Excerpt from Module Descriptions

Master of Science Biology

Examination Regulations in the Version of: 2017

Sub-Section: Non-Biological Subsidiary Subject
Index

Non-Biological Subsidiary Subject

Chemistry - Subsidiary Subject

**Practical Course Chemistry**
- Project Work in Analytical Chemistry 1
- Project Work in Inorganic Chemistry 3
- Projekt Work in Macromolecular Chemistry 5
- Project Work in Organic Chemistry 7
- Project Work in Physical Chemistry 9

**Compulsory Elective Chemistry**
- Bioanalytics not graded 11
- Bioanalytics graded 13
- Bioinorganic Chemistry 15
- Biological Chemistry 17
- Biomaterials 19
- Biopolymers 21
- Concepts of Drug Discovery and Design 23
- Introduction to the Chemistry of Natural Products 25
- Inorganic Photochemistry/Photocatalysis 27
- Organic Chemistry II 29
- Organic Chemistry III 31
- Structure Determination of Organic Molecules 33

**Computer Science - Subsidiary Subject**
- Introduction to Computer Science and Programming I and II 35

**Mathematics - Subsidiary Subject**
- Applied Stochastics I 38
- Subsidiary Subject Mathematics for Master in Biology 40
- Medical Statistics and Biometrics 42

**Online-tool Development - Subsidiary Subject**
- Online-tool Development 44

**Philosophy - Subsidiary Subject**
- Basics Philosophy A with 10 ECTS 46
- Basics Philosophy A with 4 ECTS 48
- Basics Philosophy A with 6 ECTS 50
- Basics Philosophy B with 4 ECTS 52
- Basics Philosophy B with 6 ECTS 54
- Basics Philosophy C with 4 ECTS 56
- Thinking about Science II 58
Psychology - Subsidiary Subject

Compulsory Modules in Subsidiary Subject Psychology

Psychology - Subsidiary Subject

General Psychology II
Biological Psychology
Differential Psychology
Introduction to Psychology
Clinical Psychology I - Bachelor
Neuropsychology
Social Psychology I
Social Psychology II
Lecture Developmental Psychology
Lecture General Psychology I

Management and Economics - Subsidiary Subject

Introduction to Business Administration
Introduction to Economics
# Project Work in Analytical Chemistry

## Modules referring to Practical Course Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>8802671289</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>9</td>
</tr>
<tr>
<td>Attendance time</td>
<td>12</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>German or English</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>The Dean of Studies of Chemistry</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Lecturers of the analytical chemistry</td>
</tr>
</tbody>
</table>

## Allocation of study programmes

- Master Chemistry, Study Program Chemistry, elective, 1.-3. semester
- Master Chemistry, Study Program Materials, elective, 1.-3. semester
- Master Chemistry and Management, elective, 1.-3. semester

## Recommended prerequisites

Bachelor's competences in the field related to the subject

## Learning objectives

The students who have finished this module successfully,

- earn the skill and competence to work independently on a project in theory and practise in the analytic chemistry, write it down, discuss it academically in a short treatise, and present it clearly.

## Syllabus

In this module the following contents are given:

Practical research project on a topical subject of the analytic chemistry from the working groups

## Literature

- it is made available
- independent literature search

## Teaching and learning methods

Practical Work (12 hours per week) with written elaboration and possibly presentation in the working group or institute
| **Workload**          | Presence: 180 h  
|                      | Private study: 90 h  
|                      | Total: 270 h  |

| **Assessment**       | The award of the credit points for this ungraded module is based on completion of an assignment (presentation and paper). No prerequisites are necessary for exam registration. |

| **Grading procedure** | The module is not graded. |

| **Basis for**        | No data |
# Project Work in Inorganic Chemistry

Modules referring to Practical Course Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>8802671196</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>9</td>
</tr>
<tr>
<td>Attendance time</td>
<td>12</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>German or English</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>The Dean of Studies of Chemistry</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Lecturers of the inorganic chemistry</td>
</tr>
</tbody>
</table>

**Allocation of study programmes**

- Master Chemistry, Study Program Chemistry, elective, 1.-3. semester
- Master Chemistry, Study Program Materials, elective, 1.-3. semester
- Master Chemistry and Management, elective, 1.-3. semester

**Recommended prerequisites**

Bachelor's competences in the field related to the subject

**Learning objectives**

- The students who have finished this module successfully,
- earn the skill and competence to work independently on a project in theory and practise in the inorganic chemistry, write it down, discuss it academically in a short treatise, and present it clearly.

**Syllabus**

In this module the following contents are given:

Practical research project on a topical subject of the inorganic chemistry from the working groups

**Literature**

- it is made available
- independent literature search

**Teaching and learning methods**

Practical Work (12 hours per week) with written elaboration and possibly presentation in the working group or institute
<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Workload</strong></td>
<td>Presence: 180 h</td>
</tr>
<tr>
<td></td>
<td>Private study: 90 h</td>
</tr>
<tr>
<td></td>
<td>Total: 270 h</td>
</tr>
<tr>
<td><strong>Assessment</strong></td>
<td>The award of the credit points for this ungraded module is based on</td>
</tr>
<tr>
<td></td>
<td>completion of an assignment (presentation and paper). No prerequisites</td>
</tr>
<tr>
<td></td>
<td>are necessary for exam registration.</td>
</tr>
<tr>
<td><strong>Grading procedure</strong></td>
<td>The module is not graded.</td>
</tr>
<tr>
<td><strong>Basis for</strong></td>
<td>No data</td>
</tr>
</tbody>
</table>
## Projekt Work in Macromolecular Chemistry

Modules referring to Practical Course Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>8802671329</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>9</td>
</tr>
<tr>
<td>Attendance time</td>
<td>12</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>English</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>The Dean of Studies of Chemistry</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Lecturers of the macromolecular chemistry</td>
</tr>
</tbody>
</table>

### Allocation of study programmes

- Master Chemistry, Study Program Chemistry, elective, 1.-3. semester
- Master Chemistry, Study Program Materials, elective, 1.-3. semester
- Master Chemistry and Management, electoral duty module, 1.-3. semester

### Recommended prerequisites

Bachelor's competences in the field related to the subject

### Learning objectives

The students who have finished this module successfully,

- earn the skill and competence to work independently on a project in theory and practice in macromolecular chemistry, write it down, discuss it academically in a short treatise, and present it clearly.

### Syllabus

In this module the following contents are given:

- Practical research project on a topical subject of the macromolecular chemistry from the working groups

### Literature

- it is made available
- independent literature search

### Teaching and learning methods

- Practical Work (12 hours per week) with written elaboration and possibly presentation in the working group or institute
| **Workload** | Presence: 180 h  
Private study: 90 h  
Total: 270 h |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assessment</strong></td>
<td>The award of the credit points for this ungraded module is based on completion of an assignment (presentation and paper). No prerequisites are necessary for exam registration.</td>
</tr>
<tr>
<td><strong>Grading procedure</strong></td>
<td>The module is not graded.</td>
</tr>
<tr>
<td><strong>Basis for</strong></td>
<td>No data</td>
</tr>
</tbody>
</table>
## Project Work in Organic Chemistry

Modules referring to Practical Course Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>8802671298</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>9</td>
</tr>
<tr>
<td>Attendance time</td>
<td>12</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>German or English</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>The Dean of Studies of Chemistry</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Instructors of the Organic Chemistry</td>
</tr>
</tbody>
</table>
| Allocation of study programmes | Master Chemistry, Study Program Chemistry, elective, 1.-3. semester  
Master Chemistry, Study Program Materials, elective, 1.-3. semester  
Master Chemistry and Management, elective, 1.-3. semester |
| Recommended prerequisites | Bachelor's competences in the field related to the subject |
| Learning objectives | The students who have finished this module successfully,  
- earn the skill and competence to work independently on a project in theory and practise in the organic chemistry, write it down, discuss it academically in a short treatise, and present it clearly. |
| Syllabus          | In this module the following contents are given:  
Practical research project on a topical subject of the organic chemistry from the working groups |
| Literature        | - it is made available  
- independent literature search |
| Teaching and learning methods | Practical Work (12 hours per week) with written elaboration and possibly presentation in the working group or institute |
| **Workload** | Presence: 180 h  
Private study: 90 h  
Total: 270 h |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assessment</strong></td>
<td>The award of the credit points for this ungraded module is based on completion of an assignment (presentation and paper). No prerequisites are necessary for exam registration.</td>
</tr>
<tr>
<td><strong>Grading procedure</strong></td>
<td>The module is not graded.</td>
</tr>
<tr>
<td><strong>Basis for</strong></td>
<td>No data</td>
</tr>
</tbody>
</table>
# Project Work in Physical Chemistry

Modules referring to Practical Course Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>8802671295</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>9</td>
</tr>
<tr>
<td>Attendance time</td>
<td>12</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>German or English</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>The Dean of Studies of Chemistry</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Instructors of the Physical Chemistry</td>
</tr>
</tbody>
</table>

### Allocation of study programmes
- Master Chemistry, Study Program Chemistry, elective, 1.-3. semester
- Master Chemistry, Study Program Materials, elective, 1.-3. semester
- Master Chemistry and Management, elective, 1.-3. semester

### Recommended prerequisites
- Bachelor's competences in the field related to the subject

### Learning objectives
- The students who have finished this module successfully,
  - earn the skill and competence to work independently on a project in theory and practise in the physical chemistry, write it down, discuss it academically in a short treatise, and present it clearly.

### Syllabus
- In this module the following contents are given:
  - Practical research project on a topical subject of the physical chemistry from the working groups

### Literature
- it is made available
- independent literature search

### Teaching and learning methods
- Practical Work (12 hours per week) with written elaboration and possibly presentation in the working group or institute
| Workload       | Presence: 180 h  
|               | Private study: 90 h  
|               | Total: 270 h  |
| Assessment     | The award of the credit points for this ungraded module is based on completion of an assignment (presentation and paper). No prerequisites are necessary for exam registration.  |
| Grading procedure | The module is not graded.  |
| Basis for      | No data  |
Bioanalytics not graded
Modules referring to Compulsory Elective Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>8802670998</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>3</td>
</tr>
<tr>
<td>Attendance time</td>
<td>keine Angaben</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>No english version available yet.</td>
</tr>
<tr>
<td>Duration</td>
<td>2</td>
</tr>
<tr>
<td>Cycle</td>
<td>keine Angaben</td>
</tr>
<tr>
<td>Coordinator</td>
<td>No english version available yet.</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>No english version available yet.</td>
</tr>
<tr>
<td>Allocation of study programmes</td>
<td>No english version available yet.</td>
</tr>
<tr>
<td>Recommended prerequisites</td>
<td>No english version available yet.</td>
</tr>
<tr>
<td>Learning objectives</td>
<td>No english version available yet.</td>
</tr>
<tr>
<td>Syllabus</td>
<td>No english version available yet.</td>
</tr>
<tr>
<td>Literature</td>
<td>No english version available yet.</td>
</tr>
<tr>
<td>Teaching and learning methods</td>
<td>No english version available yet.</td>
</tr>
<tr>
<td>Workload</td>
<td>No english version available yet.</td>
</tr>
<tr>
<td>Assessment</td>
<td>The award of the credit points in the ungraded module is based on regular attendance. No prerequisites are necessary for exam registration.</td>
</tr>
<tr>
<td>Grading procedure</td>
<td>The module is not graded.</td>
</tr>
</tbody>
</table>
Basis for
No english version available yet.
Bioanalytics graded  
Modules referring to Compulsory Elective Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>8802676514</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>3</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Winter Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Allocation of study programmes</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Recommended prerequisites</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Learning objectives</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Syllabus</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Literature</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Teaching and learning methods</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Workload</td>
<td>No English version available yet.</td>
</tr>
</tbody>
</table>

**Assessment**
The credit points will be awarded once the written exam has been passed. No prerequisites are necessary for exam registration.

**Grading procedure**
The grade of the module will be the grade of the exam.
Basis for

No English version available yet.
## Bioinorganic Chemistry
Modules referring to Compulsory Elective Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>8802671551</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>3</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>English</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Summer Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>The Dean of Studies of Chemistry</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Prof. Dr. Sven Rau, Prof. Dr. Carsten Streb</td>
</tr>
</tbody>
</table>

### Allocation of study programmes
- Master Chemistry, Study Program Chemistry, elective or specialization (Inorganic Chemistry)
- Master Chemistry and Management, elective/Module Group 1 or specialization/Modul Group 2 (Inorganic Chemistry)
- Master Biochemistry, compulsory module
- Master Teaching Chemistry, elective module

### Recommended prerequisites
Bachelor's competences in the field related to the subject

### Learning objectives
The students who have finished this module successfully,
- dispose of knowledge of the coordination chemistry and electron structure of transitional metals in Metallo-proteins and model connections
- dispose of knowledge of important classes of Metallo-proteins and other biological inorganic connections, functionality and biochemical role
- have the ability to be able to present able to interpret results in the topical literature critically and to be able to present competently

### Syllabus
In this module the following contents are given:
- Occurence, availability and biological function of inorganic elements
- Biological ligands and metal ions: Crash course coordination chemistry
- Structure and function of Metalloproteinen, e.g., cobalt and Coenzym B12, oxygen transport and activation, Cytochrom P450, iron sulphur proteins, nitrogen fixation, zinc-containing enzymes (Hydrolases, Alcohol-Dehydrogenases, Carboanhydrases)

- Biochemistry of toxic metal connections, e.g., Hg, Pb, As

- Metals in the medical chemistry (e.g., Pt, Au, Li)

- Biochemistry of the non-metals

- Biomineralisation

**Literature**


- A.Sigel, H.Sigel, Metal Ions in Biological Systems, Buchreihe bei Marcel Dekker

**Teaching and learning methods**

- Lecture (2 hours per week)

**Workload**

- Presence: 30 h
- Private study: 60 h
- Total: 90 h

**Assessment**

- The grade of the module will be the grade of the oral or written (depending on the number of participants) exam. No prerequisites are necessary for exam registration

**Grading procedure**

- The grade of the module will be the grade of the exam.

**Basis for**

- no data
### Biological Chemistry
Modules referring to Compulsory Elective Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>8802671328</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>3</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>German</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Summer Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>Dr. Frank Rosenau</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Dr. Frank Rosenau</td>
</tr>
</tbody>
</table>

**Allocation of study programmes**
- Master Chemistry, Study Program Chemistry, Electoral duty or deepening module, 1.-3. semester
- Master Pharmaceutical Biotechnology

**Recommended prerequisites**
- Formal: please refer to your specific Study order and examination regulations.
- Concerning the contents: Bachelor modules in Organic and/or Macromolecular Chemistry

**Learning objectives**
The students who have finished this module successfully,
- develop an understanding for it, like chemical technologies, molecules and macromolecules can be used to influence biological systems

**Syllabus**
In this module the following contents are given:
- Theory, occurrence and use in biological systems from
  - Genomics
  - Proteomics
  - chemical libraries
  - Peptide libraries
  - kombinatoric chemistry

---

Master of Science Biology

Date printed: 17. Dezember 2019  
Page 17 of 90
- Parallel synthesis
- biologically active peptide
- unnatural proteins and peptide
- Pharmacophores
- Protacs
- Post translational changes

**Literature**

1. Herbert Waldmann: Chemical Biology. Learning through Case Studies (Wiley)
2. Scientific papers

**Teaching and learning methods**

Lecture (2 hours per week)

**Workload**

Presence: 30 h
Private study: 60 h
Total: 90 h

**Assessment**

The grade of the module will be the grade of the oral or written (depending on the number of participants) exam. No prerequisites are necessary for exam registration

**Grading procedure**

The grade of the module will be the grade of the exam.

**Basis for**

no data
# Biomaterials

Modules referring to Compulsory Elective Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>8802670999</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>3</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>English</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>keine Angaben</td>
</tr>
<tr>
<td>Coordinator</td>
<td>The Dean of Studies of Chemistry</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Prof. Dr. Anita Ignatius, Prof. Dr. Mika Lindén, Prof. Dr. Boris Mizaikoff, Prof. Dr. Alexander Kühne</td>
</tr>
</tbody>
</table>

### Allocation of study programmes
- Master Biochemistry, elective
- Master Chemistry, study program Chemistry, elective or specialization (Inorganic Chemistry or Macromolecular Chemistry)
- Master Chemistry, study program Materials, elective
- Master Chemistry and Management, elective / Module Group 1 (Inorganic Chemistry) or or specialization / Modul Group 2 (Inorganic Chemistry or Macromolecular Chemistry)
- Master Teaching Chemistry, elective module

### Recommended prerequisites
Bachelor's competences in the field related to the subject

### Learning objectives
Students who have successfully completed this module
- attain the understanding of biomaterials as materials that interfere with biological systems to measure, treat, support or replace a tissue, organ or physiological function.
- are familiar with the various application areas of biomaterials.
- possess knowledge for the preparation and characterization of biomaterials.
- are able to explain and interpret the structural composition of biomaterials.

### Syllabus
This module covers the following subject-specific topics:
- Protein aggregates, amyloid and nanotechnology
- Polymer-based and protein-based biomaterials
- Polymer therapeutics
- Directed transport of agents

<table>
<thead>
<tr>
<th>Literature</th>
<th>Literature will be announced in the lecture.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching and learning methods</td>
<td>Lecture (2 hours per week)</td>
</tr>
<tr>
<td>Workload</td>
<td>Attendance: 30 h</td>
</tr>
<tr>
<td></td>
<td>Private study: 60 h</td>
</tr>
<tr>
<td></td>
<td>Sum: 90 h</td>
</tr>
<tr>
<td>Assessment</td>
<td>The grade of the module will be the grade of the oral or written (depending on the number of participants) exam. No prerequisites are necessary for exam registration</td>
</tr>
<tr>
<td>Grading procedure</td>
<td>The grade of the module will be the grade of the exam.</td>
</tr>
<tr>
<td>Basis for</td>
<td>not specified</td>
</tr>
</tbody>
</table>
**Biopolymers**  
Modules referring to Compulsory Elective Chemistry

<table>
<thead>
<tr>
<th><strong>Code</strong></th>
<th>8802671308</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ECTS credits</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Attendance time</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Language of instruction</strong></td>
<td>English</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Cycle</strong></td>
<td>each Summer Semester</td>
</tr>
<tr>
<td><strong>Coordinator</strong></td>
<td>The Dean of Studies of Chemistry</td>
</tr>
<tr>
<td><strong>Instructor(s)</strong></td>
<td>Prof. Dr. Tanja Weil</td>
</tr>
</tbody>
</table>

**Allocation of study programmes**
- Master Chemistry, Study Program Chemistry, elective (Macromolecular Chemistry) or specialization (Organic Chemistry or Macromolecular Chemistry)
- Master Chemistry, Study Program Materials, elective
- Master Chemistry and Management, specialization / Module Group 2 (Organic Chemistry or Macromolecular Chemistry)
- Master Biology, specialization
- Master Biochemistry, elective
- Master Teaching Chemistry, elective

**Recommended prerequisites**
Bachelor's competences in the field related to the subject

**Learning objectives**
The students who have finished this module successfully,
- have knowledge about the structure and function of nucleic acids, proteins and other biological macromolecules
- know analytic methods that are used for characterization of this substance class

**Syllabus**
In this module the following contents are given:
- structure and function of biopolymers, especially nucleic acids and proteins and some other natural products
- physical and chemical characterization methods
- structural regulation and chemical changes of biopolymers with regard to special applications

<table>
<thead>
<tr>
<th><strong>Literature</strong></th>
<th>it is announced in the lecture</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Teaching and learning methods</strong></th>
<th>Lecture (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The lecture is currently offered as a combined version of Biopolymers and Introduction to Natural Products Chemistry.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Workload</strong></th>
<th>Presence: 30 h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Private study: 60 h</td>
</tr>
<tr>
<td></td>
<td>Total: 90 h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Assessment</strong></th>
<th>The grade of the module will be the grade of the oral or written (depending on the number of participants) exam. No prerequisites are necessary for exam registration</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Grading procedure</strong></th>
<th>The grade of the module will be the grade of the exam.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Basis for</strong></th>
<th>No data</th>
</tr>
</thead>
</table>
# Concepts of Drug Discovery and Design

Modules referring to Compulsory Elective Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>8802674286</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>3</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>English</td>
</tr>
<tr>
<td>Duration</td>
<td><em>keine Angaben</em></td>
</tr>
<tr>
<td>Cycle</td>
<td><em>keine Angaben</em></td>
</tr>
<tr>
<td>Coordinator</td>
<td>The Dean of Studies of Chemistry</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Dr. Daniel Seeliger (Fa. Boehringer Ingelheim)</td>
</tr>
</tbody>
</table>

**Allocation of study programmes**
- Master Chemistry, Organic Chemistry (elective or specialization )
- Master Chemistry and Management, Organic Chemistry (elective / Module Group 1 or specialization / Module Group 2)
- Master Biochemistry, subject Chemistry, elective
- Master Teaching Chemistry, elective

*Please mind that this lecture can only be offered in case of availability of the instructor from company "Boehringer Ingelheim".*

**Recommended prerequisites**
Bachelor's competences in the field related to the subject

**Learning objectives**
- Students, who have successfully completed this module,
  - have a basic understanding how modern drug discovery works
  - understand the principles of drug action and the thermodynamics of protein/ligand binding
  - have a basic understanding of hit finding strategies and chemical optimization of molecule properties

**Syllabus**
In this module, the following content is given:
1) Introduction to Drug Discovery
2) Protein Structure
3) Drug Targets
4) Molecular Recognition
5) Assay Technologies
6) Hit Finding
7) Medicinal Chemistry
8) Pharmacokinetics
9) Metabolism

**Literature**
- Basic biochemistry textbooks
- Medicinal chemistry textbooks
- Basic principles of drug discovery and development, Benjamin Blass, Academic Press

**Teaching and learning methods**
Lecture (2 hours per week)

**Workload**
Presence time: 30 h
Self study: 60 h
Total: 90 h

**Assessment**
The credit points will be awarded once the written exam has been passed. No prerequisites are necessary for exam registration.

**Grading procedure**
The grade of the module will be the grade of the exam.

**Basis for**
no data
# Introduction to the Chemistry of Natural Products

Modules referring to Compulsory Elective Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>8802671464</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>3</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>English</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Summer Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>The Dean of Studies of Chemistry</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Prof. Dr. Tanja Weil</td>
</tr>
</tbody>
</table>

## Allocation of study programmes
- Master Chemistry, Study Program Chemistry, elective or specialization (Organic Chemistry)
- Master Chemistry and Management, elective / Module Group 1 or specialization / Module Group 2 (Organic Chemistry)
- Master Biochemistry, elective
- Master Teaching Chemistry, elective

## Recommended prerequisites
Bachelor's competences in the field related to the subject

## Learning objectives
The students who have finished this module successfully,
- have knowledge about occurrence, meaning as well as chemical and physical properties the most important substance classes in the field of natural products
- knows synthesis and characterization methods of these natural products
- are familiar with the reactivity and fields of use of selected natural products

## Syllabus
In this module the following contents are given:
- Natural material chemistry and natural materials: an overview
- Terpenes and molecules that are similar to terpenes
- Steroids
- Lipides, complicated Lipides, membranes
- Carbohydrates
- Amino acids
- Peptides, proteins
- Well-chosen biosynthetic key reactions

<table>
<thead>
<tr>
<th>Literature</th>
<th>It is announced in the lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching and learning methods</td>
<td>Lecture (2 hours per week)</td>
</tr>
</tbody>
</table>
| Workload            | Presence: 30 h  
                      | Private study: 60 h  
                      | Total: 90 h           |
| Assessment          | The grade of the module will be the grade of the written exam. No prerequisites are necessary for exam registration. |
| Grading procedure   | The grade of the module will be the grade of the exam. |
| Basis for           | no data |
### Inorganic Photochemistry/Photocatalysis

Modules referring to Compulsory Elective Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>8802671684</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>3</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>English</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Winter Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>The Dean of Studies of Chemistry</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Prof. Dr. Sven Rau</td>
</tr>
</tbody>
</table>

#### Allocation of study programmes

- Master Chemistry, Study Program Chemistry, elective or specialization (Inorganic Chemistry)
- Master Chemistry, Study Program Materials, compulsory module
- Master Chemistry and Management, elective / Modul Group 1 or specialization / Modul Group 2 (Inorganic Chemistry)
- Master Teaching Chemistry, elective

#### Recommended prerequisites

Bachelor's competences in the field related to the subject

#### Learning objectives

The students who have finished this module successfully,
- have turned inward the bases of the photo catalysis at the example of the biological photosynthesis
- can explain draughts for the transference of the biological model to artificial catalysts and discuss critically with the help of topical results of the research
- acquire the ability to form independently basic idea for the development of photo-catalytic processes

#### Syllabus

In this module the following contents are given:
- molecular understanding of the biological photosynthesis
- topical examples to the connection between bases of the photochemistry and photo-catalytic uses
- Clarification of photo-catalytic reactions by means of different complementary spectroscopy kinds
- Mechanisms of the photo-catalytic water splitting, carbon dioxide change and related reactions
- Immobilisierung and photoelektrochemische cells
- well-chosen aspects of the heterogeneous photo catalysis

| - V. Balzani, A. Credi, M. Venturi, Molecular Devices and Machines, Wiley-VCH ISBN 3-527-30506-8 |
| - topical publications |

| Teaching and learning methods | Lecture (2 hours per week) |

| Workload | Presence: 30 h  
Private study: 60 h  
Total: 90 h |

| Assessment | The credit points will be awarded once the written or oral exam has been passed (depending on the number of participants). The type of examination will be announced in time - at least 4 weeks prior to the date of the exam. No prerequisites are necessary for exam registration. |

| Grading procedure | The grade of the module will be the grade of the exam. |

| Basis for | No data |
Organic Chemistry II  
Modules referring to Compulsory Elective Chemistry

Code 8802674353

ECTS credits 7

Attendance time 5

Language of instruction German

Duration 1

Cycle each Summer Semester

Coordinator The Dean of Studies of Chemistry

Instructor(s) Prof. Dr. Peter Bäuerle

Allocation of study programmes

Bachelor Chemistry, compulsory module, 4. semester
Bachelor Chemistry and Management, compulsory module, 4. semester
Bachelor Teaching Chemistry, compulsory module, 4. semester
Bachelor Biochemistry, compulsory module, 4. semester

Recommended prerequisites Basic lecture in Organic Chemistry

Learning objectives not specified

Syllabus

In this module, the following content is taught:
- basic reaction mechanisms in organic reactions and syntheses
- Radical and nucleophilic substitutions
- Elimination reactions, addition reactions
- Aromatic substitutions, reactions of carbonyl compounds, carboxylic acid derivatives and enolates
- Redox reactions and rearrangement reactions

Literature Vollhardt: Organische Chemie (Verlag Chemie)
### Teaching and learning methods

Lecture (4 hours per week) and Seminar (1 hour per week)

### Workload

<table>
<thead>
<tr>
<th>Presence</th>
<th>75 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study</td>
<td>135 h</td>
</tr>
<tr>
<td>Total</td>
<td>210 h</td>
</tr>
</tbody>
</table>

### Assessment

The credit points will be awarded once the written exam has been passed. No prerequisites are necessary for exam registration.

### Grading procedure

The grade of the module will be the grade of the exam.

### Basis for

Advanced Modules in Organic Chemistry
**Organic Chemistry III**  
Modules referring to Compulsory Elective Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>8802672122</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>3</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>German</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Winter Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>Prof. Dr. Peter Bäuerle</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Prof. Dr. Max von Delius</td>
</tr>
<tr>
<td>Allocation of study programmes</td>
<td>Bachelor Chemistry, compulsory module, 5. semester</td>
</tr>
</tbody>
</table>
| Recommended prerequisites | Formally prerequisites (according to Study order and examination regulations): Modules Organic Chemistry I; Organic Chemistry II; Basic Lab Course Organic Chemistry; Structure Declaration of organic molecules  
Prerequisites regarding to the contents: Modules Organic Chemistry I; Organic Chemistry II; Basic Lab Course Organic Chemistry; Structure Declaration of organic molecules |
| Learning objectives | The students who have finished this module successfully,  
- dispose of knowledge in the chemistry of aromates and Hetero aromates  
- own the skill to work on applied problem formulations of the chemistry of the Aromaten and to formulate solution proposals |
| Syllabus      | In this module the following contents are given:  
- Aromates and aromatic Hetero cycles  
- Production and phnomenological qualities of these connecting classes  
- Synthetic and mechanistic aspects (special aromatic substitutions, modern transition metal catalysed cross coupling reactions, ring-being based Hetero cycles synthesis) |
- Theoretical draughts (Aromaticism, Anti aromaticism)

|-------------------------------------|-------------------------------------------------------------------------|

**Teaching and learning methods**

Lecture (2 hours per week, 3 CP)

**Workload**

Presence: 30 H
Self Study: 60 H
Total: 90 H

**Assessment**

The grade of the module will be the grade of the written exam. No prerequisites are necessary for exam registration.

**Grading procedure**

The grade of the module will be the grade of the exam.

**Basis for**

Master modules in the specific field of chemistry
## Structure Determination of Organic Molecules

Modules referring to Compulsory Elective Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>8802670675</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>4</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>German</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Summer Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>The Dean of Studies of Chemistry</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Instructors of the Organic Chemistry</td>
</tr>
</tbody>
</table>

### Allocation of study programmes
- Bachelor Chemistry, compulsory module, 4. semester
- Bachelor Chemistry and Management, compulsory module, 4. semester
- Bachelor Biochemistry, compulsory module, 4. semester
- Master Teaching Chemistry, elective

### Recommended prerequisites
Basic lecture in Organic Chemistry

### Learning objectives
Students who have successfully completed this module
- are familiar with the basics of various spectroscopic and instrumental-analytical methods (IR / Raman, NMR, MS, X-ray structure analysis, optical spectroscopy)

### Syllabus
In this module the following professional contents are taught:
- Structure elucidation by MS, IR / Raman, NMR, optical spectroscopy, X-ray diffraction

### Literature
- Vollhardt, Schore, „Organische Chemie“, Wiley-VCH
- Hesse, Meier, Zeeh, „Spektroskopische Methoden in der organischen Chemie“, Thieme
<table>
<thead>
<tr>
<th>Teaching and learning methods</th>
<th>Lecture and Seminar (2+1 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Workload</strong></td>
<td>Presence: 45 h</td>
</tr>
<tr>
<td></td>
<td>Self study: 75 h</td>
</tr>
<tr>
<td></td>
<td>Total: 120 h</td>
</tr>
<tr>
<td><strong>Assessment</strong></td>
<td>The credit points will be awarded once the written exam has been passed. No prerequisites are necessary for exam registration.</td>
</tr>
<tr>
<td><strong>Grading procedure</strong></td>
<td>The grade of the module will be the grade of the exam.</td>
</tr>
<tr>
<td><strong>Basis for</strong></td>
<td>Advanced modules in Organic Chemistry</td>
</tr>
</tbody>
</table>
Introduction to Computer Science and Programming I and II

Modules referring to Computer Science - Subsidiary Subject

<table>
<thead>
<tr>
<th>Code</th>
<th>8802670002</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>12</td>
</tr>
<tr>
<td>Attendance time</td>
<td>6</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>German</td>
</tr>
<tr>
<td>Duration</td>
<td>2</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Winter Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>Prof. Dr. Frank Slomka</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Axel Fürstberger, Dr. Klaus Murmann</td>
</tr>
</tbody>
</table>

Allocation of study programmes

Biology MSc, start of studies: winter semester, compulsory elective module, 1st and 2nd study semester;
Mathematics BSc, start of studies: winter semester, compulsory module, 1st and 2nd study semester;
Mathematics BSc, start of studies: summer semester, compulsory module, 2nd and 3rd study semester;
Mathematical Economics BSc, start of studies: winter semester, compulsory module, 1st and 2nd study semester;
Mathematical Economics BSc, start of studies: summer semester, compulsory module, 2nd and 3rd study semester;
Physics BSc, 1st – 3rd semester;
Econo-Physics BSc, 1st – 3rd semester;
Electrical Engineering BSc, start of studies: winter semester, compulsory module, 3rd and 4th study semester;
Mathematical Biometry, start of studies: winter semester, compulsory module, 1st and 2nd study semester

Recommended prerequisites

Formally: Refer to the subject-specific examination regulations of the respective study course, in the version effective when taking up the study program.

Contentually: None.

Learning objectives

Students who have successfully completed this module

• know the fundamentals of formal languages and their definition.
• may practically handle computers, operating systems, service programs and tools.
• possess insight and intuition regarding the construction of algorithms by concrete examples.
• may evaluate algorithms by investigations of complexity.
• have the ability to systematically develop simple algorithms in a modern programming language and to transfer it into an executable program, know and understand data structures of higher complexity like trees or associative arrays concerning their definition (recursion) and application (recursive algorithms).
• may understand the principles of modern modeling techniques and apply them on the level of simple aspects.
• know classic as well as modern programming paradigms (e.g. recursion, abstract data types, inheritance, polymorphism, exception handling) and may apply them.

**Syllabus**
This module covers the following subject-specific topics:

• Introduction to the utilized operating system, dealing with useful commands and service programs plus practical handling of data files and processes
• Formal languages: definition and structuring
• Regular expressions, finite-state machines
• Algorithms and complexity
• Principles of system development and structuring
• Types of programming languages
• Standard data types, simply structured data types plus control structures of the selected programming language
• Development of simple algorithms for standard problems (e.g. searching, sorting)
• Structuring of software in large scale
• Complex data structures (e.g. lists, trees) and algorithms on top
• Modern concepts of programming languages like inheritance or polymorphism
• Aspects of reliability (e.g. exception handling)

**Literature**
• Knuth, D.: The Art of Computer Programming, Fundamental Algorithms; Addison-Wesley
• Wirth, N.: Algorithmen und Datenstrukturen; Teubner Verlag
• Lang, H.W.: Algorithmen und Datenstrukturen in Java; Oldenbourg
• Sedgewick, R.: Algorithmen in Java; Pearson Studium 2003

**Teaching and learning methods**
• General Computer Science I (GI 1) [Allgemeine Informatik I (AI 1)] (lecture), 2 credit hours [SWS], 4 credit points [LP], winter semester
• Exercises for General Computer Science I (GI 1) [Übungen zu Allgemeine Informatik I (AI 1)] (exercise), 1 credit hour [SWS], 2 credit points [LP], winter semester
• General Computer Science 2 (GI 1) [Allgemeine Informatik 2 (AI 2)] (lecture), 2 credit hours [SWS], 4 credit points [LP], summer semester
• Exercises for GI 2 [Übungen zu AI 2] (exercise), 1 credit hour [SWS], 2 credit points [LP], summer semester

**Workload**
Attendance: 90 h  
Private study: 270 h
Sum: 360 h
<table>
<thead>
<tr>
<th><strong>Assessment</strong></th>
<th>The credit points will be awarded once all partial exams of the module have been passed. Prerequisites are necessary for exams registration.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grading procedure</strong></td>
<td>The grade of the module will be the arithmetic mean of the respective grades of the partial module exams weighted by their credit points.</td>
</tr>
<tr>
<td><strong>Basis for</strong></td>
<td>No english version available yet.</td>
</tr>
</tbody>
</table>
Applied Stochastics I
Modules referring to Mathematics - Subsidiary Subject

Code 8802672358

ECTS credits 6

Attendance time 4

Language of instruction German

Duration 1

Cycle each Summer Semester

Coordinator Dr. Hartmut Lanzinger

Instructor(s) Dr. Hartmut Lanzinger

Allocation of study programmes Biology MSc, start of studies: winter semester, compulsory elective module, 1st to 4th study semester

Recommended prerequisites Formally: Refer to the subject-specific examination regulations of the respective study course, in the version effective when taking up the study program.

Contentually: Basic knowledge in mathematics (school leaving examination level), mathematics module in bachelor course of studies.

Learning objectives Students who have successfully completed this module

• know essential results and methods of statistics.
• are able to understand basic statistical techniques and methods

Syllabus This module covers the following subject-specific topics:

• Elementary combinatorics, urn models
• Basics of probability, random variables, distributions
• Elementary statistics, expected value, variance, covariance
• Limit theorems, laws of large numbers
• Stochastic processes

Literature not specified
### Teaching and learning methods
- Applied Stochastics I (lecture) [Angewandte Stochastik I], 2 credit hours [SWS], 2 credit points [LP], summer semester
- Applied Stochastics I (seminar) [Angewandte Stochastik I], 1 credit hour [SWS], 2 credit points [LP], summer semester
- Applied Stochastics I (exercise) [Angewandte Stochastik I], 1 credit hour [SWS], 2 credit points [LP], summer semester

### Workload
- Attendance: 60 h
- Private study: 120 h
- Sum: 180 h

### Assessment
- not specified

### Grading procedure
- not specified

### Basis for
- -
# Subsidiary Subject Mathematics for Master in Biology

<table>
<thead>
<tr>
<th>Modules referring to Mathematics - Subsidiary Subject</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Code</strong></th>
<th>8802671681</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ECTS credits</strong></td>
<td>12</td>
</tr>
<tr>
<td><strong>Attendance time</strong></td>
<td>7</td>
</tr>
<tr>
<td><strong>Language of instruction</strong></td>
<td>German</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Cycle</strong></td>
<td>each Semester</td>
</tr>
<tr>
<td><strong>Coordinator</strong></td>
<td>Dr. Hartmut Lanzinger, PD Dr. Benjamin Mayer</td>
</tr>
<tr>
<td><strong>Instructor(s)</strong></td>
<td>Dr. Hartmut Lanzinger, Prof. Dr. Rainer Muche, PD Dr. Benjamin Mayer, Dr. Kathrin Hohl, Dr. Frank Fleicher, lecturers in Stochastics</td>
</tr>
<tr>
<td><strong>Allocation of study programmes</strong></td>
<td>Biology MSc, start of studies: winter semester, compulsory elective module, 1st to 4th study semester</td>
</tr>
<tr>
<td><strong>Recommended prerequisites</strong></td>
<td>Formally: Refer to the subject-specific examination regulations of the respective study course, in the version effective when taking up the study program. Contentually: Basic knowledge in mathematics (school leaving examination level), mathematics module in bachelor course of studies.</td>
</tr>
<tr>
<td><strong>Learning objectives</strong></td>
<td>see the respective module descriptions of Applied Stochastics and Medical Statistics and Biometry.</td>
</tr>
<tr>
<td><strong>Syllabus</strong></td>
<td>see the respective module descriptions of Applied Stochastics and Medical Statistics and Biometry.</td>
</tr>
<tr>
<td><strong>Literature</strong></td>
<td>see the respective module descriptions of Applied Stochastics and Medical Statistics and Biometry.</td>
</tr>
<tr>
<td><strong>Teaching and learning methods</strong></td>
<td>Students have to take the courses of the modules Applied Stochastics I and Medical Statistics and Biometry. The order of the courses is irrelevant. Therefore, students can begin this module in summer semester or in winter semester.</td>
</tr>
</tbody>
</table>
| **Workload**    | Attendance: 120 h  
|                | Private study: 240 h  
|                | Sum: 360 h  |
| **Assessment** | The grade of the module will be the grade of the oral or written (depending on the number of participants) exams. No prerequisites are necessary for exam registration. |
| **Grading procedure** | The grade of the module will be the average of the individual exam grades weighted by the credit points of the individual exams. |
| **Basis for**   | - |
Medical Statistics and Biometrics
Modules referring to Mathematics - Subsidiary Subject

<table>
<thead>
<tr>
<th>Code</th>
<th>8802672363</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>6</td>
</tr>
<tr>
<td>Attendance time</td>
<td>4</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>German</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>PD Dr. Benjamin Mayer</td>
</tr>
</tbody>
</table>
| Instructor(s)      | MS: PD Dr. Benjamin Mayer, Dr. Kathrin Hohl  
                    | CT: Prof. Dr. Rainer Muche, Dr. Frank Fleischer |
| Allocation of study programmes | Biology MSc, start of studies: winter semester, compulsory elective module, 1st to 4th study semester |
| Recommended prerequisites | Formally: Refer to the subject-specific examination regulations of the respective study course, in the version effective when taking up the study program.  
                      | Contentually:  
                      | MS: Basic knowledge in mathematics, mathematics module in bachelor course of studies, Basics of computer use.  
                      | CT: Descriptive statistics |
| Learning objectives | Students who have successfully completed this module  
                    | MS:  
                    | • are capable of understanding the application of statistical methodology in scientific publications and assessing its validity.  
                    | • have basic knowledge of the statistical software package R.  
                    | CT:  
                    | • have knowledge of fundamental steps in implementing and execution of clinical trials  
                    | • have basic knowledge of regulatory guidelines for clinical trials |
This module covers the following subject-specific topics:

**MS:**
- Part 1 – Planning and conducting of clinical trials; underlying principles, types of trials in epidemiological and clinical research, important rules and standards for clinical trials
- Part 2 – Data analysis: descriptive statistics (univariate, bivariate, statistical indicators, use of graphics) correlation and regression, confidence intervals, statistical tests, characteristics of diagnostic tests, data analysis with the statistical software package R

**CT:**
- Planning and conducting of clinical trials
- Sample size estimation / Randomisation
- Regulatory guidelines for clinical trials
- Data management in clinical trials
- Reporting of clinical trials

**Literature**


**Teaching and learning methods**

In this module there is the option of choosing one of two courses:

- Medical Statistics and Biometry (V/Ü), 3 SWS, 6 LP, winter semester
- Clinical Trials (V/Ü), 3 SWS, 6 LP, summer semester (export subject Mathematics, not Molecular Medicine!)

Both courses are export subjects of the Faculty of Medicine and are conducted by the Institute for Epidemiology and Med. Biometry. In the module description the information for each course is indicated by **MS** for Medical Statistics and Biometry and **CT** for Clinical Trials.

**Workload**

- Attendance: 60 h
- Private study: 120 h
- Sum: 180 h

**Assessment**

- not specified

**Grading procedure**

- not specified

**Basis for**

-
## Online-tool Development

Modules referring to Online-tool Development - Subsidiary Subject

<table>
<thead>
<tr>
<th>Code</th>
<th>8802670513</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ECTS credits</strong></td>
<td>12</td>
</tr>
<tr>
<td><strong>Attendance time</strong></td>
<td>8</td>
</tr>
<tr>
<td><strong>Language of instruction</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Cycle</strong></td>
<td>each Semester</td>
</tr>
<tr>
<td><strong>Coordinator</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Instructor(s)</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Allocation of study programmes</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Recommended prerequisites</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Learning objectives</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Syllabus</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Literature</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Teaching and learning methods</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Workload</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Assessment</strong></td>
<td>The credit points will be awarded once the oral exam has been passed. Prerequisites are necessary for exam registration.</td>
</tr>
<tr>
<td><strong>Grading procedure</strong></td>
<td>The grade of the module will be the arithmetic mean of the respective grades of the partial module exams weighted by their credit points.</td>
</tr>
</tbody>
</table>
**Basis for**

No English version available yet.
Basics Philosophy A with 10 ECTS
Modules referring to Philosophy - Subsidiary Subject

Code 8802673024

ECTS credits 10

Attendance time keine Angaben

Language of instruction Normally German

Duration 1

Cycle each Semester

Coordinator Humboldt Study Center of the University of Ulm

Instructor(s) Several lecturers of the Humboldt Study Center

Allocation of study programmes All courses of studies with a subsidiary compulsory elective subject, semester at student's will

Recommended prerequisites Formal prerequisites (according to Study order and examination regulations): none

Prerequisites regarding to the contents: none

Learning objectives depends on the chosen course:

Basic knowledge of epistemology and scientific theory (especially model and theory concept); basics of the general and applied ethics (specifically technology ethics); concept of evolution; basic knowledge of the philosophical eras; knowledge of exemplary historical action models; ability of the critical assessment of philosophical explanations.

Competences in contemplation and argumentation, transformation, research, linguistic competence, social competence, competence in moderation.

Syllabus Presentation and discussion of central positions or texts of the occidental philosophy, of the epistemology and scientific theory and of the general and applied ethics; as well as subject-dependent knowledge; Weighing up of different philosophic positions.

Literature Will be announced by the repetitive lecturer at the beginning of the course.
### Teaching and learning methods

Typically Lectures and Seminars with a total volume of 10 CP (presentation and 20-sided seminar paper)

Courses out of the following areas can be attended:

- history of philosophy
- theoretical philosophy
- practical philosophy
- interdisciplinary seminars
- cultural anthropology
- old languages

### Workload

<table>
<thead>
<tr>
<th>Presence Time: 100 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self Study: 200 h</td>
</tr>
<tr>
<td>Total: 300 h</td>
</tr>
</tbody>
</table>

### Assessment

The grade of the module will be the grade of the oral exam. No prerequisites are necessary for exam registration.

### Grading procedure

The grade of the module will be the grade of the exam.

### Basis for

-
Basics Philosophy A with 4 ECTS
Modules referring to Philosophy - Subsidiary Subject

Code 8802673020

ECTS credits 4

Attendance time keine Angaben

Language of instruction Normally German

Duration 1

Cycle each Semester

Coordinator Humboldt Study Center of the University of Ulm

Instructor(s) Lecturers of the Humboldt Study Center

Allocation of study programmes All courses of studies with a subsidiary compulsory elective subject, semester at student's will

Recommended prerequisites Formal prerequisites (according to Study order and examination regulations): none

Prerequisites regarding to the contents: none

Learning objectives depends on the chosen course:
Basic knowledge of epistemology and scientific theory (especially model and theory concept); basics of the general and applied ethics (specifically technology ethics); concept of evolution; basic knowledge of the philosophical eras; knowledge of exemplary historical action models; ability of the critical assessment of philosophical explanations.

Competences in contemplation and argumentation, transformation, research, linguistic competence, social competence, competence in moderation.

Syllabus Presentation and discussion of central positions or texts of the occidental philosophy, of the epistemology and scientific theory and of the general and applied ethics; as well as subject-dependent knowledge; Weighing up of different philosophic positions.

Literature Will be announced by the respective lecturer at the beginning of the course.
<table>
<thead>
<tr>
<th><strong>Teaching and learning methods</strong></th>
<th>Typically lectures and seminars with a total volume of 4 CP (presentation or written or oral exam)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Courses out of the following areas can be attended:</td>
</tr>
<tr>
<td></td>
<td>• history of philosophy</td>
</tr>
<tr>
<td></td>
<td>• theoretical philosophy</td>
</tr>
<tr>
<td></td>
<td>• practical philosophy</td>
</tr>
<tr>
<td></td>
<td>• interdisciplinary seminars</td>
</tr>
<tr>
<td></td>
<td>• cultural anthropology</td>
</tr>
<tr>
<td></td>
<td>• old languages</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Workload</strong></th>
<th>Presence Time: 45 h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Self Study: 75 h</td>
</tr>
<tr>
<td></td>
<td>Total: 120 h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Assessment</strong></th>
<th>The grade of the module will be the grade of the oral exam. No prerequisites are necessary for exam registration.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Grading procedure</strong></th>
<th>The grade of the module will be the grade of the exam.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Basis for</strong></th>
<th>-</th>
</tr>
</thead>
</table>
# Basics Philosophy A with 6 ECTS

**Modules referring to Philosophy - Subsidiary Subject**

<table>
<thead>
<tr>
<th>Code</th>
<th>8802673022</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>6</td>
</tr>
<tr>
<td>Attendance time</td>
<td>keine Angaben</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>Normally German</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>Humboldt Study Center of the University of Ulm</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Lecturers of the Humboldt Study Center</td>
</tr>
</tbody>
</table>

**Allocation of study programmes**

All courses of studies with a subsidiary compulsory elective subject, semester at student's will.

**Recommended prerequisites**

- Formal prerequisites (according to Study order and examination regulations): none
- Prerequisites regarding to the contents: none

**Learning objectives**

depends on the chosen course:

Basic knowledge of epistemology and scientific theory (especially model and theory concept); basics of the general and applied ethics (specifically technology ethics); concept of evolution; basic knowledge of the philosophical eras; knowledge of exemplary historical action models; ability of the critical assessment of philosophical explanations.

Competences in contemplation and argumentation, transformation, research, linguistic competence, social competence, competence in moderation.

**Syllabus**

Presentation and discussion of central positions or texts of the occidental philosophy, of the epistemology and scientific theory and of the general and applied ethics; as well as subject-dependent knowledge; weighing up of different philosophic positions.

**Literature**

Will be announced by the respective lecturer at the beginning of the course.
Teaching and learning methods

Typically Lectures and Seminars with a total volume of 6 CP (presentation and 10- to 12-sided seminar paper)

Courses out of the following areas can be attended:

- history of philosophy
- theoretical philosophy
- practical philosophy
- interdisciplinary seminars
- cultural anthropology
- old languages

Workload

Presence Time: 60 h
Self Study: 120 h
Total: 180 h

Assessment

The grade of the module will be the grade of the oral exam. No prerequisites are necessary for exam registration.

Grading procedure

The grade of the module will be the grade of the exam.

Basis for

-
Basics Philosophy B with 4 ECTS
Modules referring to Philosophy - Subsidiary Subject

<table>
<thead>
<tr>
<th>Code</th>
<th>8802673021</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>4</td>
</tr>
<tr>
<td>Attendance time</td>
<td>keine Angaben</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>Normally German</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>Humboldt Study Center of the University of Ulm</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Lecturers of the Humboldt Study Center</td>
</tr>
</tbody>
</table>

**Allocation of study programmes**

All courses of studies with a subsidiary compulsory elective subject, semester at student's will

**Recommended prerequisites**

Formal prerequisites (according to Study order and examination regulations): none

Prerequisites regarding to the contents: none

**Learning objectives**

depends on the chosen course:
Basic knowledge of epistemology and scientific theory (especially model and theory concept); basics of the general and applied ethics (specifically technology ethics); concept of evolution; basic knowledge of the philosophical eras; knowledge of exemplary historical action models; ability of the critical assessment of philosophical explanations.

Competences in contemplation and argumentation, transformation, research, linguistic competence, social competence, competence in moderation.

**Syllabus**

Presentation and discussion of central positions or texts of the occidental philosophy, of the epistemology and scientific theory and of the general and applied ethics; as well as subject-dependent knowledge; Weighing up of different philosophic positions.

**Literature**

Will be announced by the respective lecturer at the beginning of the course.
| **Teaching and learning methods** | Typically Lectures and Seminars with a total volume of 4 CP (presentation or written or oral exam)  
Courses out of the following areas can be attended:  
• history of philosophy  
• theoretical philosophy  
• practical philosophy  
• interdisciplinary seminars  
• cultural anthropology  
• old languages |
|-------------------------------|---------------------------------------------------------------------------------------------------------------|
| **Workload**                 | Presence Time: 45 h  
Self Study: 75 h  
Total: 120 h |
| **Assessment**               | The grade of the module will be the grade of the oral exam. No prerequisites are necessary for exam registration. |
| **Grading procedure**        | The grade of the module will be the grade of the exam. |
| **Basis for**                | - |
### Basics Philosophy B with 6 ECTS
Modules referring to Philosophy - Subsidiary Subject

<table>
<thead>
<tr>
<th><strong>Code</strong></th>
<th>8802673023</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ECTS credits</strong></td>
<td>6</td>
</tr>
<tr>
<td><strong>Attendance time</strong></td>
<td><em>keine Angaben</em></td>
</tr>
<tr>
<td><strong>Language of instruction</strong></td>
<td>Normally German</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Cycle</strong></td>
<td>each Semester</td>
</tr>
<tr>
<td><strong>Coordinator</strong></td>
<td>Humboldt Study Center of the University of Ulm</td>
</tr>
<tr>
<td><strong>Instructor(s)</strong></td>
<td>Lecturers of the Humboldt Study Center</td>
</tr>
</tbody>
</table>

**Allocation of study programmes**

All courses of studies with a subsidiary compulsory elective subject, semester at student’s will

**Recommended prerequisites**

*Formal prerequisites (according to Study order and examination regulations):* none

*Prerequisites regarding to the contents:* none

**Learning objectives**

depends on the chosen course:
Basic knowledge of epistemology and scientific theory (especially model and theory concept); basics of the general and applied ethics (specifically technology ethics); concept of evolution; basic knowledge of the philosophical eras; knowledge of exemplary historical action models; ability of the critical assessment of philosophical explanations.

Competences in contemplation and argumentation, transformation, research, linguistic competence, social competence, competence in moderation.

**Syllabus**

Presentation and discussion of central positions or texts of the occidental philosophy, of the epistemology and scientific theory and of the general and applied ethics; as well as subject-dependent knowledge; weighing up of different philosophic positions.

**Literature**

Will be announced by the respective lecturer at the beginning of the course.
### Teaching and learning methods

Typically Lectures and Seminars with a total volume of 6 CP (presentation and 10- to 12-sided seminar paper)

Courses out of the following areas can be attended:

- history of philosophy
- theoretical philosophy
- practical philosophy
- interdisciplinary seminars
- cultural anthropology
- old languages

### Workload

<table>
<thead>
<tr>
<th>Presence Time: 60 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self Study: 120 h</td>
</tr>
<tr>
<td>Total: 180 h</td>
</tr>
</tbody>
</table>

### Assessment

The grade of the module will be the grade of the oral exam. No prerequisites are necessary for exam registration.

### Grading procedure

The grade of the module will be the grade of the exam.

### Basis for

-
Basics Philosophy C with 4 ECTS
Modules referring to Philosophy - Subsidiary Subject

Code 8802674155

ECTS credits 4

Attendance time keine Angaben

Language of instruction Normally German

Duration 1

Cycle each Semester

Coordinator Humboldt Study Center of the University of Ulm

Instructor(s) Lecturers of the Humboldt Study Center

Allocation of study programmes All courses of studies with a subsidiary compulsory elective subject, semester at student's will

Recommended prerequisites Formal prerequisites (according to Study order and examination regulations): none
Prerequisites regarding to the contents: none

Learning objectives depends on the chosen course:
Basic knowledge of epistemology and scientific theory (especially model and theory concept); basics of the general and applied ethics (specifically technology ethics); concept of evolution; basic knowledge of the philosophical eras; knowledge of exemplary historical action models; ability of the critical assessment of philosophical explanations.
Competences in contemplation and argumentation, transformation, research, linguistic competence, social competence, competence in moderation.

Syllabus Presentation and discussion of central positions or texts of the occidental philosophy, of the epistemology and scientific theory and of the general and applied ethics; as well as subject-dependent knowledge; weighing up of different philosophic positions.

Literature Will be announced by the respective lecturer at the beginning of the course.
<table>
<thead>
<tr>
<th><strong>Teaching and learning methods</strong></th>
<th>Typically lectures and seminars with a total volume of 4 CP (presentation or written or oral exam)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Courses out of the following areas can be attended:</td>
</tr>
<tr>
<td></td>
<td>• history of philosophy</td>
</tr>
<tr>
<td></td>
<td>• theoretical philosophy</td>
</tr>
<tr>
<td></td>
<td>• practical philosophy</td>
</tr>
<tr>
<td></td>
<td>• interdisciplinary seminars</td>
</tr>
<tr>
<td></td>
<td>• cultural anthropology</td>
</tr>
<tr>
<td></td>
<td>• old languages</td>
</tr>
</tbody>
</table>

| **Workload**                   | Presence Time: 45 h                                                                          |
|                                | Self Study: 75 h                                                                               |
|                                | Total: 120 h                                                                                  |

| **Assessment**                 | The grade of the module will be the grade of the oral exam. No prerequisites are necessary for exam registration. |

| **Grading procedure**          | The grade of the module will be the grade of the exam.                                      |

| **Basis for**                  | -                                                                                           |
## Thinking about Science II
Modules referring to Philosophy - Subsidiary Subject

<table>
<thead>
<tr>
<th>Code</th>
<th>8802675104</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>3</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Winter Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Allocation of study programmes</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Recommended prerequisites</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Learning objectives</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Syllabus</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Literature</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Teaching and learning methods</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Workload</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Assessment</td>
<td>The credit points will be awarded once the oral exam has been passed. No prerequisites are necessary for exam registration.</td>
</tr>
<tr>
<td>Grading procedure</td>
<td>The grade of the module will be the grade of the exam.</td>
</tr>
</tbody>
</table>
Basis for  No English version available yet.
## Thinking about Science II

**Modules referring to Philosophy - Subsidiary Subject**

<table>
<thead>
<tr>
<th><strong>Code</strong></th>
<th>8802675105</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ECTS credits</strong></td>
<td>6</td>
</tr>
<tr>
<td><strong>Attendance time</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Language of instruction</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Cycle</strong></td>
<td>each Winter Semester</td>
</tr>
<tr>
<td><strong>Coordinator</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Instructor(s)</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Allocation of study programmes</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Recommended prerequisites</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Learning objectives</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Syllabus</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Literature</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Teaching and learning methods</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Workload</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Assessment</strong></td>
<td>The credit points will be awarded once the oral exam has been passed. No prerequisites are necessary for exam registration.</td>
</tr>
<tr>
<td><strong>Grading procedure</strong></td>
<td>The grade of the module will be the grade of the exam.</td>
</tr>
<tr>
<td>Basis for</td>
<td>No English version available yet.</td>
</tr>
</tbody>
</table>
Thinking about Science I
Modules referring to Philosophy - Subsidiary Subject

Code 8802672570

ECTS credits 3

Attendance time 2

Language of instruction English

Duration 1

Cycle each Semester

Coordinator Dr. Hans-Peter Eckle

Instructor(s) Dr. Hans-Peter Eckle

Allocation of study programmes Biology MSc.

Recommended prerequisites Formally: Refer to the subject-specific examination regulations of the respective study course, in the version effective when taking up the study program.

Contentually: None.

Learning objectives The course enables the students to take a step back from doing science and rather think and reflect about various issues of science from a meta-perspective. They will gain insights into their work as scientists from an epistemological, historical, and social perspective which furthers their understanding of what it means to do science.

Syllabus

Stephen C. Stearns (ecologist and evolutionary biologist) in a lecture entitled “The Logic of Science”: “Now science is basically culture's answer to the big problem of epistemology, which is how can we know anything at all?”

Sir Peter Medawar (biologist and Nobel laureate) in an essay “Induction and Intuition in Scientific Thought”: “Ask a scientist what he conceives the scientific method to be, [...] he would probably mumble something about “Induction” and “Establishing the Laws of Nature” [...]”

Francis Crick (biophysicist and Nobel laureate) in “Of Molecules and Men”: “The ultimate aim of the modern movement in biology is to explain all biology in terms of physics and chemistry.”
Richard Feynman (physicist and Nobel laureate) in “The Character of Physical Law”: “In general we look for a new law by the following process. First we guess it.”

Werner Heisenberg (physicist and Nobel laureate) in “Physics and Beyond - Encounters and Conversations” recounts a conversation with Einstein: “Possibly I did use this kind of reasoning [“Philosophie” in the German original],” Einstein admitted, "but it is nonsense all the same. […] It is the theory which decides what we can observe.”

These are snippets of texts in which scientists, arguably, have taken a step back from doing science and rather think about various issues of science.

Not only scientists, but, to quote again Stephen Stearns, “a lot of bright people”, namely (natural) philosophers and others including scientists whenever they put on their “philosophers caps”, have been “occupied” by these issues “for a number of centuries.”

In this course, we discuss those bright people’s contribution to our understanding of science in order to identify the important themes related to the thinking about science which we shall illustrate with examples from physics to biology. In doing so, we shall be let from philosophical considerations to questions of the ethics within science (research ethics) and the relation between society and science.

**Literature**


**Teaching and learning methods**

Format:
We start with introductory lectures to give an overview of the most important positions in the philosophy of science from a historical and thematic perspective including the social and ethical dimension. These overview lectures intend to open up vistas into important debates. Some of these can then be taken up and discussed in more detail and worked out in student presentations and/or papers.

**Workload**

Attendance time: 2 SWS
Self-study: 2SWS
Sum: 4SWS

**Assessment**
The grade of the module will be the grade of the oral exam. No prerequisites are necessary for exam registration.

**Grading procedure**
The grade of the module will be the grade of the exam.

**Basis for**
-
Compulsory Modules in Subsidiary Subject Psychology

Modules referring to Psychology - Subsidiary Subject

<table>
<thead>
<tr>
<th>Code</th>
<th>8802671508</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>4</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>German</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Winter Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>PD Dr. T. Stadnitski</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>PD Dr. T. Stadnitski and instructors of the Institute for Psychology and Education</td>
</tr>
</tbody>
</table>

**Allocation of study programmes**

Biology M.Sc., start of studies: winter semester, compulsory elective module in the subsidiary subject Psychology, 1\textsuperscript{st}-4\textsuperscript{th} semester

**Recommended prerequisites**

Formally: Refer to the subject-specific examination regulations of the respective study course, in the version effective when taking up the study program.

Contentually: None.

**Learning objectives**

Students who have successfully completed this module are able to

- give an overview of the study design, the range of topics in psychology and their coherence as well as the fundamental research methods.
- name prominent questions in individual subjects and explain them in coherence
- name, differentiate and illustrate the possibilities and limits of quantitative and qualitative methodological approaches in psychology as empirical science.
- name and apply generally used statistical evaluation methods.
- apply fundamental techniques of scientific work as well as learning strategies.
- read scientific texts and conclusively summarize their content.

**Syllabus**

The lecture „Einführung in die Forschungsmethoden“ gives an overview of the scientific theory construction and the fundamental methods of psychological research (experiments, survey, observation). Further key issues of the research methods are random sampling, experimental design, quality criterions (internal and external validity, etc.) and an overview of statistical analysis models.
**Literature**


---

**Teaching and learning methods**

Lecture „Einführung in die Forschungsmethoden“ (2 SWS, 4 ECTS, Winter Semester)

---

**Workload**

Attendance: 30 h

Private study: 90 h

Sum: 120 h

---

**Assessment**

The credit points will be awarded once the written or oral exam has been passed (depending on the number of participants). The type of examination will be announced in time - at least 4 weeks prior to the date of the exam. No prerequisites are necessary for exam registration.

---

**Grading procedure**

The grade of the module will be the grade of the exam.

---

**Basis for**

-
### General Psychology II

**Modules referring to Psychology - Subsidiary Subject**

<table>
<thead>
<tr>
<th>Code</th>
<th>8802673002</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ECTS credits</strong></td>
<td>8</td>
</tr>
<tr>
<td><strong>Attendance time</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Language of instruction</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Cycle</strong></td>
<td>each academic Year</td>
</tr>
<tr>
<td><strong>Coordinator</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Instructor(s)</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Allocation of study programmes</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Recommended prerequisites</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Learning objectives</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Syllabus</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Literature</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Teaching and learning methods</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Workload</strong></td>
<td>No English version available yet.</td>
</tr>
<tr>
<td><strong>Assessment</strong></td>
<td>The credit points will be awarded once the written or oral exam has been passed (depending on the number of participants). The type of examination will be announced in time. No prerequisites are necessary for exam registration.</td>
</tr>
<tr>
<td><strong>Grading procedure</strong></td>
<td>The grade of the module will be the grade of the exam.</td>
</tr>
</tbody>
</table>
Basis for  
No English version available yet.
## Biological Psychology

Modules referring to Psychology - Subsidiary Subject

<table>
<thead>
<tr>
<th>Code</th>
<th>8802674728</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>8</td>
</tr>
<tr>
<td>Attendance time</td>
<td>4</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Duration</td>
<td>2</td>
</tr>
<tr>
<td>Cycle</td>
<td>each academic Year</td>
</tr>
<tr>
<td>Coordinator</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Allocation of study programmes</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Recommended prerequisites</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Learning objectives</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Syllabus</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Literature</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Teaching and learning methods</td>
<td>No English version available yet.</td>
</tr>
<tr>
<td>Workload</td>
<td>No English version available yet.</td>
</tr>
</tbody>
</table>

### Assessment

The credit points will be awarded once the written or oral exam has been passed (depending on the number of participants). The type of examination will be announced in time - at least 4 weeks prior to the date of the exam. No prerequisites are necessary for exam registration.
<table>
<thead>
<tr>
<th><strong>Grading procedure</strong></th>
<th>The grade of the module will be the grade of the exam.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basis for</strong></td>
<td>No English version available yet.</td>
</tr>
</tbody>
</table>
**Differential Psychology**
Modules referring to Psychology - Subsidiary Subject

**Code** 8802670112

**ECTS credits** 4

**Attendance time** 2

**Language of instruction** German or English

**Duration** 1

**Cycle** each Winter Semester

**Coordinator** Prof. O. Wilhelm, Prof. C. Montag

**Instructor(s)** Instructors of the Institute for Psychology and Education and contract lecturers

**Allocation of study programmes** Biology M.Sc., start of studies: winter semester, compulsory elective module in the subsidiary subject Psychology, 1st-4th semester

**Recommended prerequisites** Formally: Refer to the subject-specific examination regulations of the respective study course, in the version effective when taking up the study program.

Contentually: None. However, basic knowledge in statistics is recommended for the understanding of the lecture.

**Learning objectives** Students who have successfully completed this module are able to

- name, explain and critically scrutinize prominent constructs and methods of Differential Psychology.
- identify problems of differential psychological methods and to develop potential solutions.
- define, explain and differentiate biological, intrapsychical, dispositional, phenomenological, sociocultural, cognitive and adaptive paradigms and positions of Differential Psychology.
- name and explain achievement-based constructs of Differential Psychology.
- define and discuss validity and utility of differential psychological constructs.

**Syllabus** The essential content of the module is the introduction of critical concepts and methods of the Differential Psychology. Besides a short review of currently significant differential psychological theories, core assumptions, methodological approaches, prototypical operationalization and essential problems of central constructs of Differential Psychology are being discussed. The validity and utility of differential psychological constructs is especially considered.
Lecture

- Theoretical concepts and empirical findings of Differential Psychology will be described in key topics.
- The relevance of this knowledge for resolving practical problems will be discussed.

Literature


Additional literature will be announced in the lecture.

Teaching and learning methods

Lecture „Differentielle Psychologie“ (2 SWS, 4 ECTS)

Workload

Attendance: 30 h
Private study: 90 h
Sum: 120 h

Assessment

The credit points will be awarded once the written or oral exam has been passed (depending on the number of participants). The type of examination will be announced in time - at least 4 weeks prior to the date of the exam (2 weeks if it as a repeat exam). No prerequisites are necessary for exam registration.

Grading procedure

The grade of the module will be the grade of the exam.

Basis for

-
| **Introduction to Psychology**  
| Modules referring to Psychology - Subsidiary Subject |
|---|---|
| **Code** | 8802670116 |
| **ECTS credits** | 4 |
| **Attendance time** | 2 |
| **Language of instruction** | German |
| **Duration** | 1 |
| **Cycle** | each Winter Semester |
| **Coordinator** | Dean of studies of the study programme B. Sc. Psychology |
| **Instructor(s)** | Instructors of the Institute for Psychology and Education, invited guest lecturers and contract lecturers. |
| **Allocation of study programmes** | Biology M.Sc., start of studies: winter semester, compulsory elective module in the subsidiary subject Psychology, 1\textsuperscript{st}-4\textsuperscript{th} semester |
| **Recommended prerequisites** | Formally: Refer to the subject-specific examination regulations of the respective study course, in the version effective when taking up the study program.  
Contentually: None. |
| **Learning objectives** | Students who have successfully completed this module are able to  
\begin{itemize}  
\item give an overview of the study design, the range of topics in psychology and their coherence as well as the fundamental research methods.  
\item name prominent questions in individual subjects and explain them in coherence  
\item name, differentiate and illustrate the possibilities and limits of quantitative and qualitative methodological approaches in psychology as empirical science.  
\item name and apply generally used statistical evaluation methods.  
\item apply fundamental techniques of scientific work as well as learning strategies.  
\item read scientific texts and conclusively summarize their content.  
\end{itemize} |
| **Syllabus** | In the introduction lecture, the essential topic areas of psychology are introduced by means of exemplary questions from the different topics. The historical development of the subject, the scientific theory construction as well as exemplary research paradigms and results are explained.  
In the mentoring, the fundamental techniques of scientific work are developed in small groups (e.g. literature research, creation of seminar papers in accord
with the publication guidelines of the DGPs, structure and completion of a presentation). Further, helpful learning strategies for the exam preparation, the editing of texts etc. are introduced and trained.

**Literature**


**Teaching and learning methods**

Lecture „Einführung in die Psychologie“ (2 SWS, 2 ECTS)
Mentoring (2 SWS, 2 ECTS, thereof 1 ECTS integrated key qualification, ISQ)

**Workload**

Attendance: 60 h
Private study: 60 h
Sum: 120 h

**Assessment**

The credit points will be awarded once the oral exam has been passed. No prerequisites are necessary for exam registration.

**Grading procedure**

The grade of the module will be the grade of the exam.

**Basis for**

-
**Clinical Psychology I - Bachelor**

Modules referring to Psychology - Subsidiary Subject

**Code** 8802673816

**ECTS credits** 4

**Attendance time** 2

**Language of instruction** German

**Duration** 1

**Cycle** each Winter Semester

**Coordinator** Prof. I.-T. Kolassa, Prof. O. Pollatos, Prof. H. Baumeister

**Instructor(s)** Lecturers of the Institute of Psychology and Education and if necessary assistant lecturers.

**Allocation of study programmes** Biology M.Sc., start of studies: winter semester, compulsory elective module in the subsidiary subject Psychology, 1st-4th semester

**Recommended prerequisites** Formally: Refer to the subject-specific examination regulations of the respective study course, in the version effective when taking up the study program.

Contentually: None. Recommended are the following lectures: "Biologische Psychologie" (Module 73812), "Entwicklungspychologie" (Module 71108), "Allgemeine Psychologie I" (Module 73814), "Statistik" (I and II) (Module 71101).

**Learning objectives** General key competences:

- reading ability, judgement competences, text comprehension, problem-solving skill, argumentation skill, literature research, dealing with english scientific texts, presentation of scientific contents.

Clinical Psychology:

Psychological key competences:

- fundamental knowledge about mental disorders:
  - know and assess diagnostic methods
  - understand aetiological contexts
  - describe and assess different therapeutical approaches
  - deal with the basics of clinical psychological assessment
- reflect the clinical psychological view of the human being

Module specific competences:

- knowledge in epidemiology, diagnostics, differential diagnostics and classification of mental disorders
- knowledge of the aetiology of mental disorders
- explanation of biological correlates of mental disorders
- summary, interpretation and critical evaluation of current research results in the treatment of mental disorders
- recognition and reflexion of the relations between theory, empirical research and application of psychological cognitions

Syllabus

Clinical Psychology

- Classification and diagnostics of mental disorders (DSM-IV and ICD-10)
- Fundamental concepts of the clinical psychology (e.g. aetiology, comorbidity, epidemiology, etc.)
- Paradigms of the clinical psychology (psychodynamic, behavioristic approach, behavioral therapy and cognitive behavioral therapy)
- Psychological interventions and Psychotherapy (fundamentals, neuropsychotherapy, client-centered psychotherapy, behavioral therapy and cognitive behavioral therapy, the diagnostic process)
- Affective disorders (symptoms, classification, epidemiology, diagnostics, aetiology, psychotherapy and/or pharmacotherapy, suicidality)
- Anxiety disorders (symptoms, classification, subtypes of the anxiety disorders, epidemiology, diagnostics, aetiology, psychotherapy and/or pharmacotherapy, suicidality)
- Obsessive-compulsive disorders (symptoms, classification, epidemiology, diagnostics, aetiology, psychotherapy and/or pharmacotherapy, suicidality)
- Personality disorders (general diagnostic criteria, cluster A, B, C, principal symptoms of the individual personality disorders)
- Addiction (Alcohol abuse and addiction, drug abuse and addiction: symptoms, classification, epidemiology, diagnostics, aetiology, psychotherapy and/or pharmacotherapy, suicidality)
- Somatic-Psychiatric Comorbidity, Psychodiabetology, Psychocardiology, Psychooncology, Psychological Pain Research
- Internet- and Mobile-based Interventions for mental disorders

Literature


Teaching and learning methods

Lecture „Klinische Psychologie I“ (2 SWS, 4 ECTS)

Workload

Attendance: 30 h
Private study: 90 h
Sum: 120 h

Assessment  No english version available yet.

Grading procedure  No english version available yet.

Basis for  -
Neuropsychology
Modules referring to Psychology - Subsidiary Subject

<table>
<thead>
<tr>
<th>Code</th>
<th>8802674733</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>5</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2</td>
</tr>
<tr>
<td>Language of</td>
<td>not specified</td>
</tr>
<tr>
<td>instruction</td>
<td></td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Winter Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>not specified</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>not specified</td>
</tr>
<tr>
<td>Allocation of study programmes</td>
<td>not specified</td>
</tr>
<tr>
<td>Recommended prerequisities</td>
<td>not specified</td>
</tr>
<tr>
<td>Learning objectives</td>
<td>not specified</td>
</tr>
<tr>
<td>Syllabus</td>
<td>not specified</td>
</tr>
<tr>
<td>Literature</td>
<td>not specified</td>
</tr>
<tr>
<td>Teaching and learning methods</td>
<td>not specified</td>
</tr>
<tr>
<td>Workload</td>
<td>not specified</td>
</tr>
</tbody>
</table>

Assessment
The credit points will be awarded once the written or oral exam has been passed (depending on the number of participants). The type of examination will be announced in time - at least 4 weeks (two weeks in the case of a repeat test) prior to the date of the exam. No prerequisites are necessary for exam registration.

Grading procedure
The grade of the module will be the grade of the exam.
Basis for

not specified
# Social Psychology I

Modules referring to Psychology - Subsidiary Subject

<table>
<thead>
<tr>
<th>Code</th>
<th>8802672564</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>4</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>German</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Winter Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>Prof. Dr. J. Keller</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Instructors of the Institute for Psychology and Education and contract lecturers.</td>
</tr>
</tbody>
</table>

**Allocation of study programmes**

- Biology M.Sc., start of studies: winter semester, compulsory elective module in the subsidiary subject Psychology, 1\textsuperscript{st}-4\textsuperscript{th} semester

**Recommended prerequisites**

- Formally: Refer to the subject-specific examination regulations of the respective study course, in the version effective when taking up the study program.
- Contentually: Command of English for reading and processing of the literature.

**Learning objectives**

The students who successfully completed this module are able to:

- name and describe the overall structure, the fundamental theoretical paradigms and the research logic of the modern social psychology.
- recite, describe and delineate central topics of social psychology such as social cognition, social interaction and intra- and inter-group processes.
- transfer social psychological theories to practical questions.
- understand and illustrate empirical research findings as well as to classify and critically assess under methodological and und theoretical aspects.

**Syllabus**

Classical and current theories and methods are introduced in this lecture. The central topics of social psychology are approached (social cognition, social interaction, intra- and inter-group processes) and the social psychological research methodology and research logic are introduced.

**Literature**

The literature (mainly in English) will be announced in the lecture.
<table>
<thead>
<tr>
<th><strong>Teaching and learning methods</strong></th>
<th>Lecture „Sozialpsychologie I“ (2 SWS, 4 ECTS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Workload</strong></td>
<td>Attendance: 30 h</td>
</tr>
<tr>
<td></td>
<td>Private study: 90 h</td>
</tr>
<tr>
<td></td>
<td>Sum: 120 h</td>
</tr>
<tr>
<td><strong>Assessment</strong></td>
<td>The credit points will be awarded once the written or oral exam has been passed (depending on the number of participants). The type of examination will be announced in time - at least 4 weeks prior to the date of the exam (2 weeks if it is a repeat exam). No prerequisites are necessary for exam registration.</td>
</tr>
<tr>
<td><strong>Grading procedure</strong></td>
<td>The grade of the module will be the grade of the exam.</td>
</tr>
<tr>
<td><strong>Basis for</strong></td>
<td>-</td>
</tr>
</tbody>
</table>
# Social Psychology II

Modules referring to Psychology - Subsidiary Subject

<table>
<thead>
<tr>
<th>Code</th>
<th>8802672565</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>4</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>German</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Summer Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>Prof. Dr. J. Keller</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Instructors of the Institute for Psychology and Education and contract lecturers.</td>
</tr>
</tbody>
</table>

**Allocation of study programmes**

Biology M.Sc., start of studies: winter semester, compulsory elective module in the subsidiary subject Psychology, 1<sup>st</sup>-4<sup>th</sup> semester

**Recommended prerequisites**

Formally: Refer to the subject-specific examination regulations of the respective study course, in the version effective when taking up the study program.

Contentually: Command of English for reading and processing of the literature.

**Learning objectives**

The students who successfully completed this module are able to:

- name and describe the overall structure, the fundamental theoretical paradigms and the research logic of the modern social psychology.
- recite, describe and delineate central topics of social psychology such as social cognition, social interaction and intra- and inter-group processes.
- transfer social psychological theories to practical questions.
- understand and illustrate empirical research findings as well as to classify and critically assess under methodological and und theoretical aspects.

**Syllabus**

Classical and current theories and methods are introduced in this lecture. The central topics of social psychology are approached (social cognition, social interaction, intra- and inter-group processes) and the social psychological research methodology and research logic are introduced.

**Literature**

The literature (mainly in English) will be announced in the lecture.
### Teaching and learning methods

Lecture „Sozialpsychologie II“ (2 SWS, 4 ECTS)

### Workload

- **Attendance:** 30 h
- **Private study:** 90 h
- **Sum:** 120 h

### Assessment

The credit points will be awarded once the written or oral exam has been passed (depending on the number of participants). The type of examination will be announced in time - at least 4 weeks prior to the date of the exam (2 weeks if it is a repeat exam). No prerequisites are necessary for exam registration.

### Grading procedure

The grade of the module will be the grade of the exam.

### Basis for

-
Lecture Developmental Psychology
Modules referring to Psychology - Subsidiary Subject

<table>
<thead>
<tr>
<th>Code</th>
<th>8802670119</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>4</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>German or English</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Winter Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>Prof. D. Zimprich</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Instructors of the Institute for Psychology and Education and contract lecturers.</td>
</tr>
<tr>
<td>Allocation of study programmes</td>
<td>Biology M.Sc., start of studies: winter semester, compulsory elective module in the subsidiary subject Psychology, 1st-4th semester</td>
</tr>
<tr>
<td>Recommended prerequisites</td>
<td>Formally: Refer to the subject-specific examination regulations of the respective study course, in the version effective when taking up the study program. Contentually: None.</td>
</tr>
</tbody>
</table>

Learning objectives
Students who have successfully completed this module are able to

- define and explain basic terms of the developmental psychology.
- name, describe and critically evaluate theories, methods and empirical research results of the developmental psychology.
- name and differentiate phenomena of age-related changes and stabilities in the behavior and the experience, in learning and performance over the lifespan.
- explain empirical research results and classify and critically evaluate under theoretical and methodological aspects.
- relate developmental psychological theories to practical and applied questions.
- read scientific texts, explain their contents, classify and evaluate their quality and assess their relevance.
- summarize and classify scientific contents and texts, describe and present them in their own words.

Syllabus
The module provides an overview of central theories of the developmental psychology and phenomena of age-related changes and stabilities in the behavior and the experience, in learning and performance over the lifespan. The students get to know essential research methods and empirical results of the topic.
Further literature will be announced in the lecture. |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching and learning methods</td>
<td>Lecture „Entwicklungspsychologie“ (2 SWS, 4 ECTS)</td>
</tr>
</tbody>
</table>
| Workload | Attendance: 30 h  
Private study: 90 h  
Sum: 120 h |
| Assessment | The credit points will be awarded once the written or oral exam has been passed (depending on the number of participants). The type of examination will be announced in time - at least 4 weeks (2 weeks if repeat exam) prior to the date of the exam (2 weeks if it is a repeat exam). No prerequisites are necessary for exam registration. |
| Grading procedure | The grade of the module will be the grade of the exam. |
| Basis for | - |
### Lecture General Psychology I

**Modules referring to Psychology - Subsidiary Subject**

<table>
<thead>
<tr>
<th>Code</th>
<th>8802676515</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>4</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>No English version available yet</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>irregular</td>
</tr>
<tr>
<td>Coordinator</td>
<td>No English version available yet</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>No English version available yet</td>
</tr>
<tr>
<td>Allocation of study programmes</td>
<td>No English version available yet</td>
</tr>
<tr>
<td>Recommended prerequisites</td>
<td>No English version available yet</td>
</tr>
<tr>
<td>Learning objectives</td>
<td>No English version available yet</td>
</tr>
<tr>
<td>Syllabus</td>
<td>No English version available yet</td>
</tr>
<tr>
<td>Literature</td>
<td>No English version available yet</td>
</tr>
<tr>
<td>Teaching and learning methods</td>
<td>No English version available yet</td>
</tr>
<tr>
<td>Workload</td>
<td>No English version available yet</td>
</tr>
</tbody>
</table>

**Assessment**

The credit points will be awarded once the written or oral exam has been passed (depending on the number of participants). The type of examination will be announced in time - at least 4 weeks prior to the date of the exam. No prerequisites are necessary for exam registration.
Grading procedure
The grade of the module will be the grade of the exam.

Basis for
No English version available yet
**Introduction to Business Administration**

*Modules referring to Management and Economics - Subsidiary Subject*

<table>
<thead>
<tr>
<th>Code</th>
<th>8802670003</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ECTS credits</strong></td>
<td>6</td>
</tr>
<tr>
<td><strong>Attendance time</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Language of instruction</strong></td>
<td>German</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Cycle</strong></td>
<td>each Winter Semester</td>
</tr>
<tr>
<td><strong>Coordinator</strong></td>
<td>Prof. Dr. Kai-Uwe Marten</td>
</tr>
<tr>
<td><strong>Instructor(s)</strong></td>
<td>All professors and lecturers of Management and Economics</td>
</tr>
</tbody>
</table>

**Allocation of study programmes**

- Biology MSc, start of studies: winter semester, compulsory elective module, 1st or 3rd semester
- Chemical Engineering B.Sc.

**Recommended prerequisites**

- Formally: Refer to the subject-specific examination regulations of the respective study course, in the version effective when taking up the study program.
- Contentually: None.

**Learning objectives**

- Students who have successfully completed this module
  - are familiar with the basic concepts and problems of corporate management.
  - have learned to apply economic concepts to managerial decisions.
  - are able to understand intra-company aspects (corporate governance, human resource management, manufacturing) as well as decisions made in interactions with markets (sales, strategy).

**Syllabus**

- This module covers the following subject-specific topics:
  - Constitutive decisions (legal forms, organizational structure and design, corporate governance, location planning)
  - Human resource management
  - Investment (especially net present value rule)
- Cost accounting
- Procurement
- Production
- Sales
- Strategic management (competitive analysis, BCG matrix etc.)

**Literature**
- Bea, Franz Xaver; Schweitzer, Marcell: Allgemeine Betriebswirtschaftslehre, 3 volumes, 9th resp. 10th revised edition, Stuttgart 2006-2011
- Schierenbeck, Henner; Wöhle, Claudia: Grundzüge der Betriebswirtschaftslehre, 17th revised edition, Munich 2008
- Steven, Marion: BWL für Ingenieure, 3rd revised edition, Munich 2008
- Wöhe, Günter; Döring, Ulrich: Einführung in die Allgemeine Betriebswirtschaftslehre, 24th revised edition, Munich 2010

**Teaching and learning methods**
Lecture (3 hours per week) and exercises (1 hour per week)

**Workload**
- Attendance time: 60 h
- Self-study: 120 h
- Sum: 180 h

**Assessment**
The grade of the module will be the grade of the written exam. No prerequisites are necessary for exam registration.

**Grading procedure**
The grade of the module will be the grade of the exam.

**Basis for**
-
# Introduction to Economics

**Modules referring to Management and Economics - Subsidiary Subject**

<table>
<thead>
<tr>
<th>Code</th>
<th>8802670726</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECTS credits</td>
<td>6</td>
</tr>
<tr>
<td>Attendance time</td>
<td>4</td>
</tr>
<tr>
<td>Language of instruction</td>
<td>German</td>
</tr>
<tr>
<td>Duration</td>
<td>1</td>
</tr>
<tr>
<td>Cycle</td>
<td>each Winter Semester</td>
</tr>
<tr>
<td>Coordinator</td>
<td>Prof. Dr. Kai-Uwe Marten</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Prof. Dr. Georg Gebhardt, Prof. Dr. Werner Smolny</td>
</tr>
<tr>
<td>Allocation of study programmes</td>
<td>Biology MSc, start of studies: winter semester, compulsory elective module, 1\textsuperscript{st} or 3\textsuperscript{rd} semester</td>
</tr>
<tr>
<td>Recommended prerequisites</td>
<td>Formally: Refer to the subject-specific examination regulations of the respective study course, in the version effective when taking up the study program. Contentually: None.</td>
</tr>
</tbody>
</table>

**Learning objectives**

Students who have successfully completed this module are familiar with the fundamental principles of economics such as (1) the use of formal models (optimization, marginal analysis, equilibrium, homo oeconomicus and its behavioral alternatives) (2) Empirical tests of hypotheses (regression analysis, causality, experimental economics). Moreover students are introduced to the most important micro- and macroeconomic applications of these methods (markets, growth, business cycles) together with the associated economic policy questions (development, taxation, monetary and fiscal policy).

**Syllabus**

This module covers the following subject-specific topics:

1) Economic indicators  
2) Growth  
3) Perfect competition  
4) Foundations of perfect competition  
5) Business cycles
<table>
<thead>
<tr>
<th>Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Wooldridge, Jeffrey M. (2009), Introductory Econometrics, Southwestern, Cengage: 4. Auflage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teaching and learning methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture (3 hours per week) and exercises (1 hour per week)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Workload</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance time: 60 h</td>
</tr>
<tr>
<td>Self-study: 120 h</td>
</tr>
<tr>
<td>Sum: 180 h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>The grade of the module will be the grade of the written exam. No prerequisites are necessary for exam registration.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grading procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>The grade of the module will be the grade of the exam.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Basis for</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
</tr>
</tbody>
</table>