Universität
Bremen

Faculty 03:
Mathematics/Computer
Sciences

Wintersemester 25/26

Module Guide

for the study of

Mathematics Master

Masterstudiengang

valid in connection with the examination regulations MPO 2022

According to the Subject-Specific Examination Regulation for the **Option without an Application Subjet** of the Master's Program Mathematics (Single Major Subject) dated February 9, 2022.

Generated: October 22, 2025

University of Bremen

Curriculum - Master Mathematics*

(without an Application Subject)

<table>
<tr><th>Sem.</th><th colspan="2">Specialization**</th><th colspan="2">Diversification**</th><th>Compulsory Elective Modules**</th><th>Free Choice</th></tr>
<tr><td>1</td><td>Specialization A

9 CP</td><td rowspan="2">Advanced Communications A

9 CP
(2 x 4,5 CP)</td><td>Diversification A

9 CP</td><td></td><td rowspan="3">Specialization C

9 CP

or

Diversification C

9 CP</td><td rowspan="3">courses offered by the Faculty 3 or from General Studies

9 CP</td></tr>
<tr><td>2</td><td>Specialization B

9 CP</td><td>Diversification B

9 CP</td><td rowspan="2">Advanced Communications B

9 CP
(2 x 4,5 CP)</td></tr>
<tr><td>3</td><td>Reading Course A

9 CP</td><td colspan="2">Reading Course B

9 CP</td></tr>
<tr><td>4</td><td colspan="2">Master Thesis

30 CP</td><td></td><td></td><td></td><td></td></tr>
</table>

Credit Points (short CP) indicate the average workload for a course or module, where 1 CP = 30 hours

* According to the Examination Regulation with an Application Subject dated February 9, 2022 including any amendments and corrections

** Composed of modules according to one of the four areas of specialization (Algebra, Analysis, Numerical Analysis or Statistics/Stochastics), which is indicated by specialization stated in brackets. The areas that are not selected for specialization together form the area of diversification.

Index by areas of study

1) Mathematics

One of the following four areas of specialization (Algebra, Analysis, Numerical Analysis or Statistics/ Stochastics) must be chosen and for each of these areas, the compulsory and compulsory elective modules for the option without an Application Subject totalling 81 CP are listed according to the curriculum.

a) Area of Specialization - Algebra (81 CP)

aa) Compulsory Modules (72 CP)

03-MAT-MA-SP-A-ALG: Specialization A (Algebra) (9 CP)....4

03-MAT-MA-D-A-ALG: Diversification A (Algebra) (9 CP)....12

03-MAT-MA-SP-B-ALG: Specialization B (Algebra) (9 CP)....20

03-MAT-MA-D-B-ALG: Diversification B (Algebra) (9 CP)....28

03-MAT-MA-AC-A-ALG: Advanced Communications A (Algebra) (9 CP)....36

03-MAT-MA-AC-B-ALG: Advanced Communications B (Algebra) (9 CP)....46

03-MAT-MA-RC-A-ALG: Reading Course A (Algebra) (9 CP)....58

03-MAT-MA-RC-B-ALG: Reading Course B (Algebra) (9 CP)....66

bb) Compulsory Elective Modules (9 CP)

One of the modules, so either in the are of specialization or from the area of diversification, is taken.

03-MAT-MA-SP-C-ALG: Specialization C (Algebra) (9 CP)....74

03-MAT-MA-D-C-ALG: Diversification C (Algebra) (9 CP)....82

b) Area of Specialization - Analysis (81 CP)

aa) Compulsory Modules (72 CP)

03-MAT-MA-SP-A-ANA: Specialization A (Analysis) (9 CP)....6

03-MAT-MA-D-A-ANA: Diversification A (Analysis) (9 CP)....14

03-MAT-MA-SP-B-ANA: Specialization B (Analysis) (9 CP)....22

03-MAT-MA-D-B-ANA: Diversification B (Analysis) (9 CP)....30

03-MAT-MA-AC-A-ANA: Advanced Communications A (Analysis) (9 CP)....39

03-MAT-MA-AC-B-ANA: Advanced Communications A (Analysis) (9 CP)....49

03-MAT-MA-RC-A-ANA: Reading Course A (Analysis) (9 CP)....60

03-MAT-MA-RC-B-ANA: Reading Course B (Analysis) (9 CP)....68

bb) Compulsory Elective Modules (9 CP)

One of the modules, so either in the are of specialization or from the area of diversification, is taken.

03-MAT-MA-SP-C-ANA: Specialization C (Analysis) (9 CP)....76

03-MAT-MA-D-C-ANA: Diversification C (Analysis) (9 CP)....84

c) Area of Specialization - Numerical Analysis (81 CP)

aa) Compulsory Modules (72 CP)

03-MAT-MA-SP-A-NUM: Specialization A (Numerical Analysis) (9 CP)....8

03-MAT-MA-D-A-NUM: Diversification A (Numerical Analysis) (9 CP)....16

03-MAT-MA-SP-B-NUM: Specialization B (Numerical Analysis) (9 CP)....24

03-MAT-MA-D-B-NUM: Diversification B (Numerical Analysis) (9 CP)....32

03-MAT-MA-AC-A-NUM: Advanced Communications A (Numerical Analysis) (9 CP)....42

03-MAT-MA-AC-B-NUM: Advanced Communications B (Numerical Analysis) (9 CP)....52

03-MAT-MA-RC-A-NUM: Reading Course A (Numerical Analysis) (9 CP)....62

03-MAT-MA-RC-B-NUM: Reading Course B (Numerical Analysis) (9 CP)....70

bb) Compulsory Elective Modules (9 CP)

One of the modules, so either in the are of specialization or from the area of diversification, is taken.

03-MAT-MA-SP-C-NUM: Specialization C (Numerical Analysis) (9 CP)....78

03-MAT-MA-D-C-NUM: Diversification C (Numerical Analysis) (9 CP)....86

d) Area of Specialization - Statistics/Stochastics (81 CP)

aa) Compulsory Modules (72 CP)

03-MAT-MA-SP-A-STS: Specialization A (Statistics/Stochastic) (9 CP)....10

03-MAT-MA-D-A-STS: Diversification A (Statistics/Stochastics) (9 CP)....18

03-MAT-MA-SP-B-STS: Specialization B (Statistics/Stochastic) (9 CP)....26

03-MAT-MA-D-B-STS: Diversification B (Statistics/Stochastics) (9 CP)....34

03-MAT-MA-AC-A-STS: Advanced Communications A (Statistics/Stochastics) (9 CP)....44

03-MAT-MA-AC-B-STS: Advanced Communications B (Statistics/Stochastics) (9 CP)....55

03-MAT-MA-RC-A-STS: Reading Course A (Statistics/Stochastics) (9 CP)....64

03-MAT-MA-RC-B-STS: Reading Course B (Statistics/Stochastics) (9 CP)....72

bb) Compulsory Elective Modules (9 CP)

One of the modules, so either in the are of specialization or from the area of diversification, is taken.

03-MAT-MA-SP-C-STS: Specialization C (Statistics/Stochastic) (9 CP).. 80

03-MAT-MA-D-C-STS: Diversification C (Statistics/Stochastics) (9 CP).. 88

2) Free Choice (9 CP)

Elective area totalling 9 CP. Students choose from the courses offered by the Faculty 3 and that are not yet completed or from the General Studies of the University of Bremen.

03-MAT-GS-FW: General Studies - Free Choice (9 CP).. 90

3) Master Thesis (30 CP)

The topic of the Master's thesis must belong to the chosen area of specialization. Required for registration are at least 81 CP.

03-MAT-MA-MTM: Module Master Thesis (30 CP).. 93

Module 03-MAT-MA-SP-A-ALG: Specialization A (Algebra)
Specialization A (Algebra)

Assignment to areas of study:
- Mathematics / Area of Specialization - Algebra / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of mathematical topics from the field of Algebra. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized subject from the field of Algebra, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
32 h Exam preparation
84 h SWS / presence time / working hours
154 h Preparation / follow-up work

Are there optional courses in the modules?
yes
Students are able to choose from a wide-variety of subjects offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Algebra

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Discrete Mathematics ()

Module 03-MAT-MA-SP-A-ANA: Specialization A (Analysis)
Specialization A (Analysis)

Assignment to areas of study:

- Mathematics / Area of Specialization - Analysis / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of mathematical topics from the field of Analysis. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized subject from the field of Analysis, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
84 h SWS / presence time / working hours
32 h Exam preparation
154 h Preparation / follow-up work

Are there optional courses in the modules?
yes
Students are able to choose from a wide-variety of subjects offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Module 03-MAT-MA-SP-A-NUM: Specialization A (Numerical Analysis)
Specialization A (Numerical Analysis)

Assignment to areas of study:

- Mathematics / Area of Specialization - Numerical Analysis / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of mathematical topics from the field of Numerical Analysis. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized subject from the field of Numerical Analysis, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
154 h Preparation / follow-up work
84 h SWS / presence time / working hours
32 h Exam preparation

Are there optional courses in the modules?
yes
Students are able to choose from a wide-variety of subjects offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Numerical Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Introduction to Optimization and Optimal Control ()

Mathematical Methods for Data Analysis and Image Processing ()

Numerical Methods for Partial Differential Equations ()

Online Optimization ()

Module 03-MAT-MA-SP-A-STS: Specialization A (Statistics/Stochastic)
Specialization A (Statistics/Stochastic)

Assignment to areas of study:
- Mathematics / Area of Specialization - Statistics/Stochastics / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of mathematical topics from the field of Statistics/Stochastics. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized subject from the field of Statistics/Stochastics, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
84 h SWS / presence time / working hours
32 h Exam preparation
154 h Preparation / follow-up work

Are there optional courses in the modules?
yes
Students are able to choose from a wide-variety of subjects offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Basics of Mathematical Statistics (Statistics I) ()

Semiparametric Statistics (Statistics III) ()

Simultaneous Statistical Inference ()

Module 03-MAT-MA-D-A-ALG: Diversification A (Algebra)
Diversification A (Algebra)

Assignment to areas of study:
- Mathematics / Area of Specialization - Algebra / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of topics from Analysis, Numerical Analysis and Statistics/Stochastics. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized area of mathematics, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
32 h Exam preparation
84 h SWS / presence time / working hours
154 h Preparation / follow-up work

Are there optional courses in the modules?
yes
Students are able to choose a course from a wide-variety of topics offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Analysis, Numerical Analysis or Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Basics of Mathematical Statistics (Statistics I) ()

Introduction to Optimization and Optimal Control ()

Mathematical Methods for Data Analysis and Image Processing ()

Numerical Methods for Partial Differential Equations ()

Online Optimization ()

Semiparametric Statistics (Statistics III) ()

Simultaneous Statistical Inference ()

Module 03-MAT-MA-D-A-ANA: Diversification A (Analysis)
Diversification A (Analysis)

Assignment to areas of study:

- Mathematics / Area of Specialization - Analysis / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of topics from Algebra, Numerical Analysis and Statistics/Stochastics. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized area of mathematics, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
84 h SWS / presence time / working hours
32 h Exam preparation
154 h Preparation / follow-up work

Are there optional courses in the modules?
yes
Students are able to choose a course from a wide-variety of topics offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Algebra, Numerical Analysis or Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Basics of Mathematical Statistics (Statistics I) ()

Discrete Mathematics ()

Introduction to Optimization and Optimal Control ()

Mathematical Methods for Data Analysis and Image Processing ()

Numerical Methods for Partial Differential Equations ()

Online Optimization ()

Semiparametric Statistics (Statistics III) ()

Simultaneous Statistical Inference ()

Module 03-MAT-MA-D-A-NUM: Diversification A (Numerical Analysis)
Diversification A (Numerical Analysis)

Assignment to areas of study:

- Mathematics / Area of Specialization - Numerical Analysis / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of topics from Algebra, Analysis and Statistics/Stochastics. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized area of mathematics, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
32 h Exam preparation
84 h SWS / presence time / working hours
154 h Preparation / follow-up work

Are there optional courses in the modules?
yes
Students are able to choose a course from a wide-variety of topics offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Algebra, Analysis or Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Basics of Mathematical Statistics (Statistics I) ()

Discrete Mathematics ()

Semiparametric Statistics (Statistics III) ()

Simultaneous Statistical Inference ()

Module 03-MAT-MA-D-A-STS: Diversification A (Statistics/Stochastics)
Diversification A (Statistics/Stochastics)

Assignment to areas of study:

- Mathematics / Area of Specialization - Statistics/Stochastics / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of topics from Algebra, Analysis and Numerical Analysis. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized area of mathematics, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
154 h Preparation / follow-up work
32 h Exam preparation
84 h SWS / presence time / working hours

Are there optional courses in the modules?
yes
Students are able to choose a course from a wide-variety of topics offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Algebra, Analysis or Numerical Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Discrete Mathematics ()

Introduction to Optimization and Optimal Control ()

Mathematical Methods for Data Analysis and Image Processing ()

Numerical Methods for Partial Differential Equations ()

Online Optimization ()

Module 03-MAT-MA-SP-B-ALG: Specialization B (Algebra)
Specialization B (Algebra)

Assignment to areas of study:

- Mathematics / Area of Specialization - Algebra / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of mathematical topics from the field of Algebra. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized subject from the field of Algebra, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
84 h SWS / presence time / working hours
32 h Exam preparation
154 h Preparation / follow-up work

Are there optional courses in the modules?
yes
Students are able to choose from a wide-variety of subjects offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Algebra

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Discrete Mathematics ()

Module 03-MAT-MA-SP-B-ANA: Specialization B (Analysis)
Specialization B (Analysis)

Assignment to areas of study:
- Mathematics / Area of Specialization - Analysis / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of mathematical topics from the field of Analysis. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized subject from the field of Analysis, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
84 h SWS / presence time / working hours
32 h Exam preparation
154 h Preparation / follow-up work

Are there optional courses in the modules?
no

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Module 03-MAT-MA-SP-B-NUM: Specialization B (Numerical Analysis)
Specialization B (Numerical Analysis)

Assignment to areas of study:
- Mathematics / Area of Specialization - Numerical Analysis / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of mathematical topics from the field of Numerical Analysis. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized subject from the field of Numerical Analysis, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
32 h Exam preparation
84 h SWS / presence time / working hours
154 h Preparation / follow-up work

Are there optional courses in the modules?
yes
Students are able to choose from a wide-variety of subjects offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Numerical Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Introduction to Optimization and Optimal Control ()

Mathematical Methods for Data Analysis and Image Processing ()

Numerical Methods for Partial Differential Equations ()

Online Optimization ()

Module 03-MAT-MA-SP-B-STS: Specialization B (Statistics/Stochastic)
Specialization B (Statistics/Stochastic)

Assignment to areas of study:

- Mathematics / Area of Specialization - Statistics/Stochastics / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of mathematical topics from the field of Statistics/Stochastics. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized subject from the field of Statistics/Stochastics, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
154 h Preparation / follow-up work
32 h Exam preparation
84 h SWS / presence time / working hours

Are there optional courses in the modules?
yes
Students are able to choose from a wide-variety of subjects offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Frequency:
each semester

The module is valid since / The module is valid until:
WiSe 23/24 / -

Responsible for the module:
Dr. Ingolf Schäfer

Duration:
1 semester[s]

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Basics of Mathematical Statistics (Statistics I) ()

Semiparametric Statistics (Statistics III) ()

Simultaneous Statistical Inference ()

Module 03-MAT-MA-D-B-ALG: Diversification B (Algebra)
Diversification B (Algebra)

Assignment to areas of study:

- Mathematics / Area of Specialization - Algebra / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of topics from Analysis, Numerical Analysis and Statistics/Stochastics. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized area of mathematics, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
32 h Exam preparation
84 h SWS / presence time / working hours
154 h Preparation / follow-up work

Are there optional courses in the modules?
yes
Students are able to choose a course from a wide-variety of topics offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Analysis, Numerical Analysis or Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Basics of Mathematical Statistics (Statistics I) ()

Introduction to Optimization and Optimal Control ()

Mathematical Methods for Data Analysis and Image Processing ()

Numerical Methods for Partial Differential Equations ()

Online Optimization ()

Semiparametric Statistics (Statistics III) ()

Simultaneous Statistical Inference ()

Module 03-MAT-MA-D-B-ANA: Diversification B (Analysis)
Diversification B (Analysis)

Assignment to areas of study:

- Mathematics / Area of Specialization - Analysis / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of topics from Algebra, Numerical Analysis and Statistics/Stochastics. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized area of mathematics, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
32 h Exam preparation
84 h SWS / presence time / working hours
154 h Preparation / follow-up work

Are there optional courses in the modules?
yes
Students are able to choose a course from a wide-variety of topics offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Frequency:
each semester

The module is valid since / The module is valid until:
WiSe 23/24 / -

Responsible for the module:
Dr. Ingolf Schäfer

Duration:
1 semester[s]

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Algebra, Numerical Analysis or Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Basics of Mathematical Statistics (Statistics I) ()

Discrete Mathematics ()

Introduction to Optimization and Optimal Control ()

Mathematical Methods for Data Analysis and Image Processing ()

Numerical Methods for Partial Differential Equations ()

Online Optimization ()

Semiparametric Statistics (Statistics III) ()

Simultaneous Statistical Inference ()

Module 03-MAT-MA-D-B-NUM: Diversification B (Numerical Analysis)
Diversification B (Numerical Analysis)

Assignment to areas of study:
- Mathematics / Area of Specialization - Numerical Analysis / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of topics from Algebra, Analysis and Statistics/Stochastics. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized area of mathematics, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
154 h Preparation / follow-up work
84 h SWS / presence time / working hours
32 h Exam preparation

Are there optional courses in the modules?
yes
Students are able to choose a course from a wide-variety of topics offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Algebra, Analysis or Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Basics of Mathematical Statistics (Statistics I) ()

Discrete Mathematics ()

Semiparametric Statistics (Statistics III) ()

Simultaneous Statistical Inference ()

Module 03-MAT-MA-D-B-STS: Diversification B (Statistics/Stochastics)
Diversification B (Statistics/Stochastics)

Assignment to areas of study:

- Mathematics / Area of Specialization - Statistics/Stochastics / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of topics from Algebra, Analysis and Numerical Analysis. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized area of mathematics, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
154 h Preparation / follow-up work
84 h SWS / presence time / working hours
32 h Exam preparation

Are there optional courses in the modules?
yes
Students are able to choose a course from a wide-variety of topics offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Algebra, Analysis or Numerical Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Discrete Mathematics ()

Introduction to Optimization and Optimal Control ()

Mathematical Methods for Data Analysis and Image Processing ()

Numerical Methods for Partial Differential Equations ()

Online Optimization ()

Module 03-MAT-MA-AC-A-ALG: Advanced Communications A (Algebra)
Advanced Communications A (Algebra)

Assignment to areas of study:

- Mathematics / Area of Specialization - Algebra / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the Seminar chosen and will be communicated by the lecturer at the start of the semester.

Learning content:
A variety of topics from Algebra will be available, which typically building upon previous lectures offered in the Master's program. The specific content will depend on the student's choice of Seminar.

Learning outcomes / competencies / targeted competencies:
Students deepen their experience in and knowledge of independent scientific work by

- Familiarizing themselves and learning about an advanced mathematical topic through literature, expanding on this with their own literature research.
- Preparing and giving a talk.
- Writing a mathematical text according to the corresponding universal and citing standards.

Calculation of student workload:
114 h Preparation / follow-up work
100 h Exam preparation
56 h SWS / presence time / working hours

Are there optional courses in the modules?
yes
In total, two seminars must be taken to complete this module. A list of the offered Algebra Seminars can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Partial Examination on a selected Seminar

Type of examination: partial exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / - / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

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Module examination: Partial Examination on a selected Seminar

Type of examination: partial exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / - / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Module courses

Course: 1. Seminar from the Area of Algebra

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
2,00

Teaching format(s):
Seminar

Associated module examination:
Partial Examination on a selected Seminar

Associated module courses

Topology (Seminar)

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Course: 2. Seminar from the Area of Algebra

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
2,00

Teaching format(s):
Seminar

Associated module examination:
Partial Examination on a selected Seminar

Associated module courses

Topology (Seminar)

Module 03-MAT-MA-AC-A-ANA: Advanced Communications A (Analysis)
Advanced Communications A (Analysis)

Assignment to areas of study:

- Mathematics / Area of Specialization - Analysis / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the Seminar chosen and will be communicated by the lecturer at the start of the semester.

Learning content:
A variety of topics from Analysis will be available, which typically building upon previous lectures offered in the Master's program. The specific content will depend on the student's choice of Seminar.

Learning outcomes / competencies / targeted competencies:
Students deepen their experience in and knowledge of independent scientific work by

- Familiarizing themselves and learning about an advanced mathematical topic through literature, expanding on this with their own literature research.
- Preparing and giving a talk.
- Writing a mathematical text according to the corresponding universal and citing standards.

Calculation of student workload:
100 h Exam preparation
56 h SWS / presence time / working hours
1114 h Preparation / follow-up work

Are there optional courses in the modules?
yes
In total, two seminars must be taken to complete this module. A list of the offered Analysis Seminars can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Partial Examination on a selected Seminar

Type of examination: partial exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / - / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

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Module examination: Partial Examination on a selected Seminar

Type of examination: partial exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / - / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Module courses

Course: 1. Seminar from the Area of Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
2,00

Teaching format(s):
Seminar

Associated module examination:
Partial Examination on a selected Seminar

Associated module courses

Eventually Positive Semigroups (Seminar)

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Course: 2. Seminar from the Area of Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
2,00

Teaching format(s):
Seminar

Associated module examination:
Partial Examination on a selected Seminar

Associated module courses

Eventually Positive Semigroups (Seminar)

Module 03-MAT-MA-AC-A-NUM: Advanced Communications A (Numerical Analysis)
Advanced Communications A (Numerical Analysis)

Assignment to areas of study:

- Mathematics / Area of Specialization - Numerical Analysis / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the Seminar chosen and will be communicated by the lecturer at the start of the semester.

Learning content:
A variety of topics from Numerical Analysis will be available, which typically building upon previous lectures offered in the Master's program. The specific content will depend on the student's choice of Seminar.

Learning outcomes / competencies / targeted competencies:
Students deepen their experience in and knowledge of independent scientific work by

- Familiarizing themselves and learning about an advanced mathematical topic through literature, expanding on this with their own literature research.
- Preparing and giving a talk.
- Writing a mathematical text according to the corresponding universal and citing standards.

Calculation of student workload:

Are there optional courses in the modules?
no

Language(s) of instruction:
German

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:

Duration:

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Partial Examination on a selected Seminar

Type of examination:

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
- / - / -

Language(s) of instruction:
German

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Module examination: Partial Examination on a selected Seminar

Type of examination:

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
- / - / -

Language(s) of instruction:
German

Module courses

Course: 1. Seminar from the Area of Numerical Analysis

Frequency:

Language(s) of instruction:
German

Contact hours:
2,00

Teaching format(s):
Seminar

Associated module examination:
Partial Examination on a selected Seminar

Associated module courses

Advanced Topics in Inverse Problems (Seminar)

Algorithmic Game Theory (Seminar)

High-Performance-Visualisierung (Seminar)

Introduction to Robust Control (Seminar)

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Course: 2. Seminar from the Area of Numerical Analysis

Frequency:

Language(s) of instruction:
German

Contact hours:
2,00

Teaching format(s):
Seminar

Associated module examination:
Partial Examination on a selected Seminar

Associated module courses

Advanced Topics in Inverse Problems (Seminar)

Algorithmic Game Theory (Seminar)

High-Performance-Visualisierung (Seminar)

Introduction to Robust Control (Seminar)

Module 03-MAT-MA-AC-A-STS: Advanced Communications A (Statistics/ Stochastics)
Advanced Communications A (Statistics/Stochastics)

Assignment to areas of study:

- Mathematics / Area of Specialization - Statistics/Stochastics / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the Seminar chosen and will be communicated by the lecturer at the start of the semester.

Learning content:
A variety of topics from Statistics/Stochastics will be available, which typically building upon previous lectures offered in the Master's program. The specific content will depend on the student's choice of Seminar.

Learning outcomes / competencies / targeted competencies:
Students deepen their experience in and knowledge of independent scientific work by

- Familiarizing themselves and learning about an advanced mathematical topic through literature, expanding on this with their own literature research.
- Preparing and giving a talk.
- Writing a mathematical text according to the corresponding universal and citing standards.

Calculation of student workload:

Are there optional courses in the modules?
no

Language(s) of instruction:
German

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:

Duration:

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Partial Examination on a selected Seminar

Type of examination:

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
- / - / -

Language(s) of instruction:
German

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Module examination: Partial Examination on a selected Seminar

Type of examination:

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
- / - / -

Language(s) of instruction:
German

Module courses

Course: 1. Seminar from the Area of Statistics/Stochastics

Frequency:

Language(s) of instruction:
German

Contact hours:
2,00

Teaching format(s):
Seminar

Associated module examination:
Partial Examination on a selected Seminar

Associated module courses

Stochastic-Statistical Dependencies (Seminar)

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Course: 2. Seminar from the Area of Statistics/Stochastics

Frequency:

Language(s) of instruction:
German

Contact hours:
2,00

Teaching format(s):
Seminar

Associated module examination:
Partial Examination on a selected Seminar

Associated module courses

Stochastic-Statistical Dependencies (Seminar)

Module 03-MAT-MA-AC-B-ALG: Advanced Communications B (Algebra)
Advanced Communications B (Algebra)

Assignment to areas of study:

- Mathematics / Area of Specialization - Algebra / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the Seminar chosen and will be communicated by the lecturer at the start of the semester.

Learning content:
A variety of topics from Analysis, Numerical Analysis and Statistics/Stochastics will be available, which typically building upon previous lectures offered in the Master's program. The specific content will depend on the student's choice of Seminar.

Learning outcomes / competencies / targeted competencies:
Students deepen their experience in and knowledge of independent scientific work by

- Familiarizing themselves and learning about an advanced mathematical topic through literature, expanding on this with their own literature research.
- Preparing and giving a talk.
- Writing a mathematical text according to the corresponding universal and citing standards.

Calculation of student workload:
100 h Exam preparation
114 h Preparation / follow-up work
56 h SWS / presence time / working hours

Are there optional courses in the modules?
yes
In total, two seminars must be taken to complete this module. A list of the offered Seminars can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Partial Examination on a selected Seminar

Type of examination: partial exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / - / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

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Module examination: Partial Examination on a selected Seminar

Type of examination: partial exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / - / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Module courses

Course: 1. Seminar from the Area of Analysis, Numercial Analysis or Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
2,00

Teaching format(s):
Seminar

Associated module examination:
Partial Examination on a selected Seminar

Associated module courses

Advanced Topics in Inverse Problems (Seminar)

Algorithmic Game Theory (Seminar)

Eventually Positive Semigroups (Seminar)

High-Performance-Visualisierung (Seminar)

Introduction to Robust Control (Seminar)

Seminar on Numerics of Partial Differential Equations (Seminar)

Stochastic-Statistical Dependencies (Seminar)

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Course: 2. Seminar from the Area of Analysis, Numercial Analysis or Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
2,00

Teaching format(s):
Seminar

Associated module examination:
Partial Examination on a selected Seminar

Associated module courses

Advanced Topics in Inverse Problems (Seminar)

Algorithmic Game Theory (Seminar)

Eventually Positive Semigroups (Seminar)

High-Performance-Visualisierung (Seminar)

Introduction to Robust Control (Seminar)

Seminar on Numerics of Partial Differential Equations (Seminar)

Stochastic-Statistical Dependencies (Seminar)

Module 03-MAT-MA-AC-B-ANA: Advanced Communications B (Analysis)
Advanced Communications A (Analysis)

Assignment to areas of study:

- Mathematics / Area of Specialization - Analysis / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the Seminar chosen and will be communicated by the lecturer at the start of the semester.

Learning content:
A variety of topics from Algebra, Numerical Analysis and Statistics/Stochastics will be available, which typically building upon previous lectures offered in the Master's program. The specific content will depend on the student's choice of Seminar.

Learning outcomes / competencies / targeted competencies:
Students deepen their experience in and knowledge of independent scientific work by

- Familiarizing themselves and learning about an advanced mathematical topic through literature, expanding on this with their own literature research.
- Preparing and giving a talk.
- Writing a mathematical text according to the corresponding universal and citing standards.

Calculation of student workload:
100 h Exam preparation
56 h SWS / presence time / working hours
114 h Preparation / follow-up work

Are there optional courses in the modules?
yes
In total, two seminars must be taken to complete this module. A list of the offered Seminars can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Partial Examination on a selected Seminar

Type of examination: partial exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / - / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

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Module examination: Partial Examination on a selected Seminar

Type of examination: partial exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / - / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Module courses

Course: 1. Seminar from the Area of Algebra, Numercial Analysis or Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
2,00

Teaching format(s):
Seminar

Associated module examination:
Partial Examination on a selected Seminar

Associated module courses

Advanced Topics in Inverse Problems (Seminar)

Algorithmic Game Theory (Seminar)

High-Performance-Visualisierung (Seminar)

Introduction to Robust Control (Seminar)

Seminar on Numerics of Partial Differential Equations (Seminar)

Stochastic-Statistical Dependencies (Seminar)

Topology (Seminar)

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Course: 2. Seminar from the Area of Algebra, Numerical Analysis or Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
2,00

Teaching format(s):
Seminar

Associated module examination:
Partial Examination on a selected Seminar

Associated module courses

Advanced Topics in Inverse Problems (Seminar)

Algorithmic Game Theory (Seminar)

High-Performance-Visualisierung (Seminar)

Introduction to Robust Control (Seminar)

Seminar on Numerics of Partial Differential Equations (Seminar)

Stochastic-Statistical Dependencies (Seminar)

Topology (Seminar)

Module 03-MAT-MA-AC-B-NUM: Advanced Communications B (Numerical Analysis)
Advanced Communications B (Numerical Analysis)

Assignment to areas of study:

- Mathematics / Area of Specialization - Numerical Analysis / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the Seminar chosen and will be communicated by the lecturer at the start of the semester.

Learning content:
A variety of topics from Analysis, Algebra and Statistics/Stochastics will be available, which typically building upon previous lectures offered in the Master's program. The specific content will depend on the student's choice of Seminar.

Learning outcomes / competencies / targeted competencies:
Students deepen their experience in and knowledge of independent scientific work by

- Familiarizing themselves and learning about an advanced mathematical topic through literature, expanding on this with their own literature research.
- Preparing and giving a talk.
- Writing a mathematical text according to the corresponding universal and citing standards.

Calculation of student workload:
114 h Preparation / follow-up work
56 h SWS / presence time / working hours
100 h Exam preparation

Are there optional courses in the modules?
yes
In total, two seminars must be taken to complete this module. A list of the offered Seminars can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Partial Examination on a selected Seminar

Type of examination: partial exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / - / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

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Module examination: Partial Examination on a selected Seminar

Type of examination: partial exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / - / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Module courses

Course: 1. Seminar from the Area of Algebra, Analysis or Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
2,00

Teaching format(s):
Seminar

Associated module examination:
Partial Examination on a selected Seminar

Associated module courses

Eventually Positive Semigroups (Seminar)

Seminar on Numerics of Partial Differential Equations (Seminar)

Stochastic-Statistical Dependencies (Seminar)

Topology (Seminar)

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Course: 2. Seminar from the Area of Algebra, Analysis or Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
2,00

Teaching format(s):
Seminar

Associated module examination:
Partial Examination on a selected Seminar

Associated module courses

Eventually Positive Semigroups (Seminar)

Seminar on Numerics of Partial Differential Equations (Seminar)

Stochastic-Statistical Dependencies (Seminar)

Topology (Seminar)

Module 03-MAT-MA-AC-B-STS: Advanced Communications B (Statistics/Stochastics)

Advanced Communications B (Statistics/Stochastics)

Assignment to areas of study:

- Mathematics / Area of Specialization - Statistics/Stochastics / Compulsory Modules

Content-related prior knowledge or skills:

The required knowledge will depend on the Seminar chosen and will be communicated by the lecturer at the start of the semester.

Learning content:

A variety of topics from Analysis, Algebra and Numerical Analysis will be available, which typically building upon previous lectures offered in the Master's program. The specific content will depend on the student's choice of Seminar.

Learning outcomes / competencies / targeted competencies:

Students deepen their experience in and knowledge of independent scientific work by

- Familiarizing themselves and learning about an advanced mathematical topic through literature, expanding on this with their own literature research.
- Preparing and giving a talk.
- Writing a mathematical text according to the corresponding universal and citing standards.

Calculation of student workload:

100 h Exam preparation

114 h Preparation / follow-up work

56 h SWS / presence time / working hours

Are there optional courses in the modules?

yes

In total, two seminars must be taken to complete this module. A list of the offered Seminars can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:

English

Responsible for the module:

Dr. Ingolf Schäfer

Frequency:

each semester

Duration:

1 semester[s]

The module is valid since / The module is valid until:

WiSe 23/24 / -

Credit points / Workload:

9 / 270 hours

Module examinations

Module examination: Partial Examination on a selected Seminar

Type of examination: partial exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / - / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

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Module examination: Partial Examination on a selected Seminar

Type of examination: partial exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / - / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Module courses

Course: 1. Seminar from the Area of Algebra, Analysis or Numerical Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
2,00

Teaching format(s):
Seminar

Associated module examination:
Partial Examination on a selected Seminar

Associated module courses

Advanced Topics in Inverse Problems (Seminar)

Algorithmic Game Theory (Seminar)

Eventually Positive Semigroups (Seminar)

High-Performance-Visualisierung (Seminar)

Introduction to Robust Control (Seminar)

Seminar on Numerics of Partial Differential Equations (Seminar)

Topology (Seminar)

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Course: 2. Seminar from the Area of Algebra, Analysis or Numerical Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
2,00

Teaching format(s):
Seminar

Associated module examination:
Partial Examination on a selected Seminar

Associated module courses

Advanced Topics in Inverse Problems (Seminar)

Algorithmic Game Theory (Seminar)

Eventually Positive Semigroups (Seminar)

High-Performance-Visualisierung (Seminar)

Introduction to Robust Control (Seminar)

Seminar on Numerics of Partial Differential Equations (Seminar)

Topology (Seminar)

Module 03-MAT-MA-RC-A-ALG: Reading Course A (Algebra)
Reading Course A (Algebra)

Assignment to areas of study:

- Mathematics / Area of Specialization - Algebra / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will be discussed with the lecturer at the start of the semester.

Learning content:
The individual topic of this Reading Course (RC) needs to be within the field of Algebra and will be determined through discussions with and the approval of a supervisor. The student will register for the RC after such discussions and the selection of a topic.

Learning outcomes / competencies / targeted competencies:
The goal of the course is to gain experience with the intensive, self-driven study of a selected topic from the area of Algebra. The process is guided and supervised by a staff member from the mathematics faculty. The Reading Course can also be used to become acquainted with topics or subjects that can then form the basis for a later Masters thesis.

Calculation of student workload:
30 h SWS / presence time / working hours
240 h Preparation / follow-up work

Are there optional courses in the modules?
no

Language(s) of instruction:
English

Responsible for the module:
Prof. Dr. Dmitry Feichtner-Kozlov

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Final examination

Type of examination: module exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
- / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Module courses

Course: Reading Course from the Area of Algebra

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
-

Teaching format(s):

Associated module examination:
Final Examination

Associated module courses

Reading Course Algebra (Seminar)

Module 03-MAT-MA-RC-A-ANA: Reading Course A (Analysis)
Reading Course A (Analysis)

Assignment to areas of study:

- Mathematics / Area of Specialization - Analysis / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will be discussed with the lecturer at the start of the semester.

Learning content:
The individual topic of this Reading Course (RC) needs to be within the field of Analysis and will be determined through discussions with and the approval of a supervisor. The student will register for the RC after such discussions and the selection of a topic.

Learning outcomes / competencies / targeted competencies:
The goal of the course is to gain experience with the intensive, self-driven study of a selected topic from the area of Analysis. The process is guided and supervised by a staff member from the mathematics faculty. The Reading Course can also be used to become acquainted with topics or subjects that can then form the basis for a later Masters thesis.

Calculation of student workload:
240 h Preparation / follow-up work
30 h SWS / presence time / working hours

Are there optional courses in the modules?
no

Language(s) of instruction:
English

Responsible for the module:
Prof. Dr. Anke Dorothea Pohl

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Module Examination

Type of examination: module exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
- / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Module courses

Course: Reading Course from the Area of Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
-

Teaching format(s):

Associated module examination:
Final Examination

Associated module courses

Reading Course Analysis (Seminar)

Module 03-MAT-MA-RC-A-NUM: Reading Course A (Numerical Analysis)
Reading Course A (Numerical Analysis)

Assignment to areas of study:
- Mathematics / Area of Specialization - Numerical Analysis / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will be discussed with the lecturer at the start of the semester.

Learning content:
The individual topic of this Reading Course (RC) needs to be within the field of Numerical Analysis and will be determined through discussions with and the approval of a supervisor. The student will register for the RC after such discussions and the selection of a topic.

Learning outcomes / competencies / targeted competencies:
The goal of the course is to gain experience with the intensive, self-driven study of a selected topic from the area of Numerical Analysis. The process is guided and supervised by a staff member from the mathematics faculty. The Reading Course can also be used to become acquainted with topics or subjects that can then form the basis for a later Masters thesis.

Calculation of student workload:
240 h Preparation / follow-up work
30 h SWS / presence time / working hours

Are there optional courses in the modules?
no

Language(s) of instruction:
English

Responsible for the module:
Prof. Dr. Andreas Rademacher

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Module Examination

Type of examination: module exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
- / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Module courses

Course: Reading Course from the Area of Numerical Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
-

Teaching format(s):

Associated module examination:
Final Examination

Associated module courses

Reading Course Numerical Analysis (Seminar)

Module 03-MAT-MA-RC-A-STS: Reading Course A (Statistics/Stochastics)
Reading Course A (Statistics/Stochastics)

Assignment to areas of study:
- Mathematics / Area of Specialization - Statistics/Stochastics / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will be discussed with the lecturer at the start of the semester.

Learning content:
The individual topic of this Reading Course (RC) needs to be within the field of Statistics/Stochastics and will be determined through discussions with and the approval of a supervisor. The student will register for the RC after such discussions and the selection of a topic.

Learning outcomes / competencies / targeted competencies:
The goal of the course is to gain experience with the intensive, self-driven study of a selected topic from the area of Statistics/Stochastics. The process is guided and supervised by a staff member from the mathematics faculty. The Reading Course can also be used to become acquainted with topics or subjects that can then form the basis for a later Masters thesis.

Calculation of student workload:
240 h Preparation / follow-up work
30 h SWS / presence time / working hours

Are there optional courses in the modules?
no

Language(s) of instruction:
English

Responsible for the module:
Prof. Dr. Thorsten-Ingo Dickhaus

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Module Examination

Type of examination: module exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
- / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Module courses

Course: Reading Course from the Area of Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
-

Teaching format(s):

Associated module examination:
Final Examination

Associated module courses

Reading Course Statistics/Stochastics (Seminar)

Module 03-MAT-MA-RC-B-ALG: Reading Course B (Algebra)
Reading Course B (Algebra)

Assignment to areas of study:

- Mathematics / Area of Specialization - Algebra / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will be discussed with the lecturer at the start of the semester.

Learning content:
The individual topic of this Reading Course (RC) can come from any of the four mathematical specialty fields (Algebra, Analysis, Numerical Analysis and Statistics/Stochastics) and will be determined through discussions with and the approval of a supervisor. The student will register for the RC after such discussions and the selection of a topic.

Learning outcomes / competencies / targeted competencies:
The goal of the course is to gain experience with the intensive, self-driven study of a selected topic. The process is guided and supervised by a staff member from the mathematics faculty. The Reading Course can also be used to become acquainted with topics or subjects that can then form the basis for a later Masters thesis.

Calculation of student workload:
240 h Preparation / follow-up work
30 h SWS / presence time / working hours

Are there optional courses in the modules?
no

Language(s) of instruction:
English

Responsible for the module:
Prof. Dr. Dmitry Feichtner-Kozlov

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Combination Examination

Type of examination: module exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
- / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Module courses

Course: Reading Course from the Area of Algebra

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
-

Teaching format(s):

Associated module examination:
Final Examination

Associated module courses

Reading Course Algebra (Seminar)

Module 03-MAT-MA-RC-B-ANA: Reading Course B (Analysis)
Reading Course B (Analysis)

Assignment to areas of study:
- Mathematics / Area of Specialization - Analysis / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will be discussed with the lecturer at the start of the semester.

Learning content:
The individual topic of this Reading Course (RC) can come from any of the four mathematical specialty fields (Algebra, Analysis, Numerical Analysis and Statistics/Stochastics) and will be determined through discussions with and the approval of a supervisor. The student will register for the RC after such discussions and the selection of a topic.

Learning outcomes / competencies / targeted competencies:
The goal of the course is to gain experience with the intensive, self-driven study of a selected topic. The process is guided and supervised by a staff member from the mathematics faculty. The Reading Course can also be used to become acquainted with topics or subjects that can then form the basis for a later Masters thesis.

Calculation of student workload:
30 h SWS / presence time / working hours
240 h Preparation / follow-up work

Are there optional courses in the modules?
no

Language(s) of instruction:
English

Responsible for the module:
Prof. Dr. Anke Dorothea Pohl

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Module Examination

Type of examination: module exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
- / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Module courses

Course: Reading Course from the Area of Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
-

Teaching format(s):

Associated module examination:
Final Examination

Associated module courses

Reading Course Analysis (Seminar)

Module 03-MAT-MA-RC-B-NUM: Reading Course B (Numerical Analysis)
Reading Course B (Numerical Analysis)

Assignment to areas of study:

- Mathematics / Area of Specialization - Numerical Analysis / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will be discussed with the lecturer at the start of the semester.

Learning content:
The individual topic of this Reading Course (RC) can come from any of the four mathematical specialty fields (Algebra, Analysis, Numerical Analysis and Statistics/Stochastics) and will be determined through discussions with and the approval of a supervisor. The student will register for the RC after such discussions and the selection of a topic.

Learning outcomes / competencies / targeted competencies:
The goal of the course is to gain experience with the intensive, self-driven study of a selected topic. The process is guided and supervised by a staff member from the mathematics faculty. The Reading Course can also be used to become acquainted with topics or subjects that can then form the basis for a later Masters thesis.

Calculation of student workload:
240 h Preparation / follow-up work
30 h SWS / presence time / working hours

Are there optional courses in the modules?
no

Language(s) of instruction:
English

Responsible for the module:
Prof. Dr. Andreas Rademacher

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Module Examination

Type of examination: module exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
- / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Module courses

Course: Reading Course from the Area of Numerical Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
-

Teaching format(s):

Associated module examination:
Final Examination

Associated module courses

Reading Course Numerical Analysis (Seminar)

Module 03-MAT-MA-RC-B-STS: Reading Course B (Statistics/Stochastics)
Reading Course B (Statistics/Stochastics)

Assignment to areas of study:

- Mathematics / Area of Specialization - Statistics/Stochastics / Compulsory Modules

Content-related prior knowledge or skills:
The required knowledge will be discussed with the lecturer at the start of the semester.

Learning content:
The individual topic of this Reading Course (RC) can come from any of the four mathematical specialty fields (Algebra, Analysis, Numerical Analysis and Statistics/Stochastics) and will be determined through discussions with and the approval of a supervisor. The student will register for the RC after such discussions and the selection of a topic.

Learning outcomes / competencies / targeted competencies:
The goal of the course is to gain experience with the intensive, self-driven study of a selected topic. The process is guided and supervised by a staff member from the mathematics faculty. The Reading Course can also be used to become acquainted with topics or subjects that can then form the basis for a later Masters thesis.

Calculation of student workload:
30 h SWS / presence time / working hours
240 h Preparation / follow-up work

Are there optional courses in the modules?
no

Language(s) of instruction:
English

Responsible for the module:
Prof. Dr. Thorsten-Ingo Dickhaus

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Module Examination

Type of examination: module exam

Form of examination:
Presentation and written assignment

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
- / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Module courses

Course: Reading Course from the Area of Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
-

Teaching format(s):

Associated module examination:
Final Examination

Associated module courses

Reading Course Statistics/Stochastics (Seminar)

Module 03-MAT-MA-SP-C-ALG: Specialization C (Algebra)
Specialization C (Algebra)

Assignment to areas of study:

- Mathematics / Area of Specialization - Algebra / Compulsory Elective Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of mathematical topics from the field of Algebra. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized subject from the field of Algebra, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
32 h Exam preparation
84 h SWS / presence time / working hours
154 h Preparation / follow-up work

Are there optional courses in the modules?
yes
Students are able to choose from a wide-variety of subjects offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Algebra

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Discrete Mathematics ()

Module 03-MAT-MA-SP-C-ANA: Specialization C (Analysis)
Specialization C (Analysis)

Assignment to areas of study:
- Mathematics / Area of Specialization - Analysis / Compulsory Elective Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of mathematical topics from the field of Analysis. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized subject from the field of Analysis, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
154 h Preparation / follow-up work
32 h Exam preparation
84 h SWS / presence time / working hours

Are there optional courses in the modules?
yes
Students are able to choose from a wide-variety of subjects offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Module 03-MAT-MA-SP-C-NUM: Specialization C (Numerical Analysis)
Specialization C (Numerical Analysis)

Assignment to areas of study:

- Mathematics / Area of Specialization - Numerical Analysis / Compulsory Elective Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of mathematical topics from the field of Numerical Analysis. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized subject from the field of Numerical Analysis, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
154 h Preparation / follow-up work
32 h Exam preparation
84 h SWS / presence time / working hours

Are there optional courses in the modules?
yes
Students are able to choose from a wide-variety of subjects offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Numerical Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Introduction to Optimization and Optimal Control ()

Mathematical Methods for Data Analysis and Image Processing ()

Numerical Methods for Partial Differential Equations ()

Online Optimization ()

Module 03-MAT-MA-SP-C-STS: Specialization C (Statistics/Stochastic)
Specialization C (Statistics/Stochastic)

Assignment to areas of study:

- Mathematics / Area of Specialization - Statistics/Stochastics / Compulsory Elective Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of mathematical topics from the field of Statistics/Stochastics. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized subject from the field of Statistics/Stochastics, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
84 h SWS / presence time / working hours
32 h Exam preparation
154 h Preparation / follow-up work

Are there optional courses in the modules?
yes
Students are able to choose from a wide-variety of subjects offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Combination Examination

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected course

Associated module courses

Basics of Mathematical Statistics (Statistics I) ()

Semiparametric Statistics (Statistics III) ()

Simultaneous Statistical Inference ()

Module 03-MAT-MA-D-C-ALG: Diversification C (Algebra)
Diversification C (Algebra)

Assignment to areas of study:

- Mathematics / Area of Specialization - Algebra / Compulsory Elective Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of topics from Analysis, Numerical Analysis and Statistics/Stochastics. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized area of mathematics, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
154 h Preparation / follow-up work
32 h Exam preparation
84 h SWS / presence time / working hours

Are there optional courses in the modules?
yes
Students are able to choose a course from a wide-variety of topics offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Analysis, Numerical Analysis or Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Basics of Mathematical Statistics (Statistics I) ()

Introduction to Optimization and Optimal Control ()

Mathematical Methods for Data Analysis and Image Processing ()

Numerical Methods for Partial Differential Equations ()

Online Optimization ()

Semiparametric Statistics (Statistics III) ()

Simultaneous Statistical Inference ()

Module 03-MAT-MA-D-C-ANA: Diversification C (Analysis)
Diversification C (Analysis)

Assignment to areas of study:

- Mathematics / Area of Specialization - Analysis / Compulsory Elective Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of topics from Algebra, Numerical Analysis and Statistics/Stochastics. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized area of mathematics, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
84 h SWS / presence time / working hours
32 h Exam preparation
154 h Preparation / follow-up work

Are there optional courses in the modules?
yes
Students are able to choose a course from a wide-variety of topics offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Algebra, Numerical Analysis or Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Basics of Mathematical Statistics (Statistics I) ()

Discrete Mathematics ()

Introduction to Optimization and Optimal Control ()

Mathematical Methods for Data Analysis and Image Processing ()

Numerical Methods for Partial Differential Equations ()

Online Optimization ()

Semiparametric Statistics (Statistics III) ()

Simultaneous Statistical Inference ()

Module 03-MAT-MA-D-C-NUM: Diversification C (Numerical Analysis)
Diversification C (Numerical Analysis)

Assignment to areas of study:

- Mathematics / Area of Specialization - Numerical Analysis / Compulsory Elective Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of topics from Algebra, Analysis and Statistics/Stochastics. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized area of mathematics, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
32 h Exam preparation
84 h SWS / presence time / working hours
154 h Preparation / follow-up work

Are there optional courses in the modules?
yes
Students are able to choose a course from a wide-variety of topics offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Algebra, Analysis or Statistics/Stochastics

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Basics of Mathematical Statistics (Statistics I) ()

Discrete Mathematics ()

Semiparametric Statistics (Statistics III) ()

Simultaneous Statistical Inference ()

Module 03-MAT-MA-D-C-STS: Diversification C (Statistics/Stochastics)
Diversification C (Statistics/Stochastics)

Assignment to areas of study:

- Mathematics / Area of Specialization - Statistics/Stochastics / Compulsory Elective Modules

Content-related prior knowledge or skills:
The required knowledge will depend on the chosen course and will be communicated by the lecturer at the start of the semester.

Learning content:
The students choose from a variety of topics from Algebra, Analysis and Numerical Analysis. The specific content will depend on the student's choice of course.

Learning outcomes / competencies / targeted competencies:
Students are introduced to a specialized area of mathematics, gaining knowledge of the topic along with current open research questions and its applications in other scientific areas, where appropriate. They familiarize themselves with the methods involved in scientific work and reflect critically on the limits of applicability of the covered procedures.

Calculation of student workload:
32 h Exam preparation
154 h Preparation / follow-up work
84 h SWS / presence time / working hours

Are there optional courses in the modules?
yes
Students are able to choose a course from a wide-variety of topics offered each semester; the offered courses can be found in the Course Catalogs, which will be released prior to the start of each semester.

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Examination(s) on the selected Course

Type of examination: combination exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / 1 / -

Language(s) of instruction:
English / German (Examinations are usually conducted in English, but can also be taken in another language after consultation with the examiner.)

Description:
Type of Examination: Scientific Paper or Oral/Written Exam.

The (Graded or Ungraded) Coursework requirements will be decided upon by the Lecturer at the beginning of the course (Weekly Worksheets, Midterm Exam, etc.).

Module courses

Course: Lecture and Exercise from the Area of Algebra, Analysis or Numerical Analysis

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
6,00

Teaching format(s):

Associated module examination:
Examination(s) on the selected Course

Associated module courses

Algorithms and Uncertainty ()

Discrete Mathematics ()

Introduction to Optimization and Optimal Control ()

Mathematical Methods for Data Analysis and Image Processing ()

Numerical Methods for Partial Differential Equations ()

Online Optimization ()

Module 03-MAT-GS-FW: General Studies - Freie Wahl
General Studies - Free Choice

Assignment to areas of study:
- Free Choice

Content-related prior knowledge or skills:
none

Learning content:
Es kann aus dem gesamten, noch nicht absolvierten Angebot des Fachbereichs 03 und aus den Fachergänzenden Studien (siehe Modulgruppe Fachergänzende Studien) gewählt werden. Insbesondere kann hier ein Praktikum eingebracht werden.

Learning outcomes / competencies / targeted competencies:

Calculation of student workload:

Are there optional courses in the modules?
yes

Language(s) of instruction:
German

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:

The module is valid since / The module is valid until:
WiSe 22/23 / -

Credit points / Workload:
9 / 270 hours

Module examinations

Module examination: Prüfungs- bzw. Studienleistung(en)

Type of examination: module exam

Form of examination:
Announcement at the beginning of the semester

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
- / - / -

Language(s) of instruction:
German

Module courses

Course: Veranstaltung(en) aus dem Fachbereich 3 bzw. den fachergänzenden Studien

Frequency:
each semester

Language(s) of instruction:
German

Contact hours:
-

Teaching format(s):

Associated module examination:
Prüfungs- bzw. Studienleistung(en)

Associated module courses

AI Algorithms — Theory and Engineering (Lecture)

Advanced Machine Learning (Lecture)

Advanced Methods for Adaptive Designs (Lecture)

Advanced Methods of AI (Lecture)

Advanced Topics in Inverse Problems (Seminar)

Algorithmentheorie (Lecture)

Algorithmic Game Theory (Seminar)

Algorithms and Uncertainty ()

Ausgewählte Probleme der multisensorischen Kognition (Seminar)

Automaten und formale Sprachen (Lecture)

Automatentheorie und ihre Anwendungen ()

Basics of Mathematical Statistics (Statistics I) ()

Basics of mathematical Statistics (Statistics I) ()

Betriebssysteme (Lecture)

Computergraphik (Lecture)

Datenbanksysteme (Lecture)

Digitalisierung in Staat und Gesellschaft (Lecture)

Discrete Mathematics ()

E-Commerce-Anwendungen ()

Eventually Positive Semigroups (Seminar)

FEB-Projekte ()

Formale Beweismethoden (Lecture)

Funktionentheorie (Lecture)

High-Performance-Visualisierung (Seminar)

Informatik und Gesellschaft (Seminar)

Informationssicherheit (Lecture)

Introduction to Optimization and Optimal Control ()

Introduction to R (Seminar)

Introduction to Robust Control (Seminar)

Kognitive Systeme Seminar (Seminar)

Mathematical Methods for Data Analysis and Image Processing ()

Mathematik 1: Logik, Kombinatorik und Lineare Algebra (Lecture)

Maß- und Wahrscheinlichkeitstheorie ()

Mensch-Technik-Interaktion ()

Modelle und Mathematik (Seminar)

Numerical Methods for Partial Differential Equations ()

Online Optimization ()

Praktische Informatik 1: Imperative Programmierung und Objektorientierung (Lecture)

Praktische Informatik 3: Funktionale Programmierung (Lecture)

Rechnerarchitektur und Eingebettete Systeme (Lecture)

Robot Design Lab (Lecture)

Seminar on Numerics of Partial Differential Equations (Seminar)

Semiparametric Statistics (Statistics III) ()

Sensordatenverarbeitung (Lecture)

Simultaneous Statistical Inference ()

Software-Projekt (Lecture)

Statistical Consulting (Seminar)

Stochastic-Statistical Dependencies (Seminar)

Technische Informatik 2: Betriebssysteme und Nebenläufigkeit (Lecture)

Topology (Seminar)

Wissenschaftskultur und Wissenschaftliches Arbeiten (Seminar)

Module 03-MAT-MA-MTM: Module Master Thesis
Module Master Thesis

Assignment to areas of study:

- Master Thesis

Content-related prior knowledge or skills:
The topic of the master thesis will be discussed with the individual supervisor(s) and will generally build on a previous course in the specialized area.

Learning content:
The in-depth exploration of a mathematical topic, which is related to an area of current research, under individual supervision in a limited amount of time. It will ideally be supported by the contribution of individual research results.

Learning outcomes / competencies / targeted competencies:
The ability to understand and independently work on scientific premises, in particular:

- Researching the topic through the analysis of provided and found literature,
- Reflecting on the current state of research,
- Generating own research results as far as possible,
- Adhering to the rules of good scientific practice,
- Writing a substantial mathematical text,
- Presenting a concise exploration of the work in a talk.

Calculation of student workload:
810 h Exam preparation
90 h Preparation / follow-up work

Are there optional courses in the modules?
no

Language(s) of instruction:
English

Responsible for the module:
Dr. Ingolf Schäfer

Frequency:
each semester

Duration:
1 semester[s]

The module is valid since / The module is valid until:
WiSe 23/24 / -

Credit points / Workload:
30 / 900 hours

Module examinations

Module examination: Master Thesis

Type of examination: combination exam

Form of examination:
Master Thesis

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / - / -

Language(s) of instruction:
English / German (The Master's thesis is written in English. The examination board may allow other languages upon request.)

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Module examination: Colloquium

Type of examination: combination exam

Form of examination:
Colloquium

The examination is ungraded?
no

Number of graded components / ungraded components / prerequisites of the examination:
1 / - / -

Language(s) of instruction:
English / German (The Master's thesis is written in English. The examination board may allow other languages upon request.)

Module courses

Course: Master Thesis incl. Colloquium

Frequency:
each semester

Language(s) of instruction:
English

Contact hours:
-

Teaching format(s):

Associated module examination:
Colloquium
Master Thesis