after succ. com  | pl. of module(s)                         |   |
| 6   |                               | rical grade  |   |  |   |
| Duratio                                       |                               | Module level   | Other prerequisites   |  |   |
| 1 semes                                       |                               | undergraduate  |   |  |   |
| Conten  |                               |  |   |  |   |
|   |                               | o fundamental technique<br>ics in elementary number          |   |  | er as a basic theme in mathema-   |
|   |                               | ning outcomes  | theory and the struc  |  | ystem.  |
|   |                               |  | inking and working i  | n mathematics as w                       | ell as the fundamental mathe-   |
| matical                                       | proof                         |  |   |  | the fields of number theory and   |
| Courses                                       | <b>s</b> (type,               | , number of weekly conta                                     | ct hours, language —  | if other than Germa                      | n)  |
| V (4) + l                                     | Ü (2)                         |  |   |  |   |
|   |                               | s <b>essment</b> (type, scope, la<br>on on whether module ca |   |  | tion offered — if not every seme-   |
| If annou<br>oral exa                          | unced l<br>aminati            | on of one candidate each                                     | inning of the course,<br>n (approx. 20 minutes                    | s) or an oral examina                    | tion may be replaced by an<br>ation in groups of 2 candidates<br>aeets, approx. 3 exercises per |
| Allocati                                      | ion of p                      | olaces   |   |  |   |
|   |                               |  |   |  |   |
| Additio                                       | nal info                      | ormation   |   |  |   |
|   |                               |  |   |  |   |
| Worklo  | ad                            |  |   |  |   |
| 180 h   |                               |  |   |  |   |
| Teachir                                       | ng cycl                       | e  |   |  |   |
|   |                               |  |   |  |   |
| Referre                                       | d to in                       | LPOI (examination regu                                       | lations for teaching-d  | legree programmes)                       |   |
| § 51   N                                      | r. 3                          |  |   |  |   |
| Module  | appea                         | irs in   |   |  |   |
| First sta<br>First sta<br>First sta<br>2015)) | ate exa<br>ate exa<br>ate exa |  | degree Realschule M<br>degree Mittelschule<br>degree Mittelschule | Nathematics (2015)<br>Mathematics (2015) |   |
| exchan  | ge prog                       | gram Mathematics (2023)                                      |   |  |   |

| Module                 | title  |                          |                       | Abbreviation           |               |
|------------------------|--|--------------------------|-----------------------|------------------------|---------------|
| Basic No               | otions and Methods of Math                                   | ematical Reasoning       |                       | 10-M-GBM-152-m01       |               |
| Modulo                 | coordinator  |                          | Module offered by     |                        |               |
|                        |  |                          | Institute of Mathem   |                        |               |
|                        | Studies Mathematik (Mathe<br>Method of grading               |                          |                       | latics                 |               |
|                        | (not) successfully completed                                 | Only after succ. con     |                       |                        |               |
| 2<br>Duration          | · · / /  |                          |                       |                        |               |
| 1 semes                |  | Other prerequisites      |                       |                        |               |
|                        |  |                          |                       |                        |               |
| Content                |  |                          |                       |                        | • •           |
|                        | tion to the basic notions an                                 | d proof techniques in m  | athematics: approa    | ch to sets, formal log | fic and maps. |
|                        | d learning outcomes  |                          |                       |                        |               |
|                        | dent gets acquainted with th<br>nelor's degree study progran |                          | ues which are prere   | quisites for the furth | er courses in |
| Courses                | (type, number of weekly co                                   | ntact hours, language –  | - if other than Germa | ın)                    |               |
| V (1) + Ü              | (1)  |                          |                       |                        |               |
|                        | of assessment (type, scope ormation on whether module        |                          |                       | tion offered — if not  | every seme-   |
|                        | (10 to 15 pages)<br>ge of assessment: German a               | nd/or English            |                       |                        |               |
| Allocatio              | on of places   |                          |                       |                        |               |
|                        | •  |                          |                       |                        |               |
| Addition               | nal information  |                          |                       |                        |               |
|                        | nal information on module d                                  | uration: block taught pr | ior to the beginning  | of the lecture period  |               |
| Workloa                |  |                          |                       | or the tecture period  | •             |
| 60 h                   | lu   |                          |                       |                        |               |
|                        |  |                          |                       |                        |               |
| Teaching               | g cycle  |                          |                       |                        |               |
| Referred               | to in LPO I (examination re                                  | gulations for teaching-  | legree programmes)    |                        |               |
| § 22    N<br>§ 22    N | r. 1 h)  | 3                        | <u></u>               |                        |               |
|                        | appears in   |                          |                       |                        |               |
|                        | r's degree (1 major) Mathem                                  | atics (2015)             |                       |                        |               |
|                        | r's degree (1 major) Econom                                  |                          |                       |                        |               |
|                        | r's degree (1 major) Mathem                                  |                          |                       |                        |               |
| Bachelo                | r's degree (1 major) Comput                                  | ational Mathematics (20  | 015)                  |                        |               |
| First stat             | te examination for the teach                                 | ing degree Grundschule   | Mathematics (2015     | )                      |               |
|                        | te examination for the teach                                 |                          |                       |                        |               |
|                        | te examination for the teach                                 |                          | Mathematics (2015)    |                        |               |
|                        | r's degree (1 major) Mathem                                  |                          |                       |                        |               |
|                        | r's degree (1 major) Econom                                  |                          | Mathomatics (ac       | Drüfungeardaus         | vorcion       |
| FIRST STAT<br>2015))   | te examination for the teach                                 |                          | mathematics (2020     | (Fininingsorannings)   | 151011        |
| -                      | r's degree (1 major) Mathem                                  | atical Physics (2020)    |                       |                        |               |
|                        | r's degree (1 major) Econom                                  |                          |                       |                        |               |
|                        | r's degree (1 major) Econom                                  |                          |                       |                        |               |
|                        |  | atical Data Science (20  | 22)                   |                        |               |
| Bachelo                | i s degree (i major) matrien                                 |                          | ,                     |                        |               |
|                        | ge program Mathematics (20                                   | 23)                      | ,                     |                        |               |

#### Julius-Maximilians-UNIVERSITÄT WÜRZBURG

Bachelor's degree (1 major) Mathematics (2023) Bachelor's degree (1 major) Economathematics (2023) Bachelor's degree (1 major) Mathematical Physics (2024) Bachelor's degree (1 major) Economathematics (2024) Bachelor's degree (1 major) Economathematics (2025)

| Module                                     | e title  |   |  |   | Abbreviation  |
|--|--|---|--|---|---|
| Basic A                                    |  |   |  |   | 10-M-GRAN-152-m01   |
| Module                                     | e coord  | inator  |  | Module offered by                               |   |
| Dean o                                     | f Studi  | es Mathematik (Mathema  | ntics)   | Institute of Mathem                             | atics   |
| ECTS                                       |  | od of grading   | Only after succ. com                                       | pl. of module(s)                                |   |
| 12   | nume   | rical grade   |  |   |   |
| Duratio                                    | n  | Module level  | Other prerequisites  |   |   |
| 2 seme                                     | ster   | undergraduate   |  |   |   |
| Conten                                     | ts   |   |  |   |   |
| mann ii<br>tiability                       | ntegral<br>v, inver                              | ), Taylor approximation a   | nd power series, func<br>heorem, curves in R^              | tions in several vari<br>n, curve integrals, in | ferentiation and integration (Rie-<br>ables, total and partial differen-<br>itegration theorems in higher di- |
| Intende                                    | ed lear  | ning outcomes   |  |   |   |
| compre<br>form. H                          | ehend t<br>e/She                                 | he central proof methods  | , can perform easy m                                       | athematical argume                              | eral variables. He/She is able to<br>ents and present them in written<br>f analysis in one and several va-    |
| Course                                     | <b>s</b> (type                                   | , number of weekly conta  | ct hours, language —                                       | if other than Germa                             | n)  |
| V (4) +                                    | Ü (2) +  | V (2) + Ü (2)   |  |   |   |
| ster, inf<br>written<br>If annot<br>examin | formati<br>examin<br>unced<br>ation c<br>5 minut | ion on whether module canation (approx. 60 to 120<br>by the lecturer at the beg<br>of one candidate each (ap<br>tes per candidate). | an be chosen to earn<br>minutes).<br>inning of the course, | a bonus)<br>the written examina                 | tion offered — if not every seme-<br>tion may be replaced by an oral<br>in groups of 2 candidates (ap-        |
| Allocat                                    | ion of <sub>l</sub>                              | olaces  |  |   |   |
|  |  |   |  |   |   |
| Additio                                    | nal inf  | ormation  |  |   |   |
|  |  |   |  |   |   |
| Worklo                                     | ad   |   |  |   |   |
| 360 h                                      |  |   |  |   |   |
| Teachir                                    | ng cycl  | ρ   |  |   |   |
|  |  |   |  |   |   |
| Poforro                                    | d to in  | LPOI (examination regu  | lations for teaching                                       | legree programmes)                              |   |
|  |  | LI UT (examination regu   |  |   |   |
| § 51   N                                   |  | ··· •   |  |   |   |
| Module                                     |  |   | dogroo Crundashulo   | Mathamatics (2017)                              | <u></u>   |
|  |  | mination for the teaching<br>mination for the teaching  | -  |   |   |
|  |  | mination for the teaching   | -  |   |   |
|  |  | -   | -  | -   | (Prüfungsordnungsversion  |
| exchan                                     | ge pro   | gram Mathematics (2023)   | )  |   |   |

| Module  | title                         |   |   |  | Abbreviation   |
|---|-------------------------------|---|---|--|--|
| Basic D                                       | ifferen                       | tial Equations  |   |  | 10-M-GRDG-152-m01  |
| Module  | coord                         | inator  |   | Module offered by                        |  |
| Dean of                                       | fStudie                       | es Mathematik (Mathema  | tics)   | Institute of Mathem                      | atics  |
| ECTS  |                               | od of grading   | Only after succ. com  | pl. of module(s)                         |  |
| 5   | <u> </u>                      | rical grade   |   |  |  |
| Duratio                                       |                               | Module level  | Other prerequisites   |  |  |
| 1 semes                                       | ster                          | undergraduate   |   |  |  |
| Conten  | ts                            |   |   |  |  |
|   |                               | natural appearances of o<br>Peano), systems of linea  |   |  | and uniqueness theorems (Pi-<br>examples.  |
| Intende                                       | ed learr                      | ning outcomes   |   |  |  |
| prehen  | d the c                       | entral proof methods, car   | n perform easy mathe  | ematical arguments a                     | uations. He/She is able to com-<br>and present them in written form.<br>rential equations to solve them. |
| Courses                                       | <b>s</b> (type,               | number of weekly conta  | ct hours, language —  | if other than Germa                      | n)   |
| V (3) + ĺ                                     | Ü (2)                         |   |   |  |  |
|   |                               | essment (type, scope, la<br>on on whether module ca   |   |  | tion offered — if not every seme-  |
| lf annou<br>examin                            | unced l<br>ation o<br>5 minut | f one candidate each (ap<br>es per candidate).  | inning of the course,   |  | tion may be replaced by an oral<br>in groups of 2 candidates (ap-  |
| Allocati                                      | ion of p                      | olaces  |   |  |  |
|   |                               |   |   |  |  |
| Additio                                       | nal info                      | ormation  |   |  |  |
|   |                               |   |   |  |  |
| Worklo  | ad                            |   |   |  |  |
| 150 h   |                               |   |   |  |  |
| Teachir                                       | ng cycle                      | e   |   |  |  |
|   |                               |   |   |  |  |
| Referre                                       | d to in                       | LPOI (examination regu  | lations for teaching-d  | legree programmes)                       |  |
| § 51   N                                      | r. 1                          |   |   |  |  |
| Module  | appea                         | rs in   |   |  |  |
| First sta<br>First sta<br>First sta<br>2015)) | ate exa<br>ate exa<br>ate exa | mination for the teaching<br>mination for the teaching<br>mination for the teaching<br>mination for the teaching<br>gram Mathematics (2023) | degree Realschule M<br>degree Mittelschule<br>degree Mittelschule | Nathematics (2015)<br>Mathematics (2015) |  |
|   |                               |   |   |  |  |

| Module title  |   |   |  | Abbreviation   |
|---|---|---|--|--|
| Basic Linear A  | nalysis   |   |  | 10-M-GRLA-152-m01  |
| Module coord  | inator  |   | Module offered by                        |  |
| Dean of Studi   | es Mathematik (Mathema  | atics)  | Institute of Mathem                      | atics  |
| 1   | od of grading   | Only after succ. com  | pl. of module(s)                         |  |
| - 1   | rical grade   |   |  |  |
| Duration  | Module level  | Other prerequisites   |  |  |
| 1 semester  | undergraduate   |   |  |  |
|   | ar algebra: groups, rings,<br>naps, examples and appl   |   | ear equations, vecto                     | r spaces, matrices and determi-  |
| Intended lear   | ning outcomes   |   |  |  |
| the central pro   |   | easy mathematical a   | arguments and prese                      | . He/She is able to comprehend<br>ent them in written form. He/She<br>a to solve them. |
| Courses (type   | , number of weekly conta  | ct hours, language —  | if other than Germa                      | n)   |
| V (4) + Ü (2)   |   |   |  |  |
|   | <b>sessment</b> (type, scope, la<br>on on whether module ca   |   |  | tion offered — if not every seme-  |
| If announced examination of                                     | of one candidate each (ap<br>es per candidate).   | inning of the course,   |  | tion may be replaced by an oral<br>in groups of 2 candidates (ap-                      |
| Allocation of   | olaces  |   |  |  |
|   |   |   |  |  |
| Additional inf  | ormation  |   |  |  |
|   |   |   |  |  |
| Workload  |   |   |  |  |
| 270 h   |   |   |  |  |
| Teaching cycl   | e   |   |  |  |
|   |   |   |  |  |
| Referred to in  | LPOI (examination regu  | lations for teaching-c  | legree programmes)                       |  |
| § 51   Nr. 2  |   |   |  |  |
| Module appea  | urs in  |   |  |  |
| First state exa<br>First state exa<br>First state exa<br>2015)) | mination for the teaching<br>mination for the teaching<br>mination for the teaching<br>mination for the teaching<br>gram Mathematics (2023) | g degree Realschule N<br>g degree Mittelschule<br>g degree Mittelschule | Aathematics (2015)<br>Mathematics (2015) |  |

| Modul                                 |  |  |  |  | Abbreviation   |
|---------------------------------------|--|--|--|--|--|
| Thesis                                | in Mat                                     | hematics (German Mittel                                  | lschule)                                       |  | 10-M-HMMS-152-m01  |
| Modul                                 | e coord                                    | inator   |  | Module offered by                        | <u> </u>   |
| Dean c                                | of Studi                                   | es Mathematik (Mathema                                   | atics)   | Institute of Mathen                      | natics   |
| ECTS                                  | Meth                                       | od of grading  | Only after succ. con                           | npl. of module(s)                        |  |
| 10                                    | nume                                       | rical grade  |  |  |  |
| Duratio                               | on   | Module level   | Other prerequisites                            |  |  |
| 2 seme                                | ester                                      | undergraduate  |  |  |  |
| Conter                                | nts  |  |  |  |  |
|                                       |  | y researching and writing<br>supervisor.                 | on a topic in mathen                           | natics or mathemati                      | cs didactics selected in consulta  |
| Intend                                | ed lear                                    | ning outcomes  |  |  |  |
| tained<br>work ir                     | during<br>1 a suita                        | his/her studies in the tea<br>able form, incorporating a | aching degree progra<br>aspects of the didacti | mme. He/She can w<br>ics of mathematics. | pply the skills and methods ob-<br>rite down the result of his/her                                       |
| Course                                | <b>es</b> (type                            | , number of weekly conta                                 | act hours, language –                          | - if other than Germa                    | an)  |
| No cou                                | irses as                                   | signed to module   |  |  |  |
| ster, in<br>Hausa<br>to 300<br>Langua | iformat<br>rbeit (th<br>hours)<br>age of a | ion on whether module c<br>nesis) pursuant to Section    | an be chosen to earn<br>n 29 LPO I (examinati  | a bonus)<br>on regulations for te        | ation offered — if not every seme<br>eaching-degree programmes) (25<br>on 4 LPO I (examination regulati- |
|                                       | tion of                                    |  | -  |  |  |
| Allocu                                |  |  |  |  |  |
| Additia                               |  | ormation   |  |  |  |
| Auditio                               |  |  |  |  |  |
| <br>Worklo                            |  |  | -  |  |  |
|                                       | Jau  |  |  |  |  |
| 300 h                                 |  |  |  |  |  |
| Teachi                                | ng cycl                                    | е  |  |  |  |
|                                       |  |  |  |  |  |
| Referre                               | ed to in                                   | LPO I (examination regu                                  | llations for teaching-o                        | degree programmes)                       |  |
| § 29                                  |  |  |  |  |  |
| Modul                                 | e appea                                    | are in   |  |  |  |
| Mouut                                 |  |  |  |  |  |

|   | e title  |   |  |  | Abbreviation                      |
|---|--|---|--|--|-----------------------------------|
| Reviev  | v Cours  | e Mathematics (German   | Grundschule/Mittelscl  | nule/Realschule)                       | 10-M-M3GMR-152-m01                |
| Modul   | e coord  | linator   | 1  | Nodule offered by                      | <u></u>                           |
| Dean o  | of Studi   | es Mathematik (Mathema  | atics) I   | nstitute of Mathen                     | natics                            |
| ECTS  | Meth   | od of grading   | Only after succ. comp  | l. of module(s)                        |                                   |
| 5   | (not)  | successfully completed  |  |  |                                   |
| Durati  | on   | Module level  | Other prerequisites  |  |                                   |
| 1 seme  | ester  | undergraduate   |  |  |                                   |
| Conter  | nts  |   |  |  |                                   |
|   |  | consolidation of the topic<br>completing exercises and  |  |  | ons, linear algebra and analytic  |
| Intend  | ed lear  | ning outcomes   |  |  |                                   |
|   |  |   |  |  | regulations for teaching degree   |
|   |  | , §51 (2) 1, 2, and is able   |  |  |                                   |
|   | es (type   | , number of weekly conta  | ict nours, language — l  | r other than Germa                     | in)                               |
| Ü (4)   |  |   |  |  |                                   |
|   |  |   |  |  | ition offered — if not every seme |
|   |  | ion on whether module c   | an de chosen lo eann a   | Dollus)                                |                                   |
|   |  | x. 45 minutes) or<br>to 15 pages)   |  |  |                                   |
| Alloca  | tion of  | places  |  |  |                                   |
|   |  |   |  |  |                                   |
| A .] .]***  | 1 * 4  |   |  |  |                                   |
| Additio   | onal Ini   | ormation  |  |  |                                   |
|   |  | ormation  |  |  |                                   |
| <br>Workle  |  | ormation  |  |  |                                   |
| <br>Workle  |  | ormation  |  |  |                                   |
| <br><b>Workle</b><br>150 h  |  |   |  |  |                                   |
| <br><b>Workle</b><br>150 h  | oad  |   |  |  |                                   |
| <br>Workle<br>150 h<br>Teachi<br>   | oad<br>ing cycl  |   | lations for teaching-de  | gree programmes)                       |                                   |
| <br>Workle<br>150 h<br>Teachi<br><br>Referre                                  | oad<br>ing cycl<br>ed to in                                    | e   |  | gree programmes)                       |                                   |
| <br>Worklo<br>150 h<br>Teachi<br><br>Referro<br>§ 51 sp                       | oad<br>ing cycl<br>ed to in                                    | e<br>LPO I (examination regu<br>ranch of science without  |  | gree programmes)                       |                                   |
| <br>Worklo<br>150 h<br>Teachi<br><br>Referro<br>§ 51 sp<br>Modul              | oad<br>ing cycl<br>ed to in<br>becial b<br>e appe              | e<br>LPO I (examination regu<br>ranch of science without  | assignment   |  |                                   |
| <br>Workle<br>150 h<br>Teachi<br><br>& 51 sp<br>Modul<br>First st             | oad<br>ing cycl<br>ed to in<br>becial b<br>e appea<br>tate exa | <b>LPO I</b> (examination regunder and the second | assignment<br>g degree Grundschule I                           | Mathematics (2015                      |                                   |
| <br>Worklo<br>150 h<br>Teachi<br><br>§ 51 sp<br>Modul<br>First st<br>First st | ed to in<br>becial b<br>eate exa<br>tate exa                   | <b>LPO I</b> (examination regunants of science without <b>ars in</b> and for the teaching   | assignment<br>g degree Grundschule I<br>g degree Realschule Ma | Mathematics (2015<br>athematics (2015) | )                                 |

| Module   |  |  |  |  | Abbreviation  |
|--|--|--|--|--|---|
| School   | Mathe  | matics from a Higher Pe  | rspective  |  | 10-M-SCH-152-m01  |
| Module   | e coord  | inator   |  | Module offered by  | <u> </u>  |
|  |  | es Mathematik (Mathem  | atics)   | Institute of Mather  | natics  |
| ECTS   |  | od of grading  | Only after succ. com   |  |   |
| 5  |  | successfully completed   |  |  |   |
| Duratio  | n  | Module level   | Other prerequisites  |  |   |
| 1 seme   | ster   | undergraduate  |  |  |   |
| Conten   | ts   |  |  |  |   |
|  |  | selected topics in schoo<br>implementation at both   |  | . –  | ration into wider theories and                                |
| Intend   | ed lear  | ning outcomes  |  |  |   |
|  | vancec   | I mathematical theories.   |  |  | between school mathematics<br>athematical, didactical and me- |
| Course   | <b>s</b> (type   | , number of weekly conta   | act hours, language —  | - if other than Germa  | an)   |
| V (2) +  | Ü (2)  |  |  |  |   |
|  |  | s <b>essment</b> (type, scope, la<br>ion on whether module c   |  |  | ation offered — if not every seme                             |
| c) proje<br>Langua   | ect wor<br>ige of a  | (10 to 15 pages) or<br>k (15 to 25 hours)<br>ssessment: German and<br>ffered: In the semester in   | /or English  | offered and in the s   | ubsequent semester  |
| c) proje<br>Langua   | ect wor<br>ge of a<br>ment o   | k (15 to 25 hours)<br>ssessment: German and<br>ffered: In the semester in  | /or English<br>n which the course is   | offered and in the s   | ubsequent semester  |
| c) proje<br>Langua<br>Assess<br>Allocat  | ect wor<br>age of a<br>ment o<br>ion of J  | k (15 to 25 hours)<br>ssessment: German and<br>ffered: In the semester in  | /or English<br>h which the course is   | offered and in the s   | ubsequent semester  |
| c) proje<br>Langua<br>Assess<br>Allocat  | ect wor<br>age of a<br>ment o<br>ion of J  | k (15 to 25 hours)<br>ssessment: German and<br>ffered: In the semester in<br>places  | /or English<br>n which the course is   | offered and in the s   | ubsequent semester  |
| c) proje<br>Langua<br>Assess<br>Allocat<br><br>Additio<br>   | ect wor<br>age of a<br>ment o<br>ion of p  | k (15 to 25 hours)<br>ssessment: German and<br>ffered: In the semester in<br>places  | /or English<br>h which the course is   | offered and in the s   | ubsequent semester  |
| c) proje<br>Langua<br>Assess<br>Allocat  | ect wor<br>age of a<br>ment o<br>ion of p  | k (15 to 25 hours)<br>ssessment: German and<br>ffered: In the semester in<br>places  | /or English<br>n which the course is   | offered and in the s   | ubsequent semester  |
| c) proje<br>Langua<br>Assess<br>Allocat<br><br>Additio<br><br>Worklo   | ect wor<br>ge of a<br>ment o<br>ion of p<br>nal inf<br>ad  | k (15 to 25 hours)<br>Issessment: German and<br>Iffered: In the semester in<br>places<br>ormation  | /or English<br>n which the course is   | offered and in the s   | ubsequent semester  |
| c) proje<br>Langua<br>Assess<br>Allocat<br><br>Additio<br><br>Worklo<br>150 h  | ect wor<br>ge of a<br>ment o<br>ion of p<br>nal inf<br>ad  | k (15 to 25 hours)<br>Issessment: German and<br>Iffered: In the semester in<br>places<br>ormation  | /or English<br>n which the course is   | offered and in the s   | ubsequent semester  |
| c) proje<br>Langua<br>Assess<br>Allocat<br><br>Additio<br><br>Worklo<br>150 h<br>Teachin   | ect wor<br>ige of a<br>ment o<br>ion of j<br>onal inf<br>ad  | k (15 to 25 hours)<br>Issessment: German and<br>Iffered: In the semester in<br>places<br>ormation  | n which the course is  |  |   |
| c) proje<br>Langua<br>Assess<br>Allocat<br><br>Additio<br><br>150 h<br>Teachin<br><br>§ 22 II I<br>§ 22 II   | ect wor<br>age of a<br>ment o<br>ion of p<br>onal inf<br>ad<br>ad<br>ad<br>Nr. 1 h)<br>Nr. 2 f)  | k (15 to 25 hours)<br>ssessment: German and<br>ffered: In the semester in<br>places<br>ormation<br>e<br>LPOI (examination regu   | n which the course is  |  |   |
| c) proje<br>Langua<br>Assess<br>Allocat<br><br>Additio<br><br>150 h<br>Teachin<br><br>§ 22 II<br>§ 22 II<br>§ 22 II  | ect wor<br>ige of a<br>ment o<br>ion of j<br>mal inf<br>ad<br>ad<br>ing cycl<br>ed to in<br>Nr. 1 h)<br>Nr. 2 f)<br>Nr. 3 f)   | k (15 to 25 hours)<br>ssessment: German and<br>ffered: In the semester in<br>places<br>ormation<br>e<br>LPO I (examination regu  | n which the course is  |  |   |
| c) proje<br>Langua<br>Assess<br>Allocat<br><br>Additio<br><br>Worklo<br>150 h<br>Teachin<br><br>§ 22 II<br>§ 22 II<br>§ 22 II<br>§ 22 II<br>§ 22 II  | ect wor<br>ge of a<br>ment o<br>ion of j<br>onal inf<br>ad<br>ad<br>ed to in<br>Nr. 1 h)<br>Nr. 2 f)<br>Nr. 3 f)<br>e appea  | k (15 to 25 hours)<br>ssessment: German and<br>ffered: In the semester in<br>places<br>ormation<br>e<br>LPO I (examination regu  | n which the course is  |  |   |
| c) proje<br>Langua<br>Assess<br>Allocat<br><br>Additio<br><br>150 h<br>Teachin<br><br>§ 22 II<br>§ 22 II<br>§ 22 II<br>§ 22 II<br>§ 22 II<br>Bachel  | ect wor<br>age of a<br>ment o<br>ion of j<br>onal inf<br>ad<br>ad<br>ad<br>ad<br>wr. 1 h)<br>Nr. 2 f)<br>Nr. 3 f)<br>e appea<br>or's de  | k (15 to 25 hours)<br>ssessment: German and<br>ffered: In the semester in<br>places<br>ormation<br>e<br>LPO I (examination regu  | n which the course is  |  |   |
| c) proje<br>Langua<br>Assess<br>Allocat<br><br>Additio<br><br>Worklo<br>150 h<br>Teachin<br><br>§ 22 II<br>§ 22 II<br>§ 22 II<br>§ 22 II<br>§ 22 II<br>Bachel<br>Bachel<br>Bachel<br>Bachel  | ect wor<br>ige of a<br>ment o<br>ion of j<br>mal inf<br>ad<br>ad<br>ad<br>ad<br>ad<br>by cycl<br>ad<br>ad<br>by cycl<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>by cycl<br>ad<br>by cycl<br>ad<br>by cycl<br>ad<br>by cycl<br>ad<br>by cycl<br>ad<br>by cycl<br>ad<br>by cycl<br>by cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycl<br>cycy | k (15 to 25 hours)<br>ssessment: German and<br>ffered: In the semester in<br>places<br>ormation<br>e<br>LPO I (examination regu<br>ars in<br>gree (1 major) Mathemat<br>gree (1 major) Computati   | n which the course is<br>allations for teaching-out<br>ics (2015)<br>ical Physics (2015)<br>onal Mathematics (20   | degree programmes  | )   |
| c) proje<br>Langua<br>Assess<br>Allocat<br><br>Additio<br><br>Worklo<br>150 h<br>Teachin<br>§ 22 II<br>§ 22 II<br>§ 22 II<br>§ 22 II<br>§ 22 II<br>§ 22 II<br>Bachel<br>Bachel<br>Bachel<br>First sta  | ect wor<br>ige of a<br>ment o<br>ion of j<br>onal inf<br>ad<br>ad<br>ed to in<br>Nr. 1 h)<br>Nr. 2 f)<br>Nr. 3 f)<br>e appea<br>or's de<br>or's de<br>or's de<br>ate exa   | k (15 to 25 hours)<br>ssessment: German and<br>ffered: In the semester in<br>places<br>ormation<br>e<br>LPO I (examination regu<br>ars in<br>gree (1 major) Mathemat<br>gree (1 major) Computati<br>mination for the teaching  | n which the course is<br>ulations for teaching-out<br>ics (2015)<br>ical Physics (2015)<br>onal Mathematics (20<br>g degree Grundschule  | degree programmes  | )   |
| c) proje<br>Langua<br>Assess<br>Allocat<br><br>Morklo<br>150 h<br>Teachin<br><br>§ 22 II<br>§ 22 II<br>§ 22 II<br>§ 22 II<br>Bachel<br>Bachel<br>Bachel<br>Bachel<br>First sta<br>First sta  | ect wor<br>age of a<br>ment o<br>ion of p<br>mal inf<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad   | k (15 to 25 hours)<br>ssessment: German and<br>ffered: In the semester in<br>places<br>ormation<br>e<br>LPO I (examination regu<br>ars in<br>gree (1 major) Mathemat<br>gree (1 major) Mathemat<br>gree (1 major) Computati<br>mination for the teaching<br>mination for the teaching                              | n which the course is<br>ulations for teaching-out<br>ics (2015)<br>ical Physics (2015)<br>onal Mathematics (20<br>g degree Grundschule<br>g degree Realschule M                       | Dify)<br>Mathematics (2015)  | )   |
| c) proje<br>Langua<br>Assess<br>Allocat<br><br>Additio<br><br>Worklo<br>150 h<br>Teachin<br><br>§ 22 II<br>§ 22 II<br>§ 22 II<br>§ 22 II<br>§ 22 II<br>Bachel<br>Bachel<br>Bachel<br>Bachel<br>First sta<br>First sta                        | ect wor<br>ige of a<br>ment o<br>ion of j<br>mal inf<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad   | k (15 to 25 hours)<br>ssessment: German and<br>ffered: In the semester in<br>places<br>ormation<br>e<br>LPO I (examination regu<br>ars in<br>gree (1 major) Mathemat<br>gree (1 major) Mathemat<br>gree (1 major) Computati<br>mination for the teaching<br>mination for the teaching<br>mination for the teaching | n which the course is<br>ulations for teaching-out<br>ics (2015)<br>ical Physics (2015)<br>onal Mathematics (20<br>g degree Grundschule<br>g degree Realschule M<br>g degree Gymnasium | degree programmes<br>2015)<br>9 Mathematics (2019)<br>Mathematics (2015) | )   |
| c) proje<br>Langua<br>Assess<br>Allocat<br><br>Additio<br><br>Worklo<br>150 h<br>Teachin<br><br>§ 22 II<br>§ 22 II<br>§ 22 II<br>§ 22 II<br>§ 22 II<br>Bachel<br>Bachel<br>Bachel<br>Bachel<br>Bachel<br>First sta<br>First sta<br>First sta | ect wor<br>ige of a<br>ment o<br>ion of j<br>mal inf<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad<br>ad   | k (15 to 25 hours)<br>ssessment: German and<br>ffered: In the semester in<br>places<br>ormation<br>e<br>LPO I (examination regu<br>ars in<br>gree (1 major) Mathemat<br>gree (1 major) Mathemat<br>gree (1 major) Computati<br>mination for the teaching<br>mination for the teaching                              | n which the course is<br>lations for teaching-out<br>ics (2015)<br>ical Physics (2015)<br>onal Mathematics (20<br>g degree Grundschule<br>g degree Gymnasium<br>g degree Mittelschule  | degree programmes<br>2015)<br>9 Mathematics (2019)<br>Mathematics (2015) | )   |



First state examination for the teaching degree Mittelschule Mathematics (2020 (Prüfungsordnungsversion 2015))

Bachelor's degree (1 major) Mathematical Physics (2020) Bachelor's degree (1 major) Mathematical Data Science (2022) exchange program Mathematics (2023) First state examination for the teaching degree Gymnasium Mathematics (2023) Bachelor's degree (1 major) Mathematics (2023)

Bachelor's degree (1 major) Mathematical Physics (2024)

| LA Mittelschulen | Mathematics | (2015) |  |
|------------------|-------------|--------|--|
|------------------|-------------|--------|--|

| Module   | title   |  |  |   | Abbreviation   |
|--|---|--|--|---|--|
| Practic  | al Trair  | ning in Classroom Teachi   | ng including Theory  | (German Mittel-   | 10-M-SFDPMS-152-m01  |
| schule)  |   |  |  |   |  |
| Module   | e coord   | inator   |  | Module offered by   |  |
| Dean o   | f Studie  | es Mathematik (Mathema   | atics)   | Institute of Mathen   | natics   |
| ECTS   | Metho   | od of grading  | Only after succ. com   | pl. of module(s)  |  |
| 4  | (not) s   | successfully completed   |  |   |  |
| Duratio  | n   | Module level   | Other prerequisites  |   |  |
| 1 seme   | ster  | undergraduate  |  |   |  |
| Conten   | ts  |  |  |   |  |
| focus o<br>specific<br>ject-spo<br>res wha<br>dactic a<br>cordan<br>practico | n the s<br>c teach<br>ecific te<br>at he/s<br>aspects<br>ce with<br>e, also | cientific discipline) or Di-<br>ing models, examples an<br>echniques. In the univers<br>he has learned during his<br>s. In this context, the cou<br>applicable guidelines ar<br>taking into account aspe | daktikfach (subject si<br>d projects in differen<br>ity course accompany<br>s/her teaching placer<br>rse discusses selecte<br>nd curricula. The cour<br>cts of school pedago | tudied with a focus of<br>t grades, the modul<br>ying the placement,<br>nent and explores a<br>ed practical aspects<br>rse focuses on recen<br>gy and learning psyc | chtsfach (subject studied with a<br>on teaching methodology). Using<br>e introduces the student to sub-<br>the student reflects and structu-<br>dditional subject-specific and di-<br>of teaching mathematics in ac-<br>t developments in classroom<br>chology that can support the suc- |
|  | <u> </u>  | cal implementation of su   |  | tuat designs.   |  |
|  |   | ning outcomes  |  |   |  |
| able to<br>cationa<br>cognisa  | teach f<br>Il syste<br>ance ar  | the relevant topics for dif<br>m. He/She is able to con<br>ad incorporate them in th   | ferent forms, and car<br>nect ideas from scho<br>e mise-en-scène of h  | n critically reflect the<br>ol pedagogy and lea<br>is/her teaching.   | d organising teaching. He/She is<br>recent developments in the edu-<br>rning psychology with didactical  |
|  |   | , number of weekly conta   | ct hours, language —   | · if other than Germa   | an)  |
| P (o) +  | S (2)   |  |  |   |  |
|  |   | <b>essment</b> (type, scope, la<br>on on whether module ca   |  |   | ation offered — if not every seme-   |
| b) term<br>Conten<br>regulat<br>tasks a                                      | paper<br>ts and<br>ions fo<br>s speci                                       | r teaching-degree progra<br>fied by placement schoo  | specified in Section<br>mmes); participation   | 34 Subsection 1 Sei   | ntence 1 No. 4 LPO I (examination<br>ing practice, completion of all set   |
| Allocat  | ion of p  | olaces   |  |   |  |
|  |   |  |  |   |  |
| Additio  | nal inf   | ormation   |  |   |  |
|  |   |  |  |   |  |
| Worklo   | ad  |  |  |   |  |
| 120 h  |   |  |  |   |  |
| Teachi   | ng cycl   | e  |  |   |  |
|  |   |  |  |   |  |
| Referre  | d to in   | LPOI (examination regu   | lations for teaching-c   | legree programmes   |  |
| § 34   1   |   |  |  |   |  |
| Module   |   | urs in   |  |   |  |
| First sta  | ate exa<br>ate exa  | mination for the teaching  | -  |   | e (2015)<br>e (2020 (Prüfungsordnungsversi-  |

| LA Mittelschulen Mathematics (2015) | JMU Würzburg • generated 18-Apr-2025 • exam. reg. data re-     |
|-------------------------------------|--|
|                                     | cord Lehramt Mittelschulen (Unterrichtsfach) Mathematik - 2015 |

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| Module             |                      |  |                         |                        | Abbreviation                      |
|--------------------|----------------------|--|-------------------------|------------------------|-----------------------------------|
| Basics             | in Aritl             | metics (virtual course)                                |                         |                        | 10-M-VHBAri-152-m01               |
| Module             | e coord              | inator   |                         | Module offered by      | <u> </u>                          |
|                    |                      | es Mathematik (Mathema                                 | atics)                  | Institute of Mathem    | natics                            |
| ECTS               |                      | od of grading  | Only after succ. con    |                        |                                   |
| 2                  |                      | successfully completed                                 |                         | 1 ( )                  |                                   |
| Duratio            | on                   | Module level   | Other prerequisites     |                        |                                   |
| 1 seme             | ester                | undergraduate  |                         |                        |                                   |
| Conten             | nts                  |  |                         |                        |                                   |
| Basic t            | opics o              | n teaching arithmetics in                              | school, e. g. divisab   | ility theory, prime nu | Imbers, set theory.               |
|                    |                      | ning outcomes  |                         | <u> </u>               |                                   |
|                    | -                    |  | eaching of arithmetic   | s and the related m    | athematical backgrounds and       |
|                    |                      |  |                         |                        | ching arithmetic in school.       |
| Course             | es (type             | , number of weekly conta                               | act hours, language –   | - if other than Germa  | in)                               |
| Ü (2)              |                      |  |                         |                        |                                   |
| Course             | e type: e            | Learning, mostly Virtuell                              | e Hochschule Bayern     | (vhb)                  |                                   |
|                    |                      |  |                         |                        | tion offered — if not every seme- |
|                    |                      | on on whether module c                                 | an be chosen to earn    | a bonus)               |                                   |
|                    |                      | based, 15 to 20 hours)                                 |                         |                        |                                   |
|                    |                      | ffered: Once a year, wint                              | er semester             |                        |                                   |
| Allocat            | tion of <sub>l</sub> | olaces   |                         |                        |                                   |
|                    | _                    |  |                         |                        |                                   |
| Additio            | onal inf             | ormation   |                         |                        |                                   |
|                    | _                    |  |                         |                        |                                   |
| Worklo             | oad                  |  | -                       |                        |                                   |
| 60 h               |                      |  |                         |                        |                                   |
| Teachi             | ng cycl              | e  |                         |                        |                                   |
|                    |                      |  |                         |                        |                                   |
| Referre            | ed to in             | LPOI (examination regu                                 | llations for teaching-o | degree programmes)     |                                   |
| § 22               | Nr. 1 h)             |  |                         |                        |                                   |
| § 22               | -                    |  |                         |                        |                                   |
| § 22               | -                    |  |                         |                        |                                   |
|                    | e appea              |  |                         |                        |                                   |
|                    |                      | mination for the teaching                              |                         |                        |                                   |
|                    |                      |  |                         |                        | matics (Primary School) (2015)    |
|                    |                      | mination for the teaching<br>mination for the teaching |                         |                        |                                   |
|                    |                      |  |                         |                        | athematics (Primary School)       |
| (2015)             |                      |  |                         |                        |                                   |
| First st<br>(2015) | ate exa              | mination for the teaching                              | g degree Sonderpäda     | gogik Didactics in M   | athematics (Middle School)        |
|                    |                      | mination for the teaching                              |                         |                        |                                   |
|                    |                      |  |                         |                        | natics (Middle School) (2015)     |
|                    | ate exa<br>ate exa   | mination for the teachinន                              | g degree Gymnasium      | Mathematics (2019)     |                                   |



First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

exchange program Mathematics (2023)

| Module title  |  |   | Abbreviation          |  |   |
|---|--|---|-----------------------|--|---|
|   | Didactics of Algebra (virtual course) 10-M-VHBDA-152-m01 |   |                       |  |   |
| Module  | e coord  | inator  |                       | Module offered by  |   |
| Dean o  | f Studi  | es Mathematik (Mathema  | atics)                | Institute of Mathem  | atics   |
| ECTS  |  | od of grading   | Only after succ. con  | pl. of module(s)   |   |
| 2   | (not) s  | successfully completed  |                       |  |   |
| Duratio   | n  | Module level  | Other prerequisites   |  |   |
| 1 seme  | ster   | undergraduate   |                       |  |   |
| Conten  | ts   |   |                       |  |   |
|   |  | tics is about learning and algebra: extensions of n   |                       |  | n the central and important to-<br>lations and functions. |
| Intende   | ed lear  | ning outcomes   |                       |  |   |
| The students are acquainted with the subject-specific contents of school algebra, and are able to structure the notions and methods within a conceptual map. They know strategies of short, middle and long term development of understanding of the central concepts of algebra in teaching mathematics. They are able to develop and justify learning units and learning sequences for the important topics in school algebra independently. They are able to assess and value the importance of digital technology with respect to todays and future design of instruction. They know various fields of application of algebraic concepts, and are able to perform modelling (in the sense of modelling cycles) independently. |  |   |                       |  |   |
| Course  | <b>s</b> (type   | , number of weekly conta  | ict hours, language – | · if other than Germa  | n)  |
| Ü (2)<br>Course   | type: e  | Learning, mostly Virtuell   | e Hochschule Bayern   | (vhb)  |   |
|   |  | e <b>ssment</b> (type, scope, la<br>on on whether module c  |                       |  | tion offered — if not every seme-                         |
|   |  | oased, 15 to 20 hours)<br>ffered: Once a year, wint   | er semester           |  |   |
| Allocat   | ion of p   | olaces  |                       |  |   |
|   |  |   |                       |  |   |
| Additio   | nal inf  | ormation  |                       |  |   |
|   |  |   |                       |  |   |
| Worklo  | ad   |   |                       |  |   |
| 60 h  |  |   |                       |  |   |
| Teachi  | ng cycl  | ٩   |                       |  |   |
| reaction  | is cyci  | 6   |                       |  |   |
| Referre   | d to in  | LPOI (examination regu  | lations for teaching. | legree programmes)   |   |
|   |  | , § 22    Nr. 2 f)  |                       |  |   |
| § 22   <br>§ 22   |  | , <u>y</u> zz ii iii. z i <i>j</i>  |                       |  |   |
| Module  | e appea  | in and a second s |                       |  |   |
|   |  | mination for the teachinន   |                       |  |   |
|   |  |   |                       |  | natics (Primary School) (2015)                            |
|   |  | mination for the teaching   |                       | -  |   |
|   |  | mination for the teaching   |                       | -  |   |
| (2015)  |  |   |                       |  | athematics (Primary School)                               |
| First sta<br>(2015)   | ate exa  | mination for the teaching   | g degree Sonderpäda   | gogik Didactics in Ma  | athematics (Middle School)                                |
| First sta   | ate exa  | mination for the teachinន្  | g degree Mittelschule | Mathematics (2015)   |   |
|   |  |   |                       |  | natics (Middle School) (2015)                             |
| LA Mittelsc   | hulen Mat  | hematics (2015)   |                       | enerated 18-Apr-2025 • exam<br>schulen (Unterrichtsfach) Mat |   |



First state examination for the teaching degree Mittelschule Mathematics (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Mittelschule Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

exchange program Mathematics (2023)

| Module   | e title   |   |   |  | Abbreviation   |  |
|--|---|---|---|--|--|--|
| Didacti  | ics of G  | eometry (virtual cours  | e)  |  | 10-M-VHBDG-152-m   | 101                                    |
| Madula   | e coord   | antor .   |   | Module offered by  |  |  |
|  |   |   |   |  |  |  |
|  | 1   | es Mathematik (Mathe  | Ĩ.  | Institute of Mathem  | latics   |  |
| <b>ECTS</b> 2  |   | od of grading<br>successfully completed   | Only after succ. con  |  |  |  |
| Duratio  | ·   | Module level  | Other prerequisites   |  |  |  |
| 1 seme   |   | undergraduate   |   |  |  |  |
| Conten   |   | undergraduate   |   |  |  |  |
| importa<br>which a<br>chapte<br>Intende              | ant for a<br>are usu<br>rs on sp<br><b>ed lear</b>      | all of geometry and ma<br>ally discussed only bri<br>bace geometry, trigono<br><b>hing outcomes</b>                               | and teaching geometr<br>thematics, namely prov<br>efly or not at all in unive<br>metry and similarity ge<br>e subject-specific conte                                      | ving and problem so<br>ersity lectures and in<br>ometry.                                     | lving. It also address<br>the literature. Amor   | ses topics<br>ng these are             |
| ment of<br>and jus<br>They ar<br>of instr<br>(in the | of under<br>stify lea<br>re able<br>ruction.<br>sense o | standing of the central<br>rning units and learnir<br>to assess and value th<br>They know various fiel<br>of modelling cycles) in | ptual map. They know s<br>concepts of geometry<br>g sequences for the im<br>e importance of digital<br>ds of application of geo<br>dependently.<br>tact hours, language – | in teaching mathema<br>portant topics in sch<br>technology with resp<br>ometric concepts, an | atics. They are able t<br>nool geometry indep<br>pect to todays and fu<br>nd are able to perform | o develop<br>endently.<br>Iture design |
| Course   |   |   | elle Hochschule Bayern  |  |  |  |
|  |   |   | language — if other the can be chosen to earn   |  | tion offered — if not  | every seme-                            |
|  |   | ased, 15 to 20 hours)<br>ffered: Once a year, su  | mmer semester   |  |  |  |
| Allocat  | tion of p   | olaces  |   |  |  |  |
| <br>Additio  | onal inf  | ormation  |   |  |  |  |
|  |   |   |   |  |  |  |
| Worklo   | ad  |   |   |  |  |  |
| 60 h   |   |   |   |  |  |  |
|  | ng cycl   | 9   |   |  |  |  |
|  |   |   |   |  |  |  |
| Referre  | ed to in  | LPOI (examination re  | gulations for teaching-o  | degree programmes)   |  |  |
| § 22     <br>§ 22     <br>§ 22                       | Nr. 1 h)<br>Nr. 2 f)                                    |   | <u> </u>  |  |  |  |
| Module   | e appea   | rs in   |   |  |  |  |
|  | ate exa   | mination for the teachi   | ng degree Grundschule<br>ng degree Grundschule<br>ng degree Realschule M  | e Didactics in Mather<br>Mathematics (2015)  |  | ool) (2015)                            |
| First sta<br>First sta                               | ate exa   | mination for the teachi   | ng degree Gymnasium<br>ng degree Sonderpäda   |  | athematics (Primary  | School)                                |

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2015)

First state examination for the teaching degree Mittelschule Mathematics (2015)

First state examination for the teaching degree Mittelschule Didactics in Mathematics (Middle School) (2015) First state examination for the teaching degree Mittelschule Mathematics (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Mittelschule Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

exchange program Mathematics (2023)

| Module                     | e title             |  |                        |                       | Abbreviation  |
|----------------------------|---------------------|--|------------------------|-----------------------|---|
| Exam T                     | utorial             | <b>Didactics of Mathematic</b>                       | s (virtual course)     |                       | 10-M-VHBEx-152-m01  |
| Module                     | e coord             | inator   |                        | Module offered by     |   |
|                            |                     | es Mathematik (Mathema                               | atics)                 | Institute of Mathem   | natics  |
| ECTS                       |                     | od of grading  | Only after succ. con   |                       | lutics  |
| 2                          |                     | successfully completed                               |                        | <u> </u>              |   |
| Duratio                    | on                  | Module level   | Other prerequisites    |                       |   |
| 1 seme                     | ster                | undergraduate  |                        |                       |   |
| Conten                     | Its                 |  |                        |                       |   |
| the Ers<br>as basi         | tes Sta<br>ic guide | atsexamen für Lehramt G<br>elines for answering exan | ymnasium (first state  | e examination for tea | g of theorems) in preparation for<br>aching at a Gymnasium) as well<br>state examination in Bavaria). |
| Intend                     | ed lear             | ning outcomes  |                        |                       |   |
| The stu                    | ident le            | arns about the structure                             | of the state exams a   | nd different methods  | s for solving the exam problems.  |
| Course                     | <b>s</b> (type      | , number of weekly conta                             | ct hours, language –   | - if other than Germa | an)   |
| Ü (2)                      | typore              | Learning, mostly Virtuell                            | e Hochschulo Bauern    | (vhb)                 |   |
|                            |                     |  |                        |                       | tion offered if not even come   |
|                            |                     | on on whether module ca                              |                        |                       | ation offered — if not every seme   |
|                            |                     | based, 15 to 20 hours)                               |                        | <b>/</b>              |   |
|                            |                     | ffered: Once a year, wint                            | er semester            |                       |   |
| Allocat                    | ion of p            | olaces   |                        |                       |   |
|                            |                     |  |                        |                       |   |
| Additio                    | onal inf            | ormation   |                        |                       |   |
|                            |                     |  |                        |                       |   |
| Worklo                     | ad                  |  |                        |                       |   |
| 60 h                       |                     |  |                        |                       |   |
| Teachi                     | ng cycl             | e  |                        |                       |   |
|                            |                     |  |                        |                       |   |
| Referre                    | ed to in            | LPOI (examination regu                               | lations for teaching-o | degree programmes)    |   |
| § 22   <br>§ 22   <br>§ 22 | Nr. 2 f)            |  |                        |                       |   |
| Module                     | e appea             | ars in   |                        |                       |   |
| First st                   | ate exa             | mination for the teaching                            |                        |                       | .)<br>matics (Primary School) (2015)  |
|                            |                     | mination for the teaching                            |                        |                       |   |
|                            |                     | mination for the teaching                            |                        |                       |   |
| First sta<br>(2015)        | ate exa             | mination for the teaching                            | g degree Sonderpäda    | gogik Didactics in M  | athematics (Primary School)   |
| _                          | ate exa             | mination for the teaching                            | g degree Sonderpäda    | gogik Didactics in M  | athematics (Middle School)  |
| First sta<br>First sta     | ate exa             |  | g degree Mittelschule  | Didactics in Mather   | )<br>matics (Middle School) (2015)<br>9 (Prüfungsordnungsversion                                      |

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

|  | title  |   |  |   | Abbreviation  |
|--|--|---|--|---|---|
| Basics in  | n School   | Geometry (virtual cou   | ırse)  |   | 10-M-VHBGeo-152-mo1   |
| Module   | coordina   | tor   |  | Module offered by   | <u> </u>  |
| Dean of !  | Studies  | Mathematik (Mathema   | atics)   | Institute of Mathem   | natics  |
|  |  | of grading  | Only after succ. com   |   | -   |
|  |  | cessfully completed   |  |   |   |
| Duration   |  | odule level   | Other prerequisites  |   |   |
| 1 semest   |  | ndergraduate  |  |   |   |
| Contents   |  |   | J  |   |   |
|  |  |   |  |   | nat are prerequisites for the sub-<br>Hauptschule, Realschule) in geo-                      |
| Intended   | d learnin  | g outcomes  |  |   |   |
|  |  | basic knowledge of sc<br>quainted with the em   |  |   | of mathematics and its didac-<br>g geometry in school.                                      |
| Courses  | (type, n   | umber of weekly conta   | act hours, language –  | · if other than Germa   | in)   |
| Ü (2)<br>Course ty   | ype: eLe   | arning, mostly Virtuell   | e Hochschule Bayern  | (vhb)   |   |
|  |  | <b>sment</b> (type, scope, la<br>on whether module c  |  |   | tion offered — if not every seme  |
|  |  | ed, 15 to 20 hours)<br>red: Once a year, sum  | mer semester   |   |   |
| Allocatio  | on of pla  | ces   |  |   |   |
|  |  |   |  |   |   |
| Addition   | al inform  | nation  |  |   |   |
|  |  |   |  |   |   |
| Workloa  | d  |   |  |   |   |
| 60 h   |  |   |  |   |   |
| Teaching   |  |   | -  |   |   |
|  | Scycie   |   |  |   |   |
| Referred   | l to in I P  | <b>OI</b> (examination regu   | lations for teaching.  | legree programmes)  |   |
| § 22    Ni   |  |   |  | - 0·  |   |
|  | r. 2 f)  |   |  |   |   |
| 9 Z Z 11 INI   |  |   |  |   |   |
| § 22    NI<br>§ 22    NI   |  |   |  |   |   |
|  | appears  | in  |  |   |   |
| § 22 II Ni<br><b>Module a</b><br>First stat  | te exami   | nation for the teaching   |  |   |   |
| § 22 II Ni<br><b>Module a</b><br>First stat<br>First stat  | te exami<br>te exami   | nation for the teaching<br>nation for the teaching  | g degree Grundschule   | Didactics in Mather   | )<br>matics (Primary School) (2015)   |
| § 22 II Ni<br>Module a<br>First stat<br>First stat<br>First stat   | te exami<br>te exami<br>te exami   | nation for the teaching<br>nation for the teaching<br>nation for the teaching   | g degree Grundschule<br>g degree Realschule N  | e Didactics in Mather<br>Nathematics (2015)   | matics (Primary School) (2015)  |
| § 22    Nı<br><b>Module a</b><br>First stat<br>First stat<br>First stat<br>First stat  | te exami<br>te exami<br>te exami<br>te exami                                     | nation for the teaching<br>nation for the teaching<br>nation for the teaching<br>nation for the teaching  | g degree Grundschule<br>g degree Realschule A<br>g degree Gymnasium  | e Didactics in Mather<br>Aathematics (2015)<br>Mathematics (2015)   | matics (Primary School) (2015)  |
| § 22 II Ni<br>Module a<br>First stat<br>First stat<br>First stat<br>First stat<br>First stat                                   | te exami<br>te exami<br>te exami<br>te exami                                     | nation for the teaching<br>nation for the teaching<br>nation for the teaching<br>nation for the teaching  | g degree Grundschule<br>g degree Realschule A<br>g degree Gymnasium  | e Didactics in Mather<br>Aathematics (2015)<br>Mathematics (2015)   | matics (Primary School) (2015)  |
| § 22 II Ni<br>Module a<br>First stat<br>First stat<br>First stat<br>First stat<br>First stat<br>(2015)<br>First stat           | te exami<br>te exami<br>te exami<br>te exami<br>te exami<br>te exami             | nation for the teaching<br>nation for the teaching<br>nation for the teaching<br>nation for the teaching<br>nation for the teaching   | g degree Grundschule<br>g degree Realschule A<br>g degree Gymnasium<br>g degree Sonderpäda   | e Didactics in Mather<br>Aathematics (2015)<br>Mathematics (2015)<br>gogik Didactics in M   | matics (Primary School) (2015)  |
| § 22 II Ni<br>Module a<br>First stat<br>First stat<br>First stat<br>First stat<br>First stat<br>(2015)<br>First stat<br>(2015) | te exami<br>te exami<br>te exami<br>te exami<br>te exami<br>te exami             | nation for the teaching<br>nation for the teaching                            | g degree Grundschule<br>g degree Realschule M<br>g degree Gymnasium<br>g degree Sonderpäda<br>g degree Sonderpäda                          | e Didactics in Mathen<br>Aathematics (2015)<br>Mathematics (2015)<br>gogik Didactics in M<br>gogik Didactics in M                       | matics (Primary School) (2015)<br>athematics (Primary School)<br>athematics (Middle School) |
| § 22 II Ni<br>Module a<br>First stat<br>First stat<br>First stat<br>First stat<br>(2015)<br>First stat<br>(2015)<br>First stat | te exami<br>te exami<br>te exami<br>te exami<br>te exami<br>te exami<br>te exami | nation for the teaching<br>nation for the teaching | g degree Grundschule<br>g degree Realschule M<br>g degree Gymnasium<br>g degree Sonderpäda<br>g degree Sonderpäda<br>g degree Mittelschule | e Didactics in Mathen<br>Mathematics (2015)<br>Mathematics (2015)<br>gogik Didactics in M<br>gogik Didactics in M<br>Mathematics (2015) | matics (Primary School) (2015)<br>athematics (Primary School)<br>athematics (Middle School) |

| LA Mittelschulen Mathematics (2015) | JMU Würzburg • generated 18-Apr-2025 • exam. reg. data re-     | page 38 / 47 |
|-------------------------------------|--|--------------|
|                                     | cord Lehramt Mittelschulen (Unterrichtsfach) Mathematik - 2015 |              |



First state examination for the teaching degree Mittelschule Mathematics (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Mittelschule Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

exchange program Mathematics (2023)

| Module              | e title   |                         |   | Abbreviation          |              |
|---------------------|---|-------------------------|---|-----------------------|--------------|
| Mather              | matics in grade 10 (virtual cou                                     | ırse)                   |   | 10-M-VHBM10-152-      | m01          |
|                     |   |                         |   |                       |              |
| Module              | e coordinator   |                         | Module offered by   |                       |              |
| Dean o              | f Studies Mathematik (Mathe   | matics)                 | Institute of Mathem   | natics                |              |
| ECTS                | Method of grading   | Only after succ. con    | npl. of module(s)   |                       |              |
| 2                   | (not) successfully completed  | l                       |   |                       |              |
| Duratio             | on Module level   | Other prerequisites     |   |                       |              |
| 1 seme              | ster undergraduate  |                         |   |                       |              |
| Conten              | its   |                         |   |                       |              |
| Basic to            | opics on teaching mathematic  | s in tenth grade in Hau | ptschule, Realschul   | e and Gymnasium.      |              |
|                     | ed learning outcomes  |                         |   |                       |              |
|                     |   |                         | tion in touth forms at                                      |                       | and Deal     |
|                     | ident learns basic topics in the<br>, as well as the related mather |                         |   |                       |              |
|                     | technologies for teaching mat                                       |                         |   | acquainteu with the   | employment   |
|                     | · · · · · · · · · · · · · · · · · · ·                               |                         |   | n                     |              |
|                     | <b>s</b> (type, number of weekly con                                | nact nours, language –  | - n other than Germa  | 11 <i>)</i>           |              |
| Ü (2)               | type: eLearning, mostly Virtue                                      | alla Hachcebula Pauarr  | (vhb)   |                       |              |
|                     | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,                             |                         |   |                       |              |
|                     | d of assessment (type, scope,                                       |                         |   | tion offered — if not | every seme-  |
|                     | formation on whether module   | can be chosen to earn   | a Donus)  |                       |              |
|                     | (web-based, 15 to 20 hours)   |                         |   |                       |              |
|                     | ment offered: Once a year, su                                       | mmer semester           |   |                       |              |
| Allocat             | ion of places   |                         |   |                       |              |
|                     |   |                         |   |                       |              |
| Additio             | onal information  |                         |   |                       |              |
|                     |   |                         |   |                       |              |
| Worklo              | ad  |                         |   |                       |              |
| 60 h                | <u></u>   |                         |   |                       |              |
|                     |   |                         |   |                       |              |
| Teachi              | ng cycle  |                         |   |                       |              |
|                     |   |                         |   |                       |              |
| Referre             | ed to in LPO I (examination reg                                     | gulations for teaching- | degree programmes)  |                       |              |
| § 22                | Nr. 1 h)  |                         |   |                       |              |
| § 22                |   |                         |   |                       |              |
| § 22                | •   |                         |   |                       |              |
| Module              | e appears in  |                         |   |                       |              |
| First sta           | ate examination for the teachi                                      | ng degree Grundschule   | Mathematics (2015   | )                     |              |
|                     | ate examination for the teachi                                      |                         |   | matics (Primary Scho  | ool) (2015)  |
|                     | ate examination for the teachi                                      |                         |   |                       |              |
|                     | ate examination for the teachi                                      |                         |   |                       |              |
|                     | ate examination for the teachi                                      | ng degree Sonderpäda    | gogik Didactics in M  | athematics (Primary   | School)      |
| (2015)              | ato over instian for the target                                     | na doaroo Condoursed-   | rogik Didoctica in M  | athomatics (Middle    | School       |
| FIrst sta<br>(2015) | ate examination for the teachi                                      | ng degree Sonderpada    | gogik Didactics in M  | athematics (MIDDLe    | 501001)      |
| -                   | ate examination for the teachi                                      | ng degree Mittelschule  | Mathematics (2015)  |                       |              |
|                     | ate examination for the teachi                                      |                         |   |                       | ol) (2015)   |
|                     | ate examination for the teachi                                      |                         |   |                       |              |
|                     | ate examination for the teachi                                      |                         | -   |                       | version      |
| 2015))              |   |                         |   |                       |              |
|                     | · · · · · · · · · · · · · · · · · · ·                               |                         |   |                       |              |
| LA Mittelsc         | hulen Mathematics (2015)  |                         | enerated 18-Apr-2025 • exam<br>schulen (Unterrichtsfach) Ma | -                     | page 40 / 47 |
|                     |   |                         |   |                       |              |



First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

exchange program Mathematics (2023)

| Module tit                                | tle   |                           |                              | Abbreviation          |              |
|---|---|---------------------------|------------------------------|-----------------------|--------------|
| Mathemat                                  | tics 1 (virtual course)                                     |                           |                              | 10-M-VHBMa1-152-      | m01          |
| Module co                                 |   |                           | Mandala afferradita          |                       |              |
|   |   |                           | Module offered by            |                       |              |
|   | udies Mathematik (Mathe                                     |                           | Institute of Mathem          | atics                 |              |
|   | ethod of grading  | Only after succ. cor      | npl. of module(s)            |                       |              |
|   | ot) successfully completed                                  |                           |                              |                       |              |
| Duration                                  | Module level  | Other prerequisites       | i                            |                       |              |
| 1 semeste                                 | r undergraduate   |                           |                              |                       |              |
| Contents                                  |   |                           |                              |                       |              |
|   | n of basic topics on teachin<br>tals concerning the organi  | <b>e</b> ,                | vmnasium, in particu         | lar verbal and subje  | ct-specific  |
| Intended l                                | earning outcomes  |                           |                              |                       |              |
| The stude                                 | nt is able to discuss select<br>ng both subject-related and |                           | is on teaching mathe         | matics at German G    | ymnasium,    |
|   | ype, number of weekly cor                                   |                           | - if other than Germa        | n)                    |              |
| Ü (2)<br>Course typ                       | be: eLearning, mostly Virtu                                 | elle Hochschule Bayerr    | ı (vhb)                      |                       |              |
| ster, inforr                              | f <b>assessment</b> (type, scope, mation on whether module  |                           |                              | tion offered — if not | every seme-  |
| Assessme                                  | eb-based, 15 to 20 hours)<br>nt offered: Every two years    | , winter semester         |                              |                       |              |
| Allocation                                | of places   |                           |                              |                       |              |
|   |   |                           |                              |                       |              |
| Additional                                | linformation  |                           |                              |                       |              |
|   |   |                           |                              |                       |              |
| Workload                                  |   |                           |                              |                       |              |
| 60 h                                      |   |                           |                              |                       |              |
| Teaching                                  | cvcle   |                           |                              |                       |              |
|   |   |                           |                              |                       |              |
| Defermed t                                |   |                           | d                            |                       |              |
|   | o in LPO I (examination re                                  | guiations for teaching-   | degree programmes)           |                       |              |
| § 22    Nr.<br>§ 22    Nr.<br>§ 22    Nr. | 2 f)  |                           |                              |                       |              |
| Module ap                                 |   |                           |                              |                       |              |
|   | examination for the teach                                   | ng degree Grundschule     | e Mathematics (2015          | )                     |              |
|   | examination for the teach                                   |                           | -                            |                       | ool) (2015)  |
|   | examination for the teach                                   |                           |                              | - ,                   |              |
|   | examination for the teach                                   |                           | _                            |                       |              |
| First state<br>(2015)                     | examination for the teach                                   | ng degree Sonderpäda      | ngogik Didactics in M        | athematics (Primary   | School)      |
| (2015)                                    | examination for the teach                                   |                           |                              |                       | School)      |
|   | examination for the teach                                   |                           |                              |                       | -1) ()       |
|   | examination for the teach                                   |                           |                              |                       | 01) (2015)   |
|   | examination for the teach                                   |                           | -                            |                       | vorcion      |
| 2015))                                    | examination for the teach                                   | ווא מפצופפ אווננפוגנוועופ | - mathematics (2020          | (Fiulungsolunungs)    | VEISIOII     |
| LA Mittelschule                           | n Mathematics (2015)  | IMU Würzburg • g          | enerated 18-Apr-2025 • exam  | . reg. data re-       | page 42 / 47 |
|   |   |                           | schulen (Unterrichtsfach) Ma |                       |              |



First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

exchange program Mathematics (2023)

| Module              | e title  |   |   | Abbreviation          |               |
|---------------------|--|---|---|-----------------------|---------------|
| Mather              | matics 2 (virtual course)  |   |   | 10-M-VHBMa2-152-      | m01           |
| Madula              | e coordinator  |   | Module offered by   |                       |               |
|                     |  |   | · · · ·   |                       |               |
|                     | f Studies Mathematik (Mathe                                      | - i - i - i - i - i - i - i - i - i - i | Institute of Mathem   | latics                |               |
| ECTS                | Method of grading  | Only after succ. con                    | npl. of module(s)   |                       |               |
| 2                   | (not) successfully completed                                     |   |   |                       |               |
| Duratio             |  | Other prerequisites                     | i   |                       |               |
| 1 seme              | ster undergraduate   |   |   |                       |               |
| Conten              | ts   |   |   |                       |               |
|                     | sion of central topics on teach<br>of implementation in the clas |   | Gymnasium, in partic  | ular didactic analys  | es and possi- |
| Intende             | ed learning outcomes   |   |   |                       |               |
|                     | ident is able to discuss and a sium from a didactical point of   | ,                                       | and questions on tea  | ching mathematics     | at German     |
|                     | <b>s</b> (type, number of weekly cor                             |   | - if other than Germa                                       | n)                    |               |
| Ü (2)               |  |   |   | ,                     |               |
| • •                 | type: eLearning, mostly Virtu                                    | elle Hochschule Baverr                  | ı (vhb)   |                       |               |
| Metho               | d of assessment (type, scope, formation on whether module        | , language — if other th                | an German, examina  | tion offered — if not | every seme-   |
|                     |  |   |   |                       |               |
|                     | (web-based, 15 to 20 hours)<br>ment offered: Every two years     | summer comester                         |   |                       |               |
|                     | ·  | , summer semester                       |   |                       |               |
| Allocal             | ion of places  |   |   |                       |               |
|                     |  |   |   |                       |               |
| Additio             | onal information   |   |   |                       |               |
|                     |  |   |   |                       |               |
| Worklo              |  |   |   |                       |               |
| 60 h                |  |   |   |                       |               |
| Teachi              | ng cycle   |   |   |                       |               |
|                     |  |   |   |                       |               |
| Referre             | ed to in LPO I (examination re                                   | gulations for teaching-                 | degree programmes)  |                       |               |
| § 22     <br>§ 22   | Nr. 2 f)   |   |   |                       |               |
| § 22                |  |   |   |                       |               |
|                     | e appears in   |   |   |                       |               |
|                     | ate examination for the teach                                    |   |   |                       |               |
|                     | ate examination for the teach                                    |   |   | natics (Primary Scho  | 00l) (2015)   |
|                     | ate examination for the teach                                    |   |   |                       |               |
|                     | ate examination for the teaching                                 |   |   | athomatics (Driman    | (School)      |
| (2015)              | ate examination for the teach                                    |   |   |                       |               |
| (2015)              | ate examination for the teach                                    |   |   |                       | School)       |
|                     | ate examination for the teach                                    |   |   |                       | $\mathcal{N}$ |
|                     | ate examination for the teach                                    |   |   |                       | 01) (2015)    |
|                     | ate examination for the teach                                    |   | -   |                       |               |
| First sta<br>2015)) | ate examination for the teach                                    | ing degree Mittelschule                 | e mathematics (2020   | (Prutungsordnungs     | version       |
| LA Mittelsc         | hulen Mathematics (2015)   |   | enerated 18-Apr-2025 • exam<br>schulen (Unterrichtsfach) Ma | -                     | page 44 / 47  |
|                     |  |   |   |                       |               |



First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

exchange program Mathematics (2023)

| Module  | title  | Abbreviation   |   |  |                       |
|---|--|--|---|--|-----------------------|
| Stocha  | stics in Sekundarstufe I (virtu  |  | 10-M-VHBSto-152-m01   |  |                       |
|   |  |  |   |  |                       |
|   | e coordinator  |  | Module offered by   |  |                       |
|   | f Studies Mathematik (Mather   |  | Institute of Mathem   | atics  |                       |
| ECTS  | Method of grading  | Only after succ. con   | npl. of module(s)   |  |                       |
| 2   | (not) successfully completed   |  |   |  |                       |
| Duratio   |  | Other prerequisites  |   |  |                       |
| 1 seme  | ster undergraduate   |  |   |  |                       |
| Conten  | ts   |  |   |  |                       |
| Revisio   | n and consolidation of the fur   | ndamental topics in sto  | chastics that are pre   | requisites for the su  | bject-speci-          |
|   | didactic courses in stochastic   |  |   | •  | , ,                   |
| Intende   | ed learning outcomes   |  |   |  |                       |
|   | dent has basic knowledge of  | stochastics as require   | d for the study of ma   | thematics and its di   | dar-                  |
|   | /She is acquainted with the e  | · ·  |   |  |                       |
|   | <b>s</b> (type, number of weekly con   |  |   | -  |                       |
| Ü (2)   |  |  | in other than defina  | '' <i>'</i>  |                       |
| • •   | type: eLearning, mostly Virtue   | elle Hochschule Ravern   | (vhb)   |  |                       |
|   | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,  |  |   | tion offered if and  | 0100100000            |
|   | <b>d of assessment</b> (type, scope,<br>formation on whether module  |  |   | uon oherea — ir not  | every seme-           |
| -   |  |  |   |  |                       |
|   | (web-based, 15 to 20 hours)<br>ment offered: Once a year, wit  | ator comoctor  |   |  |                       |
|   | · · · · · · · · · · · · · · · · · · ·  | inter semester   |   |  |                       |
| Allocat   | ion of places  |  |   |  |                       |
|   |  |  |   |  |                       |
| Additio   | nal information  |  |   |  |                       |
|   |  |  |   |  |                       |
| Worklo  | ad   |  |   |  |                       |
| 60 h  |  |  |   |  |                       |
| Teachi  | ng cycle   |  |   |  |                       |
|   |  |  |   |  |                       |
| Deferme   |  |  |   |  |                       |
|   | d to in LPO I (examination reg   | gulations for teaching-  | legree programmes)  |  |                       |
| § 22  |  |  |   |  |                       |
| § 22     <br>§ 22   | -  |  |   |  |                       |
|   |  |  |   |  |                       |
|   | e appears in   |  |   |  |                       |
|   | ate examination for the teachi   |  |   |  | -1) ( )               |
|   | ate examination for the teaching   |  |   | natics (Primary Scho   | 01) (2015)            |
| Eirct ct  |  |  |   |  |                       |
|   | ate examination for the teachi   |  |   |  |                       |
| First sta   | ate examination for the teachi   | ng degree Gymnasium  | Mathematics (2015)  | athematics (Primary  | School)               |
| First sta<br>First sta  |  | ng degree Gymnasium  | Mathematics (2015)  | athematics (Primary  | School)               |
| First sta<br>First sta<br>(2015)  | ate examination for the teachi   | ng degree Gymnasium<br>ng degree Sonderpäda  | Mathematics (2015)<br>gogik Didactics in M  | -  |                       |
| First sta<br>First sta<br>(2015)  | ate examination for the teachi<br>ate examination for the teachi   | ng degree Gymnasium<br>ng degree Sonderpäda  | Mathematics (2015)<br>gogik Didactics in M  | -  |                       |
| First sta<br>First sta<br>(2015)<br>First sta<br>(2015)   | ate examination for the teachi<br>ate examination for the teachi   | ng degree Gymnasium<br>ng degree Sonderpäda<br>ng degree Sonderpäda  | Mathematics (2015)<br>gogik Didactics in M<br>gogik Didactics in M  | athematics (Middle   |                       |
| First sta<br>First sta<br>(2015)<br>First sta<br>(2015)<br>First sta<br>First sta                                     | ate examination for the teachi<br>ate examination for the teachi<br>ate examination for the teachi<br>ate examination for the teachi<br>ate examination for the teachi                                   | ng degree Gymnasium<br>ng degree Sonderpäda<br>ng degree Sonderpäda<br>ng degree Mittelschule<br>ng degree Mittelschule  | Mathematics (2015)<br>gogik Didactics in M<br>gogik Didactics in M<br>Mathematics (2015)<br>Didactics in Mathem                       | athematics (Middle   | School)               |
| First sta<br>First sta<br>(2015)<br>First sta<br>(2015)<br>First sta<br>First sta<br>First sta                        | ate examination for the teachi<br>ate examination for the teachi | ng degree Gymnasium<br>ng degree Sonderpäda<br>ng degree Sonderpäda<br>ng degree Mittelschule<br>ng degree Mittelschule<br>ng degree Gymnasium                           | Mathematics (2015)<br>gogik Didactics in M<br>gogik Didactics in M<br>Mathematics (2015)<br>Didactics in Mathen<br>Mathematics (2019) | athematics (Middle s<br>natics (Middle Schoo                       | School)<br>ol) (2015) |
| First sta<br>First sta<br>(2015)<br>First sta<br>(2015)<br>First sta<br>First sta<br>First sta<br>First sta           | ate examination for the teachi<br>ate examination for the teachi<br>ate examination for the teachi<br>ate examination for the teachi<br>ate examination for the teachi                                   | ng degree Gymnasium<br>ng degree Sonderpäda<br>ng degree Sonderpäda<br>ng degree Mittelschule<br>ng degree Mittelschule<br>ng degree Gymnasium                           | Mathematics (2015)<br>gogik Didactics in M<br>gogik Didactics in M<br>Mathematics (2015)<br>Didactics in Mathen<br>Mathematics (2019) | athematics (Middle s<br>natics (Middle Schoo                       | School)<br>ol) (2015) |
| First sta<br>First sta<br>(2015)<br>First sta<br>(2015)<br>First sta<br>First sta<br>First sta                        | ate examination for the teachi<br>ate examination for the teachi | ng degree Gymnasium<br>ng degree Sonderpäda<br>ng degree Sonderpäda<br>ng degree Mittelschule<br>ng degree Mittelschule<br>ng degree Gymnasium                           | Mathematics (2015)<br>gogik Didactics in M<br>gogik Didactics in M<br>Mathematics (2015)<br>Didactics in Mathen<br>Mathematics (2019) | athematics (Middle s<br>natics (Middle Schoo                       | School)<br>ol) (2015) |
| First sta<br>First sta<br>(2015)<br>First sta<br>(2015)<br>First sta<br>First sta<br>First sta<br>First sta<br>2015)) | ate examination for the teachi<br>ate examination for the teachi | ng degree Gymnasium<br>ng degree Sonderpäda<br>ng degree Sonderpäda<br>ng degree Mittelschule<br>ng degree Mittelschule<br>ng degree Gymnasium<br>ng degree Mittelschule | Mathematics (2015)<br>gogik Didactics in M<br>gogik Didactics in M<br>Mathematics (2015)<br>Didactics in Mathen<br>Mathematics (2019) | athematics (Middle s<br>natics (Middle Schoo<br>(Prüfungsordnungsv | School)<br>ol) (2015) |



First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Sonderpädagogik Didactics in Mathematics (Primary School) (2020 (Prüfungsordnungsversion 2015))

exchange program Mathematics (2023)