Module Catalogue
for the Subject
Chemistry
as a Bachelor’s with 1 major
with the degree "Bachelor of Science"
(180 ECTS credits)

Examination regulations version: 2009
Responsible: Faculty of Chemistry and Pharmacy
Contents

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Content and Objectives of the Programme

The chemistry program in Würzburg offers a research-oriented curriculum. Graduates of the Bachelor-program in chemistry are acquainted with the fundamentals of chemistry, possess the relevant experimental skills and are familiar with the general methods of scientific research. In lectures and tutorials the basic knowledge of the various areas of chemistry is imparted as well as the foundations of mathematics and physics. A further hallmark is the comparably large number of student lab courses. In these labs the laboratory skills and techniques used in experimental scientific work are taught. During their Bachelor thesis the students finally work for a limited time on a specific chemical problem. They demonstrate their scientific abilities in work which is performed under guidance, but to a large extent independently. The students obtain the necessary knowledge to attend a research-oriented Masters program. In addition they possess the basic qualifications necessary for further professional training in industry and business. In supplementary modules they acquire science-related soft skills in specific areas of chemistry and general soft skills that match their personal interests and serve as an additional qualification for various professional areas.
Abbreviations used

Course types: **E** = field trip, **K** = colloquium, **O** = conversatorium, **P** = placement/lab course, **R** = project, **S** = seminar, **T** = tutorial, **Ü** = exercise, **V** = lecture

Term: **SS** = summer semester, **WS** = winter semester

Methods of grading: **NUM** = numerical grade, **B/NB** = (not) successfully completed

Regulations: **(L)ASPO** = general academic and examination regulations (for teaching-degree programs), **FSB** = subject-specific provisions, **SFB** = list of modules

Other: **A** = thesis, **LV** = course(s), **PL** = assessment(s), **TN** = participants, **VL** = prerequisite(s)

**Conventions**

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

**Notes**

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

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

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

**In accordance with**

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

**ASPO2007**

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

**19-Nov-2009 (2009-74)**

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

(145 ECTS credits)
<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>Introduction to Physics for Students of Non-physics-related Minor Subjects</td>
<td>11-EFNF-072-m01</td>
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</table>

**Module coordinator**
Managing Director of the Institute of Applied Physics

**Module offered by**
Faculty of Physics and Astronomy

<table>
<thead>
<tr>
<th>ECTS</th>
<th>Method of grading</th>
<th>Only after succ. compl. of module(s)</th>
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<tr>
<td>7</td>
<td>numerical grade</td>
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<thead>
<tr>
<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
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</thead>
<tbody>
<tr>
<td>2 semester</td>
<td>undergraduate</td>
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</tbody>
</table>

**Contents**
Mechanics, vibration theory, thermodynamics, optics, science of electricity, Atomic and Nuclear Physics.

**Intended learning outcomes**
The students have knowledge of the principles of Physics.

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

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

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

written examination (approx. 120 minutes)

**Allocation of places**
Only as part of pool of general key skills (ASQ): 10 places. Places will be allocated by lot.

**Additional information**
--

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

--
<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tr>
<td>Practical Course Physics for Students of Non-physics-related Minor Subjects</td>
<td>11-PFN-072-m01</td>
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<th>Module offered by</th>
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<tr>
<td>Managing Director of the Institute of Applied Physics</td>
<td>Faculty of Physics and Astronomy</td>
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<th>ECTS</th>
<th>Method of grading</th>
<th>Other prerequisites</th>
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<td>3</td>
<td>Only after succ. compl. of module(s)</td>
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<tr>
<th>Duration</th>
<th>Module level</th>
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</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</tbody>
</table>

### Contents
Mechanics, vibration theory, thermodynamics, optics, X-rays, nuclear magnetic resonance, Atomic and Nuclear Physics.

### Intended learning outcomes
The students have knowledge of the principles of Physics.

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

### Method of assessment
a) oral test (approx. 15 minutes) during experiment and b) ungraded written examination (approx. 90 minutes)

### Allocation of places
Only as part of pool of general key skills (ASQ): 10 places. Places will be allocated by lot.

### Additional information
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### Referred to in LPO I
(examination regulations for teaching-degree programmes)
--
**Module title**  
Inorganic Chemistry 2

**Abbreviation**  
o8-AC2-092-m01

**Module coordinator**  
Lecturer of lecture "Festkörperchemie" (Solid State Chemistry)

**Module offered by**  
Institute of Inorganic Chemistry

**ECTS**  
6

**Method of grading**  
Numerical grade

**Only after succ. compl. of module(s)**  
--

**Duration**  
1 semester

**Module level**  
Undergraduate

**Other prerequisites**  
--

**Contents**

German contents available but not translated yet.


**Intended learning outcomes**

German intended learning outcomes available but not translated yet.


**Courses**

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

**Method of assessment**

(a) 1 to 3 written examinations (1 written examination: 90 minutes; 2 written examinations: 60 or 90 minutes each; 3 written examinations: 60 minutes each) or (b) oral examination in groups (groups of 2, approx. 30 minutes)

**Allocation of places**

--

**Additional information**

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**Referred to in LPO I**

(examination regulations for teaching-degree programmes)
Module title: Inorganic Chemistry 3
Abbreviation: 08-AC3-092-m01

Module coordinator:
Lecturer of lecture "Elementorganische Chemie" (Elemental Organic Chemistry)

Module offered by:
Institute of Inorganic Chemistry

ECTS: 9
Method of grading: numerical grade
Only after succ. compl. of module(s): 08-AC1 (module component 08-AC1-2 only) or 08-AN1 (module component 08-AN1-2 only)

Duration: 1 semester
Module level: undergraduate

Other prerequisites: --

Contents
German contents available but not translated yet.


Intended learning outcomes
German intended learning outcomes available but not translated yet.


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

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- 08-AC3-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available)
- 08-AC3-2-092: P (no information on SWS (weekly contact hours) and course language available)

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

Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

Assessment in module component 08-AC3-1-092: Elemental Organic Chemistry
- 4 ECTS, Method of grading: numerical grade
  - a) 1 to 3 written examinations (1 written examination: 90 minutes; 2 written examinations: 60 or 90 minutes each; 3 written examinations: 60 minutes each) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes)

Assessment in module component 08-AC3-2-092: Inorganic Chemistry 2 (lab)
- 5 ECTS, Method of grading: (not) successfully completed
  - Vorleistung (pre-experiment exams, approx. 15 minutes each), assessment of practical performance, Nachleistung (post-experiment exams, approx. 15 minutes each)
  - Assessment offered: once a year, winter semester
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<thead>
<tr>
<th>Allocation of places</th>
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<tr>
<td>Additional information</td>
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<tr>
<td>Referred to in LPO I (examination regulations for teaching-degree programmes)</td>
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<tr>
<td>Module title</td>
<td>Abbreviation</td>
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<tr>
<td>Organic Chemistry 2</td>
<td>08-OC2-092-m01</td>
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</table>

**Module coordinator**
holder of the Chair of Physically Organic Chemistry

**Module offered by**
Institute of Organic Chemistry

**Contents**
German contents available but not translated yet.


**Intended learning outcomes**
German intended learning outcomes available but not translated yet.


**Courses**
V + Ü + V (no information on SWS (weekly contact hours) and course language available)

**Method of assessment**
a) 1 to 3 written examinations (1 written examination: 90 minutes; 2 written examinations: 60 or 90 minutes each; 3 written examinations: 60 minutes each) or b) oral examination in groups (groups of 2, approx. 30 minutes)

**Allocation of places**
--

**Additional information**
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**Referred to in LPO I** (examination regulations for teaching-degree programmes)
--
Module title: Organic Chemistry 3
Abbreviation: 08-OC3-092-m01

Module coordinator: holder of the Professorship of Organic Chemistry
Module offered by: Institute of Organic Chemistry

ECTS: 15
Method of grading: numerical grade
Only after succ. compl. of module(s): 08-AC1 (module component 08-AC1-2 only) or 08-AN1 (module component 08-AN1-2 only) or 08-OC1 or 08-OC1-GHR

Duration: 1 semester
Module level: undergraduate
Other prerequisites: By way of exception, additional prerequisites are listed in the section on assessments.

Contents

German contents available but not translated yet.


Intended learning outcomes

German intended learning outcomes available but not translated yet.


Courses

This module comprises 2 module components. Information on courses will be listed separately for each module component.

• 08-OC3-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available)
• 08-OC3-2-092: P (no information on SWS (weekly contact hours) and course language available)

Method of assessment

Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

Assessment in module component 08-OC3-1-092: Organic Chemistry 3 Organic Chemistry 3

• 6 ECTS, Method of grading: numerical grade
• a) 1 to 3 written examinations (1 written examination: approx. 90 minutes; 2 written examinations: approx. 60 or 90 minutes each; 3 written examinations: approx. 60 minutes each) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes)
• Language of assessment: German or English
• Other prerequisites: Admission prerequisite to assessment; successful completion of exercises in the respective classes as specified at the beginning of the course (usually 70% of exercises to be successfully
completed) as well as regular attendance of exercises (usually a maximum of 2 incidents of unexcused absence).

**Assessment in module component 08-OC3-2-092:** Organic Chemistry - lab 1
- 9 ECTS, Method of grading: (not) successfully completed
- Vortestate (pre-experiment exams, approx. 15 minutes each), assessment of practical performance, Nachtestate (post-experiment exams, approx. 15 minutes each)

**Allocation of places**

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**Additional information**

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

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Module title | Abbreviation
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Organic Chemistry 4 | 08-OC4-092-m01

Module coordinator | Module offered by
holder of the Chair of Organic Chemistry II | Institute of Organic Chemistry

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<th>ECTS</th>
<th>Method of grading</th>
<th>Only after succ. compl. of module(s)</th>
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<td>08-AC1 (module component 08-AC1-2 only) or 08-AC1-BC (module component 08-AC1-BC-2 only) or 08-AN1 (module component 08-AN1-2 only)</td>
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</tbody>
</table>

Duration | Module level | Other prerequisites
1 semester | undergraduate | By way of exception, additional prerequisites are listed in the section on assessments.

Contents

German contents available but not translated yet.


Intended learning outcomes

German intended learning outcomes available but not translated yet.


Courses

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- 08-OC4-2-092: P (no information on SWS (weekly contact hours) and course language available)
- 08-OC4-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment

Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

**Assessment in module component 08-OC4-2-092**: Organic Chemistry - advanced laboratory course for students of chemistry

- 5 ECTS, Method of grading: (not) successfully completed
- Vortestate (pre-experiment exams, approx. 15 minutes each), assessment of practical performance, Nachtestate (post-experiment exams, approx. 15 minutes each)
- Assessment offered: once a year, winter semester

**Assessment in module component 08-OC4-1-092**: Organic Chemistry 4 Organic Chemistry 4

- 5 ECTS, Method of grading: numerical grade
- a) 1 to 3 written examinations (1 written examination: approx. 90 minutes; 2 written examinations: approx. 60 or 90 minutes each; 3 written examinations: approx. 60 minutes each) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes)
- Other prerequisites: Admission prerequisite to assessment: successful completion of exercises in the respective classes as specified at the beginning of the course (usually 70% of exercises to be successfully completed)
completed) as well as regular attendance of exercises (usually a maximum of 2 incidents of unexcused absence).

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</table>
Module title | Abbreviation
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Physical Chemistry 1 | 08-PC1-092-m01

Module coordinator
l. lecturer of lecture "Grundlagen der Quantenmechanik and Spektroskopie" (Principles of Quantum Mechanics and Spectroscopy)

Module offered by
Institute of Physical and Theoretical Chemistry

ECTS | Method of grading | Only after succ. compl. of module(s)
--- | --- | ---
8 | numerical grade | --

Duration | Module level | Other prerequisites
--- | --- | ---
1 semester | undergraduate | Admission prerequisite to assessment: successful completion of exercises in the respective classes as specified at the beginning of the course (usually 70% of exercises to be successfully completed) as well as regular attendance of exercises (usually a maximum of 2 incidents of unexcused absence).

Contents
German contents available but not translated yet.


Intended learning outcomes
German intended learning outcomes available but not translated yet.

Die Studierenden sind in der Lage, grundlegende Modelle der Quantenmechanik zu erklären und bei Molekülen anzuwenden. Er/Sie kann unterschiedliche spektroskopische Methoden darstellen. Die Studierenden können die mathematischen Grundlagen der elementaren der Quantenmechanik anwenden.

Courses (type, number of weekly contact hours, language — if other than German)
V + Ü + V + Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)
a) 1 to 3 written examinations (1 written examination: approx. 90 minutes; 2 written examinations: 60 or 90 minutes each; 3 written examinations: 60 minutes each) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes)

Allocation of places
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Additional information
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Referred to in LPO I (examination regulations for teaching-degree programmes)
--
### Module title

**Physical Chemistry 2: Thermodynamics, Kinetics, Electrochemistry**

### Abbreviation

08-PC2-092-m01

### Module coordinator

Lecturer of lecture "Thermodynamik, Kinetik, Elektrochemie"

### Module offered by

Institute of Physical and Theoretical Chemistry

### ECTS

18

### Method of grading

Numerical grade

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

--

### Duration

1 semester

### Module level

Undergraduate

### Other prerequisites

By way of exception, additional prerequisites are listed in the section on assessments.

### Contents

German contents available but not translated yet.


### Intended learning outcomes

German intended learning outcomes available but not translated yet.


### Courses

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- **08-PC2-2-092**: P (no information on SWS (weekly contact hours) and course language available)
- **08-PC2-1-092**: V + Ü (no information on SWS (weekly contact hours) and course language available)

### Method of assessment

Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

**Assessment in module component 08-PC2-2-092: Physical Chemistry (lab)**

- 9 ECTS, Method of grading: (not) successfully completed
- Vortests (pre-experiment exams, approx. 15 minutes each), assessment of practical performance, Nachtests (post-experiment exams, approx. 15 minutes each)
- Assessment offered: once a year, winter semester
- Only after successful completion of module components: 08-PC1-1 or 08-PC2-1

**Assessment in module component 08-PC2-1-092: Thermodynamics, Kinetics, Electrochemistry**

- 9 ECTS, Method of grading: numerical grade
- a) 1 to 3 written examinations (1 written examination: approx. 90 minutes; 2 written examinations: 60 or 90 minutes each; 3 written examinations: 60 minutes each) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes)
• Other prerequisites: Admission prerequisite to assessment: successful completion of exercises in the respective classes as specified at the beginning of the course (usually 70% of exercises to be successfully completed) as well as regular attendance of exercises (usually a maximum of 2 incidents of unexcused absence).

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<th>Allocation of places</th>
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<th>Referred to in LPO I</th>
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<tr>
<td>(examination regulations for teaching-degree programmes)</td>
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</tbody>
</table>
### Module title
Physical Chemistry 4: Statistical Thermodynamics

### Abbreviation
08-PC4-092-m01

### Module coordinator
lecturer of lecture "Statistische Thermodynamik"

### Module offered by
Institute of Physical and Theoretical Chemistry

### ECTS
3

### Method of grading
numerical grade

### Only after succ. compl. of module(s)
--

### Duration
1 semester

### Module level
undergraduate

### Other prerequisites
Admission prerequisite to assessment: successful completion of exercises in the respective classes as specified at the beginning of the course (usually 70% of exercises to be successfully completed) as well as regular attendance of exercises (usually a maximum of 2 incidents of unexcused absence).

### Contents
This module deals with basics of statistical thermodynamics.

### Intended learning outcomes
German intended learning outcomes available but not translated yet.

### Courses (type, number of weekly contact hours, language — if other than German)
V + Ü (no information on SWS (weekly contact hours) and course language available)

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)
a) 1 to 3 written examinations (1 written examination: approx. 90 minutes; 2 written examinations: approx. 60 or 90 minutes each; 3 written examinations: approx. 60 minutes each) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes)

### Allocation of places
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### Additional information
--

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

### Abbreviation
08-BC-092-m01

### Module coordinator
holder of the Chair of Biochemistry

### Module offered by
Chair of Biochemistry

### ECTS
6

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

### Method of assessment
type, scope, language — if other than German
a) 1 to 3 written examinations (1 written examination: approx. 90 minutes; 2 written examinations: approx. 60 or 90 minutes each; 3 written examinations: approx. 60 minutes each) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes)

### Other prerequisites
Admission prerequisite to assessment: successful completion of exercises in the respective classes as specified at the beginning of the course (usually 70% of exercises to be successfully completed) as well as regular attendance of exercises (usually a maximum of 2 incidents of unexcused absence).

### Contents
The module imparts the basic knowledge of biochemistry by lectures and in-depth tutorials.

### Intended learning outcomes
German intended learning outcomes available but not translated yet.

Der/Die Studierende verfügt über Grundlagenkenntnisse der Biochemie. Er/Sie ist in der Lage, die grundlegenden biochemischen Prozesse in zellulären Systemen zu beschreiben.

### Courses
V + Ü + V + Ü (no information on SWS (weekly contact hours) and course language available)

### Allocation of places
--

### Additional information
--

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

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<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tr>
<td>Mathematics for students of Chemistry and Biology (lecture and practice)</td>
<td>10-M-MCB-092-m01</td>
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Module coordinator
Dean of Studies Mathematik (Mathematics)
Institute of Mathematics

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<th>ECTS</th>
<th>Method of grading</th>
<th>Only after succ. compl. of module(s)</th>
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<tbody>
<tr>
<td>5</td>
<td>numerical grade</td>
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</tbody>
</table>

Duration
1 semester

Module level
undergraduate

Other prerequisites
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Contents
Functional relations, differentiation and integration of functions in one variable, curve sketching, differentiation of functions in several variables, power series, ordinary differential equations, systems of linear equations, basic notions in statistics.

Intended learning outcomes
The student is able to recognise and phrase simple questions from natural sciences as mathematical problems, apply basic mathematical methods to them and interpret the results.

Courses
(type, number of weekly contact hours, language — if other than German)
This module comprises 2 module components. Information on courses will be listed separately for each module component.
- 10-M-MCB-1-092: V (no information on SWS (weekly contact hours) and course language available)
- 10-M-MCB-2-092: Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)
Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

Assessment in module component 10-M-MCB-1-092: Mathematics for students in Chemistry and Biology
- 3 ECTS, Method of grading: numerical grade
- written examination (120 minutes)

Assessment in module component 10-M-MCB-2-092: Exercises in Mathematics for students in Chemistry and Biology
- 2 ECTS, Method of grading: (not) successfully completed
- exercises (to be submitted on a weekly basis, written examination)

Allocation of places
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Additional information
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Referred to in LPO I (examination regulations for teaching-degree programmes)
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**Module title**  
Theoretical Models in Chemistry

**Abbreviation**  
08-TC-092-m01

**Module coordinator**  
lecturer of lecture "Quantenchemie"

**Module offered by**  
Institute of Physical and Theoretical Chemistry

**ECTS**  
3

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

**Numerical grade**  
--

**Duration**  
1 semester

**Module level**  
undergraduate

**Other prerequisites**  
Admission prerequisite to assessment: successful completion of exercises in the respective classes as specified at the beginning of the course (usually 70% of exercises to be successfully completed) as well as regular attendance of exercises (usually a maximum of 2 incidents of unexcused absence).

**Contents**

German contents available but not translated yet.


**Intended learning outcomes**

German intended learning outcomes available but not translated yet.

Die Studierenden sind in der Lage, mit Hilfe grundlegender Konzepte und Modelle angeregte Zustände von Molekülen zu beschreiben.

**Courses**

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

**Method of assessment**

a) 1 to 3 written examinations (1 written examination: approx. 90 minutes; 2 written examinations: approx. 60 or 90 minutes each; 3 written examinations: approx. 60 minutes each) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes)

**Allocation of places**

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**Additional information**

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**Referred to in LPO I**

(examination regulations for teaching-degree programmes)
Module title

Inorganic Chemistry 1

Abbreviation

08-AC1-092-m01

Module coordinator

lecturer of lecture "Experimentalchemie" (Experimental Chemistry)

Module offered by

Institute of Inorganic Chemistry

ECTS

Method of grading

Only after succ. compl. of module(s)

21

numerical grade

--

Duration

Module level

Other prerequisites

1 semester

undergraduate

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Contents

German contents available but not translated yet.


Intended learning outcomes

German intended learning outcomes available but not translated yet.


Courses

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

- 08-AC1-1-092: V + V + Ü (no information on language and number of weekly contact hours available)
- 08-AC1-2-092: P (no information on language and number of weekly contact hours available)
- 08-AC1-3-092: V (no information on language and number of weekly contact hours available)
- 08-AC1-4-092: P (no information on language and number of weekly contact hours available)

Method of assessment

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

Assessment component to module component 08-AC1-1-092: Grundlagen der Allgemeinen und Anorganischen Chemie

- 10 ECTS credits, method of grading: numerical grade
- a) 1-3 written exams (1 written examination 90 minutes, 2 written examsje 60 or 90 minutes, 3 written examsje 60 minutes) or b) oral examination of on candidate each (approx. 20 minutes) or c) oral examination in groups (groups of two, approx. 30 minutes)

Assessment component to module component 08-AC1-2-092: Praktikum Anorganische Chemie 1

- 6 ECTS credits, method of grading: (not) successfully completed
- Vortests (pre-experiment exams, approx. 15 minutes each), assessment of practical performance, Nachtests (post-experiment exams, approx. 15 minutes each)
- examination offered once a year, winter semester

**Assessment component to module component 08-AC1-3-092:** Erläuterungen zum Praktikum Anorganische Chemie 1
  - 4 ECTS credits, method of grading: numerical grade
  - 3 written examinations (45 minutes each), weighted 1:1:1, dates to be announced

**Assessment component to module component 08-AC1-4-092:** Sicheres Arbeiten in chemischen Laboratorien
  - 1 ECTS credits, method of grading: (not) successfully completed
  - practical assessment (safety drill in laboratory, length to be specified at the beginning of the course)

### Allocation of places

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### Additional information

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

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Module title:
Analytical Chemistry 1

Abbreviation:
o8-AN1-092-m01

Module coordinator:
lecturer of lecture "Analytische Chemie" (Analytical Chemistry)

Module offered by:
Institute of Inorganic Chemistry

ECTS:
11

Method of grading:
umerical grade

Only after succ. compl. of module(s):
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Duration:
1 semester

Module level:
undergraduate

Other prerequisites:
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Contents:


Intended learning outcomes:


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

This module comprises 2 module components. Information on courses will be listed separately for each module component.
- o8-AN1-2-092: P (no information on SWS (weekly contact hours) and course language available)
- o8-AN1-1-092: Ü + V (no information on SWS (weekly contact hours) and course language available)

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

Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

Assessment in module component o8-AN1-2-092: Analytical Chemistry (lab)
- 6 ECTS, Method of grading: (not) successfully completed
- Vortest (pre-experiment exams, approx. 15 minutes each), assessment of practical performance, Nachtest (post-experiment exams, approx. 15 minutes each)
- Assessment offered: once a year, summer semester

Assessment in module component o8-AN1-1-092: Principles of Analytical Chemistry Principles of Analytical Chemistry
- 5 ECTS, Method of grading: numerical grade
- a) 1 to 3 written examinations (1 written examination: 90 minutes; 2 written examinations: 60 or 90 minutes each; 3 written examinations: 60 minutes each) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes)
### Additional information

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

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Module title

Physical and Theoretical Chemistry 3: Symmetry and Quantum Chemistry

Abbreviation

08-PC3-092-m01

Module coordinator

lecturer of lecture "Quantenchemie"

Module offered by

Institute of Physical and Theoretical Chemistry

ECTS

Method of grading

Only after succ. compl. of module(s)

6

numerical grade

--

Duration

Module level

Other prerequisites

1 semester

undergraduate

Admission prerequisite to assessment: successful completion of exercises in the respective classes as specified at the beginning of the course (usually 70% of exercises to be successfully completed) as well as regular attendance of exercises (usually a maximum of 2 incidents of unexcused absence).

Contents

This module deals with basics of quantum chemistry and symmetry in chemistry.

Intended learning outcomes

German intended learning outcomes available but not translated yet.

Der/Die Studierende verfügt über Kenntnisse der Quantenchemie und der Symmetrie in der Chemie und kann diese gezielt anwenden.

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

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

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

a) 1 to 3 written examinations (1 written examination: 90 minutes; 2 written examinations: 60 or 90 minutes each; 3 written examinations: 60 minutes each) or b) oral examination of one candidate each (approx. 20 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes)

Allocation of places

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Additional information

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

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### Module title
Organic Chemistry 1

### Abbreviation
08-OC1-092-m01

### Module coordinator
holder of the Professorship of Organic Chemistry

### Module offered by
Institute of Organic Chemistry

### ECTS
5

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

### Duration
1 semester

### Module level
undergraduate

### Other prerequisites
Admission prerequisite to assessment: successful completion of exercises in the respective classes as specified at the beginning of the course (usually 70% of exercises to be successfully completed) as well as regular attendance of exercises (usually a maximum of 2 incidents of unexcused absence).

### Contents
German contents available but not translated yet.

Das Modul bietet einen Überblick über die elementaren Grundkenntnisse der organischen Chemie. Dazu wird die Bindungssituation am Kohlenstoff betrachtet und in die Nomenklatur einfacher und mäßig komplexer organischer Verbindungen eingeführt. Es werden Grundlagen der Stereochemie, Substitutions-, Additions- und Eliminierungsreaktionen sowie der Syntheseplanung vermittelt.

### Intended learning outcomes
German intended learning outcomes available but not translated yet.


### Courses
V + Ü (no information on SWS (weekly contact hours) and course language available)

### Method of assessment
(a) 1 to 3 written examinations (1 written examination: approx. 90 minutes; 2 written examinations: 60 or 90 minutes each; 3 written examinations: 60 minutes each) or (b) oral examination of one candidate each (approx. 20 minutes) or (c) oral examination in groups (groups of 2, approx. 30 minutes)

### Allocation of places
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### Additional information
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### Referred to in LPO I
§ 62 (1) 2. Chemie "Organische und Bioorganische Chemie"
Compulsory Electives
(5 ECTS credits)
### Module title
Applied Spectroscopy 3

### Abbreviation
08-PS3-092-m01

### Module coordinator
Lecturer of lecture "Praktische Spektroskopie 3"

### Module offered by
Institute of Physical and Theoretical Chemistry

### ECTS
5

### Method of grading
Numerical grade

### Only after succ. compl. of module(s)
--

### Duration
1 semester

### Module level
Undergraduate

### Other prerequisites
--

### Contents
German contents available but not translated yet.

Das Modul bietet die Möglichkeit, das theoretische Wissen über spektroskopische Methoden praktisch umzusetzen und die erhaltenen Messwerte bzw. Graphen zu interpretieren. Im Detail werden UV/VIS-, Fluoreszenz- und Schwingungsspektren aufgenommen sowie analysiert. Im Modul werden zudem moderne Methoden der Massenspektrometrie behandelt.

### Intended learning outcomes
German intended learning outcomes available but not translated yet.

Die Studierenden sind in der Lage, verschiedene Spektrometer zu bedienen und das erhaltene Spektrum zu interpretieren. Er/Sie kann eine Fehlerdiskussion durchführen.

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

### Method of assessment
1 written examination (approx. 90 minutes) or 2 written examinations (approx. 60 or 90 minutes each) or 3 written examinations (approx. 60 minutes each) or oral examination of one candidate each (approx. 20 minutes) or oral examination in groups (groups of 2, approx. 30 minutes)

### Allocation of places
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### Additional information
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### Referred to in LPO I
(examination regulations for teaching-degree programmes)

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<th>Module offered by</th>
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<tbody>
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<td>Institute of Physical and Theoretical Chemistry</td>
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<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</table>

**Contents**

The module introduces students to the basics of a programming language and gives applications to problems related to chemistry.

**Intended learning outcomes**

German intended learning outcomes available but not translated yet.

Die Studierenden können einfach Grundlagen der Programmiersprache beschreiben und auf chemierelevante Probleme anwenden.

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

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

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

practical examination: completion of programming exercises and oral description of algorithms used (length/expenditure of time as specified at the beginning of the course)

**Allocation of places**

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**Additional information**

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

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**Module title**  
Biochemistry Lab

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**Module coordinator**  
holder of the Chair of Biochemistry

**Module offered by**  
Chair of Biochemistry

**ECTS**  
5

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

**Duration**  
1 semester

**Module level**  
undergraduate

**Other prerequisites**  
--

### Contents

In this module the basics of scientific biochemical experimentation shall be practiced in practical exercises.

### Intended learning outcomes

After participating in the practical exercises the students master basic biochemical methods and are able to purposefully apply them.

### Courses

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

### Method of assessment

- pre/post-experiment examination talks (Vortestate and Nachtestate, approx. 15 minutes each), practical work (log, approx. 5 to 10 pages)

Assessment offered: once a year, summer semester

### Allocation of places

Number of places: 24. Should the number of applications exceed the number of available places, places will be allocated in a standardised procedure among all applicants irrespective of their subjects according to the following quotas: Quota 1 (80% of places): grade achieved in module 08-BC; among applicants with the same grade, places will be allocated by lot. Quota 2 (20% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated as they become available.

### Additional information

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**Referred to in LPO I**  
(examination regulations for teaching-degree programmes) --
Thesis
(10 ECTS credits)
## Module title

**Bachelor Thesis**

### Abbreviation

08-BA-092-m01

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<tr>
<th>Module title</th>
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<tr>
<td>Bachelor Thesis</td>
<td>08-BA-092-m01</td>
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### Module coordinator

head of the research group offering the module

### Module offered by

Faculty of Chemistry and Pharmacy

### ECTS

10

### Method of grading

numerical grade

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

--

### Duration

1 semester

### Module level

undergraduate

### Other prerequisites

Registration for assessment on a continuous basis as agreed upon with supervisor. Topic to be selected in consultation with supervisor. Topic to be assigned by examination committee (Section 21 Subsection 3 ASPO (general academic and examination regulations)).

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### Contents

The module enables the processing of a defined problem within a specified period by applying the scientific methods learned in the course of study.

### Intended learning outcomes

The student has the ability to deal with a defined problem/issue using scientific methods and to document the results.

### Courses

No courses assigned

### Method of assessment

- **Written thesis**
  - Language of assessment: German or English

### Allocation of places

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### Additional information

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### Referred to in LPO I

(examination regulations for teaching-degree programmes)

--
Subject-specific Key Skills

(10 ECTS credits)
<table>
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<tr>
<th><strong>Module title</strong></th>
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<td>Toxicology and legal studies</td>
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<tr>
<td>lecturer of lecture &quot;Toxikologie und Rechtskunde&quot;</td>
<td>Faculty of Medicine</td>
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<td>1 semester</td>
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**Contents**
Basics of legal regulations for chemists (handling and transportation of hazardous materials), fundamentals of toxicology.

**Intended learning outcomes**
The students master the basics of legal regulations for chemists (handling and transport of hazardous substances) as well as the fundamentals of toxicology.

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

**Method of assessment**
written examination (approx. 90 minutes)

**Allocation of places**
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**Additional information**
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**Referred to in LPO I** (examination regulations for teaching-degree programmes)
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<table>
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<th>Module title</th>
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<td>Advanced chemical practical course</td>
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<tbody>
<tr>
<td>head of the research group offering the module</td>
<td>Faculty of Chemistry and Pharmacy</td>
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</table>

**Contents**

German contents available but not translated yet.

Das Modul bietet die Möglichkeit sich mit Hilfe der für den jeweiligen Fachbereich üblichen wissenschaftlichen Arbeitstechniken und Methoden vertieft in ein Forschungsthema einzuarbeiten.

**Intended learning outcomes**

The student is able to deeply acquaint himself/herself with a specific research topic, and to process and to present the results in a written report or a talk.

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

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

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

talk (approx. 15 minutes)

**Allocation of places**

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**Additional information**

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

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<table>
<thead>
<tr>
<th>Module title</th>
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<td>Literature research methods</td>
<td>08-LRAC-092-m01</td>
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<td>Institute of Inorganic Chemistry</td>
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**Contents**

German contents available but not translated yet.

Literaturrecherche zur Planung der Experimente in der Anorganischen Chemie.

**Intended learning outcomes**

German intended learning outcomes available but not translated yet.

Der/Die Studierende verfügt über Kenntnisse der Literaturrecherche zur Planung der Experimente in der Anorganischen Chemie.

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

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

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

2 literature searches about given preparations

**Allocation of places**

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**Additional information**

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

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<table>
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<tr>
<td>lecturer of lecture “Organische Chemie 4”</td>
<td>Institute of Organic Chemistry</td>
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**Contents**

German contents available but not translated yet.

Literaturrecherche zur Planung der Experimente in der Organischen Chemie.

**Intended learning outcomes**

German intended learning outcomes available but not translated yet.

Der/Die Studierende verfügt über Kenntnisse der Literaturrecherche zur Planung der Experimente in der Organischen Chemie.

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

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

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

1 literature search about given preparations

**Allocation of places**

--

**Additional information**

--

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

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