Module Catalogue
for the Subject
Didactics in Chemistry (Middle School)
as Didaktikfach
with the degree "Erste Staatsprüfung für das Lehramt an Mittelschulen"

Examination regulations version: 2015
Responsible: Faculty of Chemistry and Pharmacy
Contents

The subject is divided into
Abbreviations used, Conventions, Notes, In accordance with

Compulsory Courses
Introduction into Teaching Chemistry for Elementary, Secondary and Middle School (Major Subject)
Teaching Chemical Practice for Elementary and Secondary School
Designing Chemistry Classes for Elementary and Secondary School
Social Aspects of Chemistry Teaching in Secondary School

Freier Bereich (general as well as subject-specific electives)

Extra Skills Teaching Chemistry at the German Mittelschule

Principles of Inorganic Chemistry
Organic Chemistry 1 (teaching degree for secondary schools)
Organic Chemistry 2
Physical Chemistry (teaching degree for secondary schools)
Toxicology and legal studies
Chemistry SchoolLabs
Collecting Data with CASSY System
Microscale Experiments in Chemistry Teaching
Out-Of-School Education

Paper

Final Thesis according to § 29 LPO I in Chemistry for Secondary School Teachers

JMU Würzburg • generated 20-Jul-2022 • exam. reg. data record Lehramt Mittelschulen (Didaktikfach) Chemie - 2015
# The subject is divided into

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<td>Paper</td>
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Abbreviations used

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

Term: SS = summer semester, WS = winter semester

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

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

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

Conventions

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

Notes

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

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

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

In accordance with

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

LASPO2015

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

08-Sep-2015 (2015-129)

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

(20 ECTS credits)

Successful completion of modules worth 20 ECTS credits in each subject selected as Didaktikfach (subject studied with a focus on teaching methodology) is a prerequisite for admission to the Erste Staatsprüfung (First State Examination) in the subject Didaktiken einer Fächergruppe der Mittelschule (Didactics of a Group of Subjects of Mittelschule).
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<tr>
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<th>Abbreviation</th>
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<td>Introduction into Teaching Chemistry for Elementary, Secondary and Middle School (Major Subject)</td>
<td>08-FD1-DF-LAGM-152-m01</td>
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<td>Module offered by</td>
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<td>holder of the Professorship of Didactics of Chemistry</td>
<td>Institute of Inorganic Chemistry</td>
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<td>Intended learning outcomes</td>
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<tr>
<td>Courses (type, number of weekly contact hours, language — if other than German)</td>
<td>V (2) + S (2)</td>
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<td>Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)</td>
<td>a) written examination (approx. 90 minutes) and b) presentation (approx. 20 minutes) with practical examination (supervision of pupils)</td>
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<tr>
<td>Language of assessment: German and/or English</td>
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<td>Allocation of places</td>
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<tr>
<td>Teaching Chemical Practice for Elementary and Secondary School</td>
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**Contents**

No information on contents available.

**Intended learning outcomes**

No information on intended learning outcomes available.

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

S (2) + S (2)

**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) presentation with practical examination (approx. 30 minutes) and b) presentation (approx. 20 minutes)

Language of assessment: German and/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)

§ 42 I Nr. 4 and § 36 I Nr. 7
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<td>Designing Chemistry Classes for Elementary and Secondary School</td>
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**Contents**

No information on contents available.

**Intended learning outcomes**

No information on intended learning outcomes available.

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

- S (2) + S (2)

**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) written examination (approx. 45 minutes) and b) presentation (approx. 20 minutes)
- Language of assessment: German and/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)

- § 36 I Nr. 7
- § 38 I Nr. 1
### Module title
Social Aspects of Chemistry Teaching in Secondary School

### Abbreviation
08-FD4-DF-LAMS-152-m01

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

### Module offered by
Institute of Inorganic Chemistry

### ECTS
5

### Method of grading
(not) successfully completed

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

### Duration
1 semester

### Module level
unknown

### Other prerequisites
--

### Contents
No information on contents available.

### Intended learning outcomes
No information on intended learning outcomes available.

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

### S (4)

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

- presentation of a project (approx. 30 minutes)

- Language of assessment: German and/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)

§ 38 | Nr. 1
Freier Bereich (general as well as subject-specific electives)
(0-15 ECTS credits)

Teaching degree students must take modules worth a total of 15 ECTS credits in the area Freier Bereich (general as well as subject-specific electives) (Section 9 LASPO (general academic and examination regulations for teaching-degree programmes)). To achieve the required number of ECTS credits, students may take any modules from the areas below.

Freier Bereich -- interdisciplinary: The interdisciplinary additional offer for a teaching degree can be found in the respective Annex "Ergänzende Bestimmungen für den "Freien Bereich" im Rahmen des Studiums für ein Lehramt".
Extra Skills Teaching Chemistry at the German Mittelschule

(ECTS credits)

(Freier Bereich (general as well as subject-specific electives) -- subject specific)
### Module title
Principles of Inorganic Chemistry

### Abbreviation
08-AC1-152-m01

### Module coordinator
lecturer of lecture "Experimentalchemie" (Experimental Chemistry)

### Module offered by
Institute of Inorganic Chemistry

### ECTS
8

### Method of grading
numerical 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
The module provides an overview of the fundamental knowledge of chemistry. Emphasis is placed on the material and particle level, metals, acid-base reactions, the periodic table, chemical equilibrium and complexometry. In addition, the module introduces fundamental concepts of chemistry and teaches the basics of inorganic chemistry.

### Intended learning outcomes
The student understands the principles of the periodic table and can obtain information from it. He/she is proficient in basic models of the structure of matter and can describe them properly. He/she can depict chemical reactions using typical chemical formula language and interpret them by identifying the type of reaction. The students know how the most important quantitative and qualitative analytical methods work and their areas of application.

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

V (4) + V (2)

### 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) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes)

Language of assessment: German and/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)

§ 42 I Nr. 1 and § 22 II Nr. 1 h)

§ 62 I Nr. 1
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<td>Organic Chemistry 1 (teaching degree for secondary schools)</td>
<td>08-OC1-LAGMR-152-m01</td>
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<tbody>
<tr>
<td>holder of the Professorship of Organic Chemistry</td>
<td>Institute of Organic Chemistry</td>
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<th>Module level</th>
<th>Other prerequisites</th>
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<tr>
<td>1 semester</td>
<td>undergraduate</td>
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**Contents**

This module provides students with an overview of the fundamental principles of organic chemistry. It examines the bonding situation of carbon and introduces students to the nomenclature of simple and moderately complex organic compounds. The module also discusses the fundamental principles of stereochemistry, substitution, addition and elimination reactions as well as synthesis planning.

**Intended learning outcomes**

Students know important categories of substances in organic chemistry. They are able to use different systems of nomenclature to determine simple substance names. Students are able to analyse the stereochemistry of molecules. They are able to describe and formulate some of the most important reactions in organic chemistry. For that purpose, they can analyse and categorise the characteristic reaction conditions and can use them for simple syntheses.

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

V (3) + Ü (1)

**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) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes)

Language of assessment: German and/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)

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<tr>
<td>holder of the Chair of Physically Organic Chemistry</td>
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<tbody>
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<td>1 semester</td>
<td>undergraduate</td>
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### Contents

This module introduces students to the rules of aromaticity and discusses specific reactions of aromatics. Using the example of carbonyl compounds, it extends the students’ knowledge of substitution, elimination and addition reactions to complex reaction mechanisms. The course also focuses on oxidation and reduction reactions as well as rearrangement.

### Intended learning outcomes

Students have become familiar with the criteria for aromaticity. They can analyse the varying reactivity of carbonyl compounds. They are able to describe specific reactions of carbonyls and aromatics. For that purpose, they can plan and formulate multi-stage syntheses with complex reaction mechanisms and can transfer them to unknown reactions.

### Courses

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

| V (3) + Ü (1) |

### 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) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes)

Language of assessment: German and/or English

### Allocation of places

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### Additional information

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### Referred to in LPO I

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§ 42 I Nr. 2 and § 22 II Nr. 1 h)

§ 62 I Nr. 2
### Module title

**Physical Chemistry (teaching degree for secondary schools)**

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### Module coordinator

Lecturer of lecture "Thermodynamik, Kinetik, Elektrochemie für Studierende der Biologie, Lebensmittelchemie und des Lehramtes Chemie GHR"

### Module offered by

Institute of Physical and Theoretical Chemistry

### ECTS

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### Duration

<table>
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<tr>
<td>1 semester</td>
<td>undergraduate</td>
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### Contents

This module deals with basics of thermodynamics, kinetics and electrochemistry.

### Intended learning outcomes

Students have become familiar with the fundamental principles of thermodynamics, kinetics and electrochemistry. They are able to understand and explain fundamental processes in nature and engineering.

### Courses

<table>
<thead>
<tr>
<th>Type</th>
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<tbody>
<tr>
<td>V (2)</td>
<td>+ Ü (1) + V (1) + Ü (1)</td>
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### Method of assessment

a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes)

Language of assessment: German and/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)

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<td>Toxicology and legal studies</td>
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<td>Faculty of Medicine</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** (type, number of weekly contact hours, language — if other than German)
V (1) + V (1)

**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. 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)
§ 22 II Nr. 1 h)
§ 22 II Nr. 2 f)
§ 22 II Nr. 3 f)
### Module title
Chemistry SchoolLabs

### Abbreviation
08-FD-LLL-152-m01

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

### Module offered by
Institute of Inorganic Chemistry

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### Duration
1 semester

### Module level
unknown

### Other prerequisites
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### Contents
No information on contents available.

### Intended learning outcomes
No information on intended learning outcomes available.

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

- P (3)

### 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 assignment (successful supervision of 2 sessions in learn-teach-lab, approx. 4 to 6 hours each)
- Language of assessment: German and/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)

- § 22 II Nr. 1 h)
- § 22 II Nr. 2 f)
- § 22 II Nr. 3 f)
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**Contents**

No information on contents available.

**Intended learning outcomes**

No information on intended learning outcomes available.

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

S (2)

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

presentation of a project (approx. 30 minutes)
Language of assessment: German and/or English

**Allocation of places**

--

**Additional information**

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

§ 22 II Nr. 2 f)
§ 22 II Nr. 3 f)
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<th>Module coordinator</th>
<th>Module offered by</th>
</tr>
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<tbody>
<tr>
<td>holder of the Professorship of Didactics of Chemistry</td>
<td>Institute of Inorganic Chemistry</td>
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<table>
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<tr>
<th>ECTS</th>
<th>Method of grading</th>
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<tr>
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**Contents**

No information on contents available.

**Intended learning outcomes**

No information on intended learning outcomes available.

<table>
<thead>
<tr>
<th>Courses (type, number of weekly contact hours, language — if other than German)</th>
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**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

project: presentation of a project (approx. 30 minutes)
Language of assessment: German and/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)

§ 22 II Nr. 1 h)
§ 22 II Nr. 2 f)
§ 22 II Nr. 3 f)
<table>
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<th>Module title</th>
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<tr>
<td>Out-Of-School Education</td>
<td>08-FD-ASL-152-m01</td>
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**Module coordinator**
holder of the Professorship of Didactics of Chemistry

**Module offered by**
Institute of Inorganic Chemistry

**ECTS** | **Method of grading** | **Only after succ. compl. of module(s)** |
----------|-----------------------|------------------------------------------|
2         | (not) successfully completed | --                                       |

**Duration** | **Module level** | **Other prerequisites** |
1 semester   | unknown            | --                       |

**Contents**
No information on contents available.

**Intended learning outcomes**
No information on intended learning outcomes available.

**Courses** (type, number of weekly contact hours, language — if other than German)
S (2)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)
- project: presentation of a project (approx. 30 minutes)
- Language of assessment: German and/or English

**Allocation of places**
--

**Additional information**
--

**Referred to in LPO I** (examination regulations for teaching-degree programmes)
- § 22 II Nr. 1 h)
- § 22 II Nr. 2 f)
- § 22 II Nr. 3 f)
Paper
(10 ECTS credits)

Preparation of a written Hausarbeit (thesis) in accordance with the provisions of Section 29 LPO I (examination regulations for teaching-degree programmes) is a prerequisite for teaching degree students to be admitted to the Erste Staatsprüfung (First State Examination). In accordance with the provisions of Section 29 LPO I, students studying for a teaching degree Mittelschule may write this thesis in the subject Didaktik einer Fächergruppe der Mittelschule (Didactics of a Group of Subjects of Mittelschule), in the subject they selected as Unterrichtsfach (subject studied with a focus on the scientific discipline) or in the subject Erziehungswissenschaften (Educational Science). Pursuant to Section 29 Subsection 1 Sentence 2 LPO I, students may also choose to write an interdisciplinary thesis.
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<th>Module title</th>
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<tr>
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<tr>
<td>head of the research group offering the module</td>
<td>Faculty of Chemistry and Pharmacy</td>
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<tbody>
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<td>unknown</td>
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</tbody>
</table>

Contents

No information on contents available.

Intended learning outcomes

No information on intended learning outcomes available.

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

No courses assigned to module

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

Hausarbeit (thesis) pursuant to Section 29 LPO I (examination regulations for teaching-degree programmes) (30 to 50 pages)
Language of assessment: German; exceptions pursuant to Section 29 Subsection 4 LPO I (examination regulations for teaching-degree programmes)

Allocation of places

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Additional information

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

§ 29