Subdivided Module Catalogue
for the Subject

Biology

as a Bachelor’s with 1 major
with the degree "Bachelor of Science"
(180 ECTS credits)

Examination regulations version: 2015
Responsible: Faculty of Biology
Course of Studies - Contents and Objectives

The objective of the study program biology is to familiarize the students with basic scientific concepts and content in the various biological topics. The students are made familiar with basic biological methodologies and learn to apply them. Through practical and theoretical studies to answer fundamental questions in biological science, the study program biology improves the student’s analytical thinking and thus enhances understanding of complex biological processes and relationships.
Abbreviations used

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

Term: \(SS\) = summer semester, \(WS\) = winter semester

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

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

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

Conventions

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

Notes

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

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

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

In accordance with

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

\[ASPO2015\]

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

\[22-Jul-2015\ (2015-38)\]

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

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**Subfield Special Biosciences I (5 ECTS credits)**

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<td>Structural an functional Analysis of Biosensors 3</td>
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<td>Specific Membrane Biology of Plants 3</td>
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<td>07-6S3PS4-152-m01</td>
<td>Scientific Work in Plant Ecophysiology</td>
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<td>245</td>
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<tr>
<td>07-6S3PS5-152-m01</td>
<td>Research Project in Pharmaceutical Biology with Focus on Molecular Biology</td>
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<td>Research Project in Pharmaceutical Biology with Focus on Molecular Biochemistry</td>
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<td>61</td>
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<td>03-6S3IM-152-m01</td>
<td>Immunology 3</td>
<td>15</td>
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<td>03-6S3VL-152-m01</td>
<td>Virology 3</td>
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<td>Clinical Biochemistry 3 / Laboratory Medicine</td>
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<td>03-6S3TE-152-m01</td>
<td>Tissue Engineering 3</td>
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<td>07-5S-EX3-152-m01</td>
<td>Excursion III</td>
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### Key Skills Area (20 ECTS credits)

#### General Key Skills (5 ECTS credits)

In addition to the modules offered as part of the pool of general transferable skills (ASQ) of JMU, students may also take the following modules.

#### General Key Skills (subject-specific)

- **07-SQA-EFQ2-152-m01** Additional Key Qualification 2
- **07-SQA-EFQ3-152-m01** Additional Key Qualification 3
- **07-SQA-EFQ4-152-m01** Additional Key Qualification 4
- **07-SQA-EFQ5-152-m01** Additional Key Qualification 5
- **07-SQA-WP1-152-m01** Designing a Scientific Poster

#### Subject-specific Key Skills (15 ECTS credits)

Completion of module 07-SQF-RETH is mandatory.

- **07-SQF-TFB3-152-m01** Supervising Tutorial for Basic Courses 3
- **07-SQF-TFB4-152-m01** Supervising Tutorial for Basic Courses 4
- **07-SQF-TFB5-152-m01** Supervising Tutorial for Basic Courses 5
- **07-SQF-TSB2-152-m01** Supervising Tutorial for Biology 2
- **07-SQF-TSB3-152-m01** Supervising Tutorial for Biology 3
- **07-SQF-UBG-152-m01** Environmental Education in the Botanic Garden of Würzburg University
- **07-SQF-BGA-152-m01** Biotechnology and Social Acceptance
- **07-SQF-RETH-152-m01** Legal and Ethical Aspects in Biological Sciences
- **07-SQF-PBD-152-m01** Principles of Image Data Processing
- **07-SQF-GSA-152-m01** Basics in System Administration
- **07-SQF-CTA-152-m01** Computertools for Molecular Biology
- **07-SQF-EDV-152-m01** Basic Data Processing
- **07-SQF-GSL-152-m01** Principles of Laboratory Work
- **07-SQF-GXP-152-m01** Good Practices in Laboratory, Clinics and Production
- **07-SQF-INK-152-m01** Tutorial Intercultural Competence
- **07-SQF-KEB-152-m01** Career Perspectives, Personal Competence and Communication Skills
- **07-SQF-RPI-152-m01** Research, Presentation, Information
- **07-SQF-GHE-152-m01** Global Acting in Globally and Locally linked Decision Processes
- **07-SQF-HVB-152-m01** Outstanding Publications in Biology
- **07-SQF-PRB-152-m01** Patents in Biology
- **07-SQF-SAL-152-m01** Operational Safety in Ecophysiological Laboratories
- **07-SQF-WIP-152-m01** Publishing Scientific Data
- **07-SQF-GTA-152-m01** Teamwork in Natural Science
- **07-SQF-UBD-152-m01** Entrepreneurial Thinking in Biosciences
- **07-SQF-ZQN2-152-m01** Additional Qualification in Natural Sciences 2
- **07-SQF-ZQN3-152-m01** Additional Qualification in Natural Sciences 3
- **07-SQF-ZQN4-152-m01** Additional Qualification in Natural Sciences 4
- **07-SQF-ZQN5-152-m01** Additional Qualification in Natural Sciences 5
- **07-SQF-ZQN6-152-m01** Additional Qualification in Natural Sciences 6
### Subdivided Module Catalogue for the Subject Biology

Bachelor's with 1 major, 180 ECTS credits

<table>
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<td>Additional Qualification outside Natural Sciences 6</td>
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**Thesis Area (12 ECTS credits)**

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<td>Thesis Biology</td>
<td>12</td>
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<td>Inorganic Chemistry for Biology Majors</td>
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<th>Module offered by</th>
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<tr>
<td>lecturer of lecture “Allgemeine and Anorganische Che-</td>
<td>Institute of Inorganic Chemistry</td>
</tr>
<tr>
<td>mie für Studierende der Medizin, Zahnmedizin and Biolo-</td>
<td></td>
</tr>
<tr>
<td>gie” (General and Inorganic Chemistry for Students of</td>
<td></td>
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<tr>
<td>Medicine, Dentistry and Biology)</td>
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<thead>
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<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
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<tbody>
<tr>
<td>2 semester</td>
<td>undergraduate</td>
<td>Successful completion of the written examination serves as proof of all safety-related skills and is a prerequisite for attendance of the lab course.</td>
</tr>
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</table>

**Contents**

This module will provide students with an overview of anorganic chemistry. Furthermore, in a lab course it introduces on the basics techniques of anorganic chemistry.

**Intended learning outcomes**

Students have become familiar with the fundamental principles of inorganic chemistry. They are able to identify fundamental problems in chemistry and perform experiments to solve them.

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

V (2) + P (3)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 60 minutes) and assessment of practical skills during lab course (ungraded): Vor- testate/Nachtestate (pre and post-experiment exams, approx. 15 minutes each), assessment of practical assignments, log (approx. 5 to 10 pages)

Assessment offered: Once a year, summer semester

**Allocation of places**

--

**Additional information**

--

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

--
**Methods in Biotechnology**

**Abbreviation**: 07-4S1AMB-152-m01

**Module coordinator**: holder of the Chair of Biotechnology and Biophysics

**Module offered by**: Faculty of Biology

**ECTS**: 5

**Method of grading**: numerical grade

**Duration**: 1 semester

**Module level**: undergraduate

**Other prerequisites**: --

### Contents

This module (lecture and seminar) will provide students with an overview of instrument-based methods in biotechnology and biomedicine and the underlying physical principles. It will discuss modern methods for the analysis of biological matter on the molecular and cellular level. These methods include light microscopy, fluorescence spectroscopy, electron microscopy, atomic force microscopy, flow cytometry and microfluidics.

### Intended learning outcomes

Students will gain an overview of key methods in biotechnology and their respective advantages and disadvantages. They will learn to decide what method is most suitable for addressing a particular issue.

### Courses

(V (2) + S (2))

**Method of assessment**

written examination (approx. 30 to 60 minutes)

creditable for bonus

### Allocation of places

25 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

**Selection process group 1 (95%)**: Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

**Selection process group 2 (5%)**: Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology;
among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.
Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information
--

Referred to in LPO I (examination regulations for teaching-degree programmes)
--
Module title
Practical Course as Exchange Student
Abbreviation
07-5AP-152-m01

Module coordinator
Coordinator BioCareers

Module offered by
Faculty of Biology

ECTS
10

Method of grading
numerical grade

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

Duration
1 semester

Module level
undergraduate

Other prerequisites
Please consult with course advisory service in advance.

Contents
Practical course to be completed at universities abroad. Students may complete this course in the context of exchange programmes such as Erasmus etc. Contents of the course should correspond to the contents of Spezielle Biowissenschaften 2 (Advanced Biosciences 2); please consult with the competent coordinator in advance.

Intended learning outcomes
Students are familiar with working methods at universities in countries other than Germany. They have developed professional competencies as well as language and interpersonal skills.

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

P (1)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

creditable for bonus

Allocation of places
--

Additional information
--

Referred to in LPO I (examination regulations for teaching-degree programmes)
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<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>chairperson of examination committee Biologie (Biology)</td>
<td>Faculty of Biology</td>
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<th>Other prerequisites</th>
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</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</tr>
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</table>

### Contents

Within a time frame of ten weeks, students will research and write on a defined scientific question. They will plan and perform experiments, collect data and present it in a thesis and will deliver a presentation on and discuss their topic in a seminar. For more information on the structure of the thesis, please refer to www.biostudium.uni-wuerzburg.de.

### Intended learning outcomes

Students will be able to research and write on a scientific problem within a given time frame (10 weeks), adhering to the principles of good scientific practice. They will be able to document their findings in both written and oral form, to discuss their findings as well as to place them in the context of the present knowledge in the field.

### Courses

No courses assigned to module

Module taught in: German and/or English

### Method of assessment

written thesis (approx. 20 to 40 pages)

Language of assessment: German and/or English

### Allocation of places

--

### Additional information

--

### Referred to in LPO I

(examination regulations for teaching-degree programmes)

--
## Biochemistry 1

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<tr>
<td>holder of the Chair of Biochemistry</td>
<td>Chair of Biochemistry</td>
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<th>Other prerequisites</th>
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</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
<td>--</td>
</tr>
</tbody>
</table>

### Contents

The module imparts the basic knowledge of biochemistry by lectures and tutorials. Main topics of the module Biochemistry 1 are particularly the biochemistry of proteins (amino acids, peptide bond, primary, secondary, tertiary and quaternary structure), catalytic strategies and enzyme kinetics, carbohydrate metabolism (glycolysis, gluconeogenesis, citric acid cycle, cellular respiration, photosynthesis), fatty acid metabolism (beta-oxidation, fatty acid synthesis), nucleotide metabolism, urea cycle and metabolism of amino acids. Additionally the module conveys basic knowledge about the structure of DNA and the basics of passing and transformation of genetic information (central dogma).

### Intended learning outcomes

The student has basic knowledge in the covered subject areas of biochemistry. He/She is able to describe the basic biochemical processes in cellular systems.

### Courses

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

V (2) + Ü (1)

### Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 60 to 90 minutes)

### Allocation of places

--

### Additional information

--

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

§ 42 Nr. 2  
§ 62 Nr. 2
Module title: Biochemistry 2
Abbreviation: 08-BC2-152-m01

Module coordinator: holder of the Chair of Biochemistry

Module offered by: Chair of Biochemistry

ECTS: 5
Method of grading: numerical grade
Only after succ. compl. of module(s)

Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents:
The module imparts the basic knowledge of biochemistry by lectures and in-depth tutorials. Main topics of the module Biochemistry 2 are particularly Replication, DNA repair, transcription, mRNA maturation, translation and regulation of translation, protein targeting, nuclear transport, and protein degradation. Additionally the module conveys basic knowledge about the cellular signal transduction.

Intended learning outcomes:
The student has basic knowledge in the covered subject areas of biochemistry. He/She is able to describe the basic biochemical processes in cellular systems.

Courses (type, number of weekly contact hours, language — if other than German):
V (2) + Ü (1)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus):
written examination (approx. 60 to 90 minutes)

Allocation of places:
--

Additional information:
Pursuant to Section 2 Subsection 2 Sentence 2 Verordnung über die Ausbildung und Prüfung der Staatlich geprüften Lebensmittelchemikerinnen und Lebensmittelchemiker (Regulation on the training and examination of state-certified food chemists, APOLmCh) in conjunction with No. II 2. Letter e) and No. II 1. Letter c) of Annex 1 of APOLmCh and No. 3 of Annex 3 of APOLmCh.

Referred to in LPO I (examination regulations for teaching-degree programmes):
--
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<td>Biochemical Practical Course for Students in Biology</td>
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<td>Chair of Biochemistry</td>
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</table>

**Contents**

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

**Intended learning outcomes**

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

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

P (6)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Log (approx. 30 pages)
Assessment offered: Once a year, summer semester

**Allocation of places**

Biologie: 6 places. (grade), should the number of applications exceed the number of available places, applicants will be ranked according to the grade achieved in module 08-BC1. Places will be allocated according to this ranking. Among applicants with the same ranking, places will be allocated by lot.

**Additional information**

--

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

--
Module title: Bioinformatics for Advanced Students
Abbreviation: 07-4BFMZ4-152-m01

Module coordinator: holder of the Chair of Bioinformatics
Module offered by: Faculty of Biology

ECTS: 5
Method of grading: numerical grade
Only after succ. compl. of module(s):

Duration: 1 semester
Module level: undergraduate
Other prerequisites:

Contents
The module will introduce students to the practice of bioinformatics and will cover the following topics: sequence analysis, structure analysis, genome analysis, cellular and metabolic networks as well as gene regulation.

Intended learning outcomes
Students are able to use appropriate bioinformatic algorithms to address simple problems as well as to interpret their results.

Courses
(type, number of weekly contact hours, language — if other than German)
V (1) + Ü (5)

Method of assessment
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
Log (approx. 10 to 20 pages) creditable for bonus

Allocation of places
40 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25%
of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery. Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

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<tr>
<th>Referred to in LPO I (examination regulations for teaching-degree programmes)</th>
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<tbody>
<tr>
<td>Module title</td>
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<tr>
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<tr>
<td>Biology and Ecology of Arthropods</td>
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<tr>
<th>Module coordinator</th>
<th>Module offered by</th>
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<tbody>
<tr>
<td>holder of the Chair of Animal Ecology and Tropical Biology</td>
<td>Faculty of Biology</td>
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<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</table>

**Contents**

All aspects of the biology and ecology of arthropods, from phylogeny and morphology through to behaviour and ecology. The lecture will provide you with an overview of the biology and ecology of arthropods or will focus on specific taxa. It will discuss findings of basic and applied research on and with arthropods and will highlight the diversity of relationships between arthropods and humans. Practical exercises that will vary according to the group of arthropods we focused on will provide you with an opportunity to consolidate your knowledge on the topics covered in the lecture.

**Intended learning outcomes**

Ability to conduct research on and with arthropods to address suitable problems as well as to explain the role of arthropods in ecosystems.

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

\[ \text{Ü (5) + V (1)} \]

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

**Allocation of places**

15 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

**Selection process group 1 (95%)**: Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according
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Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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

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### Analysis of Biosensors

**Abbreviation:** 07-5S2PS3-152-m01

<table>
<thead>
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<th>Module coordinator</th>
<th>Module offered by</th>
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<tbody>
<tr>
<td>holder of the Chair of Plant Physiology and Biophysics</td>
<td>Faculty of Biology</td>
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<th>Other prerequisites</th>
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</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</tbody>
</table>

**Contents**

In this module, students will acquire a knowledge of methods for recombinant protein expression, protein isolation and protein purification as well as the biophysical and biochemical analysis of proteins. Current scientific publications on these topics will be presented and discussed.

**Intended learning outcomes**

Students have acquired knowledge and skills in the areas of recombinant protein expression and subsequent purification as well as protein analysis. They are able to interpret and deliver presentations on scientific publications.

**Courses**

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

<table>
<thead>
<tr>
<th>Ü (7)</th>
<th>S (1)</th>
</tr>
</thead>
</table>

Module taught in: German and/or English

**Method of assessment**

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 45 to 60 minutes)
- b) log (approx. 10 to 20 pages)
- c) oral examination of one candidate each (approx. 30 minutes)
- d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate)
- e) presentation (approx. 20 to 30 minutes)
- f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours)

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

### Allocation of places

5 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

**Selection process group 1 (95%)**: Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according
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Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

Referred to in LPO I (examination regulations for teaching-degree programmes)
Module title: Biotechnology 1
Abbreviation: 07-4BFMZ5-152-m01

Module coordinator: holder of the Chair of Biotechnology and Biophysics
Module offered by: Faculty of Biology

ECTS: 5
Method of grading: numerical grade
Only after success. completion of module(s)

Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents:
In this module (lab course and seminar), students will acquire fundamental specialist knowledge in the areas of biotechnology, biophysics and microscopic imaging. Students will gain an insight into different topics in biotechnology and biophysics at the molecular and cellular level. The following topics will be covered: introduction to photon absorption, (UV/VIS) spectroscopy, fluorescence anisotropy, time-resolved fluorescence measurement, fluorescent labelling of proteins, circular dichroism, confocal laser scanning microscopy (CLSM), electrophysiological techniques, osmoregulation in animal cells, dielectric analysis and electromanipulation of cells. During the practical part, students will become familiar with the abovementioned technologies and will perform several experiments under expert guidance.

Intended learning outcomes:
Students will have acquired a knowledge of fundamental biotechnological and biophysical methods and their applications that will enable them to independently review relevant literature. In addition, they will have become acquainted with - or, where necessary, will be able to independently acquaint themselves with - biophysical mechanisms. Students will have acquired practical experience performing experiments, using a variety of scientific tools. In the seminar, students will have acquired detailed theoretical knowledge on these experiments and will have delivered a short presentation (15 minutes) on one of the experiments they performed.

Courses:
( type, number of weekly contact hours, language — if other than German)
Ü (4) + S (1)

Method of assessment:
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).
Students will be informed about the method and length of the assessment prior to the course.

Allocation of places:
24 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

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Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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Module title: Biotechnology and Social Acceptance
Abbreviation: 07-SQF-BGA-152-m01

Module coordinator: holder of the Chair of Plant Physiology and Biophysics
Module offered by: Faculty of Biology

ECTS: 3
Method of grading: numerical grade
Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents
Applications of green biotechnology; biological background, economic interests, ecological risks, social acceptability.

Intended learning outcomes
Students are able to discuss/evaluate society's views of biotechnology. They know how to conduct a literature search and are able to critically review scientific publications as well as issues raised by society. Students have enhanced their oral and written presentation skills and are able to use these to present the data they have collected.

Courses (type, number of weekly contact hours, language — if other than German)
V (1) + S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
term paper or preparing educational materials (approx. 5 to 10 pages)
Language of assessment: German and/or English
creditable for bonus

Allocation of places
20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: first, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.
Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery. Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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

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Module title | Abbreviation
--- | ---
Analysis of Chromosomes | 07-4S1MZ2-152-m01

Module coordinator | Module offered by
head of the Department of Electronmicroscopy | Faculty of Biology

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

Duration | Module level | Other prerequisites
--- | --- | ---
1 semester | undergraduate | --

Contents
Overview of the structure of chromosomes of somatic and meiotic cells.

Intended learning outcomes
Students are able to analyse chromosomal structures.

Courses (type, number of weekly contact hours, language — if other than German)
V (1) + Ü (5)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
written examination (approx. 30 to 60 minutes)
creditable for bonus

Allocation of places
18 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.
Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.
Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

### Abbreviation
07-1A1ZPF-152-m01

### Module coordinator
Dean of Studies Biologie (Biology)

### Module offered by
Faculty of Biology

### ECTS
5

### Method of grading
numerical grade

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

### Duration
1 semester

### Module level
undergraduate

### Other prerequisites
Admission prerequisite to assessment: exercises. Regular attendance of exercises (minimum 80%) and successful completion of the respective exercises (approx. 25 to 30 hours) are prerequisites for admission to assessment.

### Contents
Using the example of plants, students will be introduced to the phylogenetic diversity of eukaryotes in particular. At the level of groups in the plant kingdom, students will acquire the fundamental knowledge necessary to understand the forms and functions of plant organisms, with morphology and cytology being discussed in an evolutionary and ecological context. The contents of the module are relevant for biological disciplines at all levels of biological organisation. Students will also acquire and practise some of the fundamental preparation skills bioscientists are often required to possess.

### Intended learning outcomes
- Knowledge of the specific characteristics of the intracellular and extracellular structures of plant cells and fungi.
- Ability to recognise evolution as the driving force behind the phylogeny of species.
- Familiarity with the concepts of phylogenetic relationships between plants/fungi.
- Familiarity with the distinguishing characteristics and major representatives of fungi as well as groups in the plant kingdom.
- Ability to select those plant and fungal organisms that are most suitable for particular scientific issues.
- Familiarity with the components and functioning of microscopes.
- Fundamental skills in the interpretation of macroscopic and histologic preparations by light microscopy.
- Fundamental preparation skills.

### Courses
V (1.5) + Ü (2.5)

### Method of assessment
written examination (approx. 60 minutes)
creditable for bonus

### Allocation of places
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### Additional information
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### Referred to in LPO I
(examination regulations for teaching-degree programmes)
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## Subdivided Module Catalogue for the Subject Biology

Bachelor's with 1 major, 180 ECTS credits

<table>
<thead>
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<tr>
<td>The Fauna of Germany</td>
<td>07-4A4FAU-152-m01</td>
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### Module coordinator
holder of the Chair of Animal Ecology and Tropical Biology

### Module offered by
Faculty of Biology

<table>
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<th>Method of grading</th>
<th>Only after succ. compl. of module(s)</th>
<th>Other prerequisites</th>
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</thead>
<tbody>
<tr>
<td>7</td>
<td>numerical grade</td>
<td>--</td>
<td>Admission prerequisite to assessment: regular attendance of field trips (minimum 80%) and completion of exercises. Regular attendance of exercises (minimum 80%) and successful completion of the respective exercises (approx. 25 to 30 hours) is a prerequisite for admission to assessment.</td>
</tr>
</tbody>
</table>

### Contents

In this module, students will acquire an overview of selected groups of animals to be found in Central Europe. They will acquire a fundamental knowledge of the systematics and taxonomy of these animals and will practise identifying species, using specimens of animals. Selection of specimens will be taxon-specific and will represent specific habitats or lifestyles. Exercises in a variety of habitats will provide students with an opportunity to consolidate the knowledge and skills they acquired in the lab by identifying living specimens including their ecology and behavioural biology.

### Intended learning outcomes

Students possess species identification skills. They know how to taxonomically classify selected representatives of the indigenous fauna (vertebrates, invertebrates) and use identification keys. They are familiar with selected Central European habitats as well as their faunas and phenology. On the basis of the morphology and habitats of species, students are able to predict the biology and ecology of these species as well as, where applicable, to predict whether they function as indicators and are of conservation concern.

### Courses

<table>
<thead>
<tr>
<th>Type</th>
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<tbody>
<tr>
<td>V (1)</td>
<td>Ü (2)</td>
<td>English</td>
</tr>
</tbody>
</table>

### Method of assessment

- written examination (approx. 45 minutes) and practical identification assignment (approx. 45 minutes), weighted 1:1
- Assessment offered: Once a year, summer semester

### Allocation of places

180 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (Biology) (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

Referred to in LPO I (examination regulations for teaching-degree programmes)
Module title: Structure and Function of Cells
Abbreviation: 07-1A1ZE-152-m01

Module coordinator: holder of the Chair of Plant Physiology and Biophysics
Module offered by: Faculty of Biology

ECTS: 5
Method of grading: numerical grade
Only after succ. compl. of module(s): --

Duration: 1 semester
Module level: undergraduate
Other prerequisites:
Admission prerequisite to assessment: exercises. Regular attendance of exercises (minimum 80%) and successful completion of the respective exercises (approx. 25 to 30 hours) are prerequisites for admission to assessment.

Contents:
The course will acquaint students with the elementary building blocks of life as well as biological categories. Building on this knowledge, the course will then discuss the cell, the smallest unit of life, starting with its macroscopic structure before moving on to its microscopic structure. The course will point out differences and similarities between prokaryotic cells (bacteria, archaeabacteria) and eukaryotic cells (animals, plants). Students will acquire the fundamental knowledge necessary to understand the forms and functions of prokaryotic, animal and plant organisms, with morphology and cytology being discussed in a physiological context. The contents of the module are relevant for biological disciplines at all levels of biological organisation. Students will also acquire and practise some of the fundamental preparation skills bioscientists are often required to possess.

Intended learning outcomes:
- Knowledge of the structures of prokaryotic and eukaryotic cells and their (biological) macromolecules.
- Knowledge of the specific characteristics of the intracellular and extracellular structures of prokaryotes as well as animal and plant cells.
- Ability to recognise evolution as the driving force behind the phylogeny of species.
- Familiarity with the distinguishing characteristics of major representatives of prokaryotes, animals and plants.
- Familiarity with the components and functioning of microscopes.
- Fundamental skills in the interpretation of macroscopic and histologic preparations by light microscopy.
- Fundamental preparation skills.

Courses (type, number of weekly contact hours, language — if other than German):
V (1.5) + Ü (3.5)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus):
written examination (approx. 60 minutes)
creditable for bonus

Allocation of places:
--

Additional information:
--

Referred to in LPO I (examination regulations for teaching-degree programmes)
--
**Module title** | **Abbreviation**
---|---
Basic Data Processing | 07-SQF-EDV-152-m01

| **Module coordinator** | holder of the Chair of Bioinformatics |
| **Module offered by** | Faculty of Biology |

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<th><strong>Other prerequisites</strong></th>
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<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</table>

**Contents**

In this module, students will acquire fundamental computer skills that are essential not only for students of biology: - up-to-date information on hardware and software, data protection and data security - basic information on Windows and Linux operating systems - in the area of software, the course will focus on Office applications students will be required to work with during their university studies: word processing, spreadsheets, presentation and database software - in addition, the course will focus on topics from the areas of communication technology, the internet, network technology and image processing

**Intended learning outcomes**

Students have developed fundamental knowledge on the state of the art in the area of computers and software for bioscientists. They have gained an overview of prevalent operating systems and know how to backup and protect data. Students are able to use MS Office-like software to address in particular scientific issues and know how to search for information on the internet. They know how to create and maintain web pages and are familiar with tools for these purposes. Students are proficient in image editing software and techniques and know how to embed images into documents in specific formats, as they will be required to do when writing scientific publications.

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

**Ü (2)**

Module taught in: German and/or English

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English creditable for bonus

**Allocation of places**

--

**Additional information**

--

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

--
### Subdivided Module Catalogue for the Subject Biology

**Bachelor's with 1 major, 180 ECTS credits**

<table>
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<tr>
<th><strong>Module title</strong></th>
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<td>Computertools for Molecular Biology</td>
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<tbody>
<tr>
<td>holder of the Chair of Bioinformatics</td>
<td>Faculty of Biology</td>
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<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</table>

### Contents

Students know how simple and free tools for molecular biological analysis work.

### Intended learning outcomes

Students will be familiar with the methods discussed in class and will know what problems may be addressed with these methods.

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

V (0.5) + Ü (0.5)

Module taught in: German and/or English

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- written examination or practical examination (approx. 30 minutes)
- Language of assessment: German and/or English
- creditable for bonus

### Allocation of places

20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25%
of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.
Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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<table>
<thead>
<tr>
<th>Module title</th>
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<td>Introduction to Physics for Students of Biology</td>
<td>11-ENF-Bio1-152-m01</td>
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<td>1 semester</td>
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**Contents**

Fundamentals of mechanics and vibration theory.

**Intended learning outcomes**

The students understand the basic contexts of mechanics and have knowledge of experimental observations.

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

<table>
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**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 60 to 120 minutes)

**Allocation of places**

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**Additional information**

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

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

**Contents**
- Fundamentals of optics.

**Intended learning outcomes**
The students understand the basic contexts of optics and have knowledge of experimental observations. They have detected and understood physical contexts on the basis of the implementation of own experiments. They have a basic understanding of physical phenomena and know the basic ideas and ways of functioning of different measuring and imaging methods as well as their applications, especially in the field of Biomedicine.

**Courses** (type, number of weekly contact hours, language — if other than German)
V (3) + P (4)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
oral test during experiments (approx. 15 minutes) and written examination (90 minutes). Each experiment comprises preparation, performance and evaluation. Test as well as performance of experiments can each be repeated once. a) practical assignment with oral test (approx. 15 minutes) and b) written examination (approx. 90 minutes)

**Allocation of places**
--

**Additional information**
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**Referred to in LPO I** (examination regulations for teaching-degree programmes)
--
Module title | Abbreviation
---|---
The Flora of Germany | 07-4A4FLO-152-m01

Module coordinator | Module offered by
holder of the Chair of Ecophysiology and Vegetation Ecology | Faculty of Biology

<table>
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Duration | Module level | Other prerequisites
1 semester | undergraduate | Modules 12-NW-EBWL and 12-NW-EVWL are not open for students of the following subjects: Wirtschaftswissenschaft (Business Management and Economics) Bachelor’s (BSc with 180 ECTS credits), Wirtschaftsinformatik (Business Information Systems) Bachelor’s (BSc with 180 ECTS credits) and Wirtschaftsmathematik (Mathematics for Economics) Bachelor’s (BSc with 180 ECTS credits).

Contents

The module will discuss the fundamental principles of the systematics and ecology of indigenous flowering plants. Students will acquire an overview of major indigenous plant families as well as their ecological and economic importance. Using a field guide, the course will demonstrate how dichotomous keys are used, and students will practise identifying freshly-gathered plants using dichotomous keys. Identifying plants, students will learn how to identify major morphological plant characteristics and will become familiar with the respective terminology. The module will also include field trips to typical habitats in the Botanical Garden and the vicinity of Würzburg. Students will become familiar with the common as well as scientific names of the plants found and will be introduced to the family- as well as species-specific characteristics of these plants. Students will practise using field guides and identification keys on site. Habitat ecological, geobotanical, climatic as well as conservation-relevant characteristics will also be discussed. The module will also include sessions at the Botanical Garden of the University of Würzburg with its outdoor facilities and greenhouses to help students acquire species identification skills.

Intended learning outcomes

Students have acquired knowledge and skills related to the ecology, systematics and taxonomy of indigenous flowering plants. They are familiar with the terminology of plant morphology and know how to use Floras and set up scientific herbaria.

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

V (1) + Ü (2) + E (2.5)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 45 minutes) and practical identification assignment (approx. 45 minutes), weighted 1:1

Assessment offered: Once a year, summer semester creditable for bonus

Allocation of places

180 places. Students applying after not having successfully completed assessment in the past two semesters will be given preferential consideration. The remaining places will be allocated by lot. A waiting list will be maintained and places re-allocated by lot as they become available. Places on all courses of the module with a restricted number of places will be allocated in the same procedure.

Additional information

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

--
### Module title
Developmental Biochemistry

### Abbreviation
03-4S1PC-152-m01

### Module coordinator
holder of the Chair of Physiological Chemistry

### Module offered by
Faculty of Medicine

### ECTS
5

### Method of grading
numerical grade

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

### Duration
1 semester

### Module level
undergraduate

### Other prerequisites
--

### Contents

### Intended learning outcomes
Students are able to independently produce transient transgenic fish. They are able to delineate and describe temporal and spatial RNA and protein expression in situ, appraise expression patterns and recognise phenotypes of developmental mutants. They are able to evaluate fish models of biomedicine for their usefulness to answer specific questions.

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

<table>
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<tr>
<th>Type</th>
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<tr>
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<td>+ Ü (4)</td>
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### Method of assessment
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 60 minutes)

### Allocation of places
16 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: first, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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

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<table>
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<td>Developmental Biology of Plants</td>
<td>07-3A3EBIOPF-152-m01</td>
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<tr>
<td>Dean of Studies Biologie (Biology)</td>
<td>Faculty of Biology</td>
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<tr>
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<td>Admission prerequisite to assessment: exercises. Regular attendance (minimum 80%) and successful completion of exercises (approx. 25 to 30 hours) are prerequisites for admission to assessment.</td>
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</tbody>
</table>

**Contents**

In this module, students will acquire an insight into the fundamental processes of plant developmental biology over a plant’s entire life cycle from germination to reproduction. The module will discuss the molecular determination and regulation of different developmental biological processes in plants as well as their plasticity.

**Intended learning outcomes**

1. Fundamental concepts in plant developmental biology. 2. Developmental biology of selected plant model organisms. 3. Developmental biological processes at specific stages in the life cycle of plants. 4. Molecular mechanisms underlying pattern formation, morphogenesis and organogenesis in plants. 5. Establishment of plant embryonic axes. 6. Physiological aspects of the developmental processes in plants that were discussed. 7. Plasticity of developmental biological processes: regulation by endogenous and environmental factors.

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

V (1) + Ü (3)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 60 minutes)

creditable for bonus

**Allocation of places**

--

**Additional information**

--

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

§ 61 I Nr. 5
**Module title**  
Developmental Biology of Animals

**Abbreviation**  
07-3A3EBIOTI-152-m01

**Module coordinator**  
Dean of Studies Biologe (Biology)

**Module offered by**  
Faculty of Biology

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**Duration**  
1 semester

**Module level**  
undergraduate

**Other prerequisites**  
Admission prerequisite to assessment: exercises. Regular attendance (minimum 80%) and successful completion of exercises (approx. 25 to 30 hours) are prerequisites for admission to assessment.

**Contents**

In this module, students will acquire theoretical and practical background knowledge on animal developmental biology. The following topics will be covered: early embryonic development of various model organisms (amphibians, nematodes, Drosophila, mouse) and relevance for the systematics of animals, gametogenesis (production of spermatozoa and ova), differential gene expression, cell growth and molecular regulation of cell development, organogenesis, pattern formation, carcinogenesis, stem cell research and cloning, metamorphosis (amphibians, insects), eco-devo, evo-devo.

**Intended learning outcomes**

1. Fundamental concepts in developmental biology.  
2. Embryonic and postembryonic development of selected model organisms (pattern formation).  
3. Molecular mechanisms as well as control of cell development.  
4. Interdisciplinary connections between developmental biology and other branches of biology.  
5. Cell biology of cotyledon, cancer and stem cells as well as gametes.  
6. Interrelations between ontogeny and evolution/environment.  
7. Physiological aspects of the developmental processes discussed.

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

V (1) + Ü (3)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 60 minutes) creditable for bonus

**Allocation of places**

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**Additional information**

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

§ 61 I Nr. 5
### Additional Key Qualification 2

<table>
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**Module coordinator**

Coordinator BioCareers

**Module offered by**

Faculty of Biology

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</tbody>
</table>

**Duration**

1 semester

**Module level**

undergraduate

**Other prerequisites**

Please consult with course advisory service in advance.

### Contents

Other courses (not offered as part of the pool of general transferable skills (ASQ)) offered by JMU or external institutions that will equip participants with general and interdisciplinary knowledge and skills, e. g. modules offered by Virtuelle Hochschule Bayern (vhb) or courses equipping students with knowledge and skills in the areas of educational science, pedagogy or psychology. Decision on credit transfer to be made by module coordinators.

### Intended learning outcomes

Students have enhanced their interpersonal skills, general problem solving skills or decision making skills.

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

V (0.5) + S (0.5) + Ü (0.5)

Module taught in: German and/or English

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

### Allocation of places

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### Additional information

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

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<table>
<thead>
<tr>
<th>Additional Key Qualification 3</th>
<th>Abbreviation</th>
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<tr>
<td></td>
<td>07-SQA-EFQ3-152-m01</td>
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**Module coordinator**

Coordinator BioCareers

**Module offered by**

Faculty of Biology

<table>
<thead>
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<th>ECTS</th>
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<tr>
<td>1 semester</td>
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<td>Please consult with course advisory service in advance.</td>
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**Contents**

Other courses (not offered as part of the pool of general transferable skills (ASQ)) offered by JMU or external institutions that will equip participants with general and interdisciplinary knowledge and skills, e.g. modules offered by Virtuelle Hochschule Bayern (vhb) or courses equipping students with knowledge and skills in the areas of educational science, pedagogy or psychology. Decision on credit transfer to be made by module coordinators.

**Intended learning outcomes**

Students have enhanced their interpersonal skills, general problem solving skills or decision making skills.

**Courses**

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

V (0.5) + S (1) + Ü (1)

Module taught in: German and/or English

**Method of assessment**

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

creditable for bonus

**Allocation of places**

--

**Additional information**

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**Referred to in LPO I**

(examination regulations for teaching-degree programmes)

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### Additional Key Qualification 4

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<th>BioCareers</th>
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<td>Module offered by</td>
<td>Faculty of Biology</td>
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<th>Method of grading</th>
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<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
<td>Please consult with course advisory service in advance.</td>
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</table>

### Contents

Other courses (not offered as part of the pool of general transferable skills (ASQ)) offered by JMU or external institutions that will equip participants with general and interdisciplinary knowledge and skills, e.g. modules offered by Virtuelle Hochschule Bayern (vhb) or courses equipping students with knowledge and skills in the areas of educational science, pedagogy or psychology. Decision on credit transfer to be made by module coordinators.

### Intended learning outcomes

Students have enhanced their interpersonal skills, general problem solving skills or decision making skills.

### Courses

<table>
<thead>
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<tbody>
<tr>
<td>V (0.5) + S (2) + Ü (2)</td>
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</tbody>
</table>

Module taught in: German and/or English

### Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or
b) log (approx. 10 to 20 pages) or
c) oral examination of one candidate each (approx. 30 minutes)
or
d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate)
or
e) presentation (approx. 20 to 30 minutes) or
f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

### Allocation of places

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### Additional information

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### Referred to in LPO I

(examination regulations for teaching-degree programmes)

---
Module title
Additional Key Qualification 5

Abbreviation
07-SQA-EFQ5-152-m01

Module coordinator
Coordinator BioCareers

Module offered by
Faculty of Biology

ECTS
5

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

(not) successfully completed

Duration
1 semester

Module level
undergraduate

Other prerequisites
Please consult with course advisory service in advance.

Contents
Other courses (not offered as part of the pool of general transferable skills (ASQ)) offered by JMU or external institutions that will equip participants with general and interdisciplinary knowledge and skills, e.g. modules offered by Virtuelle Hochschule Bayern (vhb) or courses equipping students with knowledge and skills in the areas of educational science, pedagogy or psychology. Decision on credit transfer to be made by module coordinators.

Intended learning outcomes
Students have enhanced their interpersonal skills, general problem solving skills or decision making skills.

Courses
(type, number of weekly contact hours, language — if other than German)
V (1) + S (1) + Ü (1)

Module taught in: German and/or English

Method of assessment
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

creditable for bonus

Allocation of places
--

Additional information
--

Referred to in LPO I
(examination regulations for teaching-degree programmes)
--
Module title | Abbreviation
---|---
Evolution and the Animal Kingdom | 07-1A1TI-152-m01

Module coordinator | Module offered by
---|---
holder of the Professorship of Zoology at the Department of Electronmicroscopy | Faculty of Biology

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

<table>
<thead>
<tr>
<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
</tr>
</thead>
</table>
| 1 semester | undergraduate | Admission prerequisite to assessment: exercises. Regular attendance (minimum 80%) and successful completion of exercises (approx. 25 to 30 hours) are prerequisites for admission to assessment.

Contents

The lecture *Evolution* will acquaint students with fundamental concepts and mechanisms of evolutionary biology: the origins of diversity; natural and sexual selection; speciation; population genetics. It will provide students with an introduction to phylogenetic reconstruction and will thus enable them to develop an understanding of the system of plants and animals. During the exercise, students will complete exercises on mechanistic evolution and evolutionary history. The lecture *Tierreich* (*Animal Kingdom*) will discuss the diversity of animal organisms on the basis of the phyla of the animal kingdom focusing on phylogenetic criteria. It will address the ecological constraints that led to the development of different types of body plans with their different structures and functions. In this context, the lecture will also develop an awareness in students of how important a knowledge of the fundamental principles of zoology is for research and applications not only but in particular in biology and medicine. In the exercise, students will prepare and/or examine selected species and histological preparations and will thus become familiar with the functional and morphological characteristics of the major multicellular animal phyla. In this context, students will practise working with light microscopes and stereo microscopes and will acquire fundamental preparation skills. They will prepare drawings, documenting and interpreting what they have seen.

Intended learning outcomes

Students will be familiar with the fundamental concepts and mechanisms of evolutionary biology and will know that these are key to understanding biological processes. They will have gained an overview of the diversity of animals on the basis of different types of body plans and will understand important structures in both a functional and an ecological context.

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

V (2) + Ü (3)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 60 minutes) creditable for bonus

Allocation of places

--

Additional information

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

§ 61 I Nr. 1 (4 ECTS credits) and § 61 I Nr. 4 (1 ECTS credits)
§ 41 I Nr. 1 (4 ECTS credits) and § 41 I Nr. 4 (1 ECTS credits)
Module title | Excursion I
---|---
Abbreviation | 07-S1-Ex1-152-m01

Module coordinator | Coordinator BioCareers
Module offered by | Faculty of Biology

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

Duration | Module level | Other prerequisites
---|---|---
1 semester | undergraduate | Please consult with course advisory service in advance.

Contents

Contents of the field trip to be determined by the respective institution.

Intended learning outcomes

Students have developed skills which qualify them to work in their profession.

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

E (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Creditable for bonus

Allocation of places

--

Additional information

--

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

--
Subdivided Module Catalogue for the Subject Biology
Bachelor’s with 1 major, 180 ECTS credits

<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tbody>
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<td>Excursion II</td>
<td>07-S2-EX2-152-m01</td>
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<td>numerical grade</td>
<td>--</td>
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</table>

Contents

Contents of the field trip to be determined by the respective institution.

Intended learning outcomes

Students have developed skills which qualify them to work in their profession.

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

E (8)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

creditable for bonus

Allocation of places

--

Additional information

--

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

--
### Excursion III

<table>
<thead>
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<td>07-S3-Ex3-152-m01</td>
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<tr>
<td>Coordinator BioCareers</td>
<td>Faculty of Biology</td>
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<tr>
<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
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</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
<td>Please consult with course advisory service in advance.</td>
</tr>
</tbody>
</table>

**Contents**

Contents of the field trip to be determined by the respective institution; field trip may include visits to institutions and businesses or fieldwork in the area of organismic biology.

**Intended learning outcomes**

Students will forge links with non-university institutions and industry, will receive first-hand information and will learn about additional non-academic aspects of careers in biology. Fieldwork in the area of organismic biology will provide students with an opportunity to learn how to collect and interpret data in the field.

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

E (10)
Module taught in: German and/or English

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

Creditable for bonus

**Allocation of places**

--

**Additional information**

--

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

--
**Module title**

Excursion on the Ecology and Faunistics of a Tropical Ecosystem

**Abbreviation**

07-4S1TROP-152-m01

**Module coordinator**

holder of the Chair of Animal Ecology and Tropical Biology

**Module offered by**

Faculty of Biology

**ECTS**

5

**Method of grading**

numerical grade

**Duration**

1 semester

**Module level**

undergraduate

**Other prerequisites**

--

**Contents**

In a tropical ecosystem in the Paleotropics or Neotropics, participants will implement small projects on ecological or nature conservation-related issues and will undertake field trips to become familiar with the local flora and fauna. Participants will become familiar with different project stages from experiment design, implementation and data analysis through to data presentation.

**Intended learning outcomes**

Students have acquired an advanced knowledge on tropical species diversity. They know how to design, perform and present ecological experiments in the Paleotropics or Neotropics.

**Courses**

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

Ü (4) + E (2)

**Method of assessment**

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

term paper (approx. 10 to 20 pages)

creditable for bonus

**Allocation of places**

5 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

**Selection process group 1 (95%)**

Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

**Selection process group 2 (5%)**

Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology;
among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 %
of places): number of subject semesters of the respective applicant; among applicants with the same number of
subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.
Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, pla-
ces will be allocated according to the selection process of group 1.

**Additional information**

--

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

--
Excursion on the Ecology and Faunistics of Terrestrial Ecosystems of the Temperate Zone

<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tbody>
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<td>Excursion on the Ecology and Faunistics of Terrestrial Ecosystems of the Temperate Zone</td>
<td>07-4S1LAND-152-m01</td>
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</table>

**Module coordinator**

holder of the Chair of Animal Ecology and Tropical Biology

**Module offered by**

Faculty of Biology

**ECTS**

5

**Method of grading**

numerical grade

Only after succ. compl. of module(s)

**Duration**

1 semester

**Module level**

undergraduate

**Other prerequisites**

--

### Contents

During this field trip, students will become acquainted with the species characteristic of a terrestrial ecosystem of the temperate zone in an ecological context. Faunistic surveys will be carried out using different methods of ecological data collection.

### Intended learning outcomes

Students will have enhanced their knowledge of form as well as their understanding of concepts in synecology. In addition, they will have learned how to systematically collect ecological field data.

### Courses

É (4) + E (2)

### Method of assessment

term paper (approx. 10 to 20 pages)
creditable for bonus

### Allocation of places

12 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25%
of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery. Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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Subdivided Module Catalogue for the Subject Biology
Bachelor’s with 1 major, 180 ECTS credits

<table>
<thead>
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<th>Module title</th>
<th>Abbreviation</th>
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<td>External Practical Course</td>
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<th>Module offered by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinator BioCareers</td>
<td>Faculty of Biology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ECTS</th>
<th>Method of grading</th>
<th>Only after succ. compl. of module(s)</th>
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<td>10</td>
<td>numerical grade</td>
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</table>

<table>
<thead>
<tr>
<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
<td>Please consult with course advisory service in advance.</td>
</tr>
</tbody>
</table>

### Contents
Students will complete a placement at an authority, a non-university research institution or a business. Contents to be determined by the respective institution.

### Intended learning outcomes
Students are familiar with the structures of external institutions and businesses and have developed skills which qualify them to work in their profession.

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

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<thead>
<tr>
<th>P (1)</th>
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</thead>
<tbody>
<tr>
<td>Module taught in: German and/or English</td>
</tr>
</tbody>
</table>

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English
creditable for bonus

### Allocation of places
--

### Additional information
--

### Referred to in LPO 1 (examination regulations for teaching-degree programmes)
--
Subdivided Module Catalogue for the Subject Biology
Bachelor's with 1 major, 180 ECTS credits

<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tr>
<td>Supervising Tutorial for Basic Courses 3</td>
<td>07-SQF-TFB3-152-m01</td>
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<th>Module coordinator</th>
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<tr>
<td>degree programme coordinator Biologie (Biology)</td>
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Contents

Working as tutors, students will mentor other students during the modules Allgemeine Biologie (General Biology) I through III in particular. Tutors will help students improve upon their understanding of material, consolidate their knowledge and prepare for assessments. They will correct exercises, will discuss these with students and will help them fill gaps in their knowledge. Tutors will support other students on their way towards academic success.

Intended learning outcomes

The tutors are able to communicate complex concepts in a clear and structured way. They have gained experience supervising a group. Having prepared for answering specific questions and explaining material in detail, the tutors have also enhanced their own subject-specific skills. They have enhanced their teaching skills.

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

T (o)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Proof of tutoring activities and report (approx. 2 to 3 pages) creditable for bonus

Allocation of places

--

Additional information

--

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

--
### Module title

**Supervising Tutorial for Basic Courses 4**

### Abbreviation

07-SQF-TFB4-152-m01

### Module coordinator

degree programme coordinator Biologie (Biology)

### Module offered by

Faculty of Biology

### ECTS

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### Duration

1 semester

### Module level

undergraduate

### Other prerequisites

--

### Contents

Working as tutors, students will mentor other students during the modules *Allgemeine Biologie (General Biology)* I through III in particular. Tutors will help students improve upon their understanding of material, consolidate their knowledge and prepare for assessments. They will correct exercises, will discuss these with students and will help them fill gaps in their knowledge. Tutors will support other students on their way towards academic success.

### Intended learning outcomes

The tutors are able to communicate complex concepts in a clear and structured way. They have gained experience supervising a group. Having prepared for answering specific questions and explaining material in detail, the tutors have also enhanced their own subject-specific skills. They have enhanced their teaching skills.

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

T (0)

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Proof of tutoring activities and report (approx. 2 to 3 pages) creditable for bonus

### Allocation of places

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### Additional information

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

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**Contents**

Working as tutors, students will mentor other students during the modules Allgemeine Biologie (General Biology) I through III in particular. Tutors will help students improve upon their understanding of material, consolidate their knowledge and prepare for assessments. They will correct exercises, will discuss these with students and will help them fill gaps in their knowledge. Tutors will support other students on their way towards academic success.

**Intended learning outcomes**

The tutors are able to communicate complex concepts in a clear and structured way. They have gained experience supervising a group. Having prepared for answering specific questions and explaining material in detail, the tutors have also enhanced their own subject-specific skills. They have enhanced their teaching skills.

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

T (0)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Proof of tutoring activities and report (approx. 2 to 3 pages) creditable for bonus

**Allocation of places**

--

**Additional information**

--

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

--
### Module title

**Research Project in Pharmaceutical Biology with Focus on Molecular Biology**

### Abbreviation

07-653P5-152-m01

### Module coordinator

holder of the Chair of Pharmaceutical Biology

### Module offered by

Faculty of Biology

### ECTS

15

### Method of grading

Only after succ. compl. of module(s)

### Module level

undergraduate

### Duration

1 semester

### Other prerequisites

---

### Contents

Using the examples of topics in contemporary research, students will be introduced to the concepts of good scientific practice, including planning research strategies, performing complex experiments as well as documenting and communicating research findings in the form of a presentation, a publication or a term paper. Students will be involved in ongoing research and will learn how to independently apply specific methods in pharmaceutical biology with a focus on molecular biology.

### Intended learning outcomes

Students are able to independently pursue research projects in the field of pharmaceutical biology with a focus on molecular biology. They are able to independently address and document questions in the field of plant biology, adhering to the principles of good scientific practice.

### Courses

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

Ü (9) + S (1)

Module taught in: German and/or English

### Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

### Allocation of places

8 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

### Selection process group 1 (95%)

Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics))
at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

Referred to in LPO I (examination regulations for teaching-degree programmes)
<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tr>
<td>Research Project in Pharmaceutical Biology with Focus on Molecular Biochemistry</td>
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<td>holder of the Chair of Pharmaceutical Biology</td>
<td>Faculty of Biology</td>
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<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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**Contents**

Using the examples of topics in contemporary research, students will be introduced to the concepts of good scientific practice, including planning research strategies, performing complex experiments as well as documenting and communicating research findings in the form of a presentation, a publication or a term paper. Students will be involved in ongoing research and will learn how to independently apply specific methods in pharmaceutical biology with a focus on molecular biochemistry.

**Intended learning outcomes**

Students are able to independently pursue research projects in the field of pharmaceutical biology with a focus on molecular biochemistry. They are able to independently address and document questions in the field of plant biology, adhering to the principles of good scientific practice.

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

Ü (9) + S (1)

Module taught in: German and/or English

**Method of assessment** *(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)*

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

**Allocation of places**

8 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)).
at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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

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Module title: Functional Morphology of Arthropods
Abbreviation: 07-4StNVO3-152-m01

Module coordinator: holder of the Chair of Animal Ecology and Tropical Biology
Module offered by: Faculty of Biology

ECTS: 5
Method of grading: Only after succ. compl. of module(s)

Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents:
Morphology, anatomy, phylogeny and ecology of arthropods.

Intended learning outcomes:
Students are able to explain arthropod radiations in a functional context as well as to explain the importance of arthropods to ecosystems.

Courses (type, number of weekly contact hours, language — if other than German):
V (1) + Ü (5)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus):
term paper (approx. 5 to 10 pages)
creditable for bonus

Allocation of places:
20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.
Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

<table>
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<tr>
<th>Additional information</th>
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</table>

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

--
Module title: Genes, Molecules, Technologies
Abbreviation: 07-3A3GEMT-152-m01

Module coordinator: Dean of Studies Biologie (Biology)
Module offered by: Faculty of Biology

ECTS: 6
Method of grading: only after completion of module(s)
Duration: 1 semester
Module level: undergraduate

Other prerequisites: --

Contents:
The module Genes, Molecules, Technologies will include lectures on the following topics: The section Spezielle Genetik (Special Genetics) will build on Einführung in die Genetik (Introduction to Genetics) and will deepen the students' knowledge of topics from the following areas: structure and evolution of the eukaryotic genome, regulatory RNA, epigenetically and evolutionarily significant genetic mechanisms. The section will also focus on methods of gene expression profiling, reverse genetics and modern methods of gene function and gene sequence analysis. In the lecture Einführung in die Bioinformatik (Introduction to Bioinformatics), students will acquire an overview of major areas in the field of bioinformatics: protein sequence and protein domain analysis, phylogeny and evolution of sequences, protein structure, RNA/DNA sequences and structures, cellular networks (regulation, metabolism) and systems biology. During the section Einführung in die Biotechnologie (Introduction to Biotechnology), students will acquire an overview of the following topics: history of biotechnology, DNA and RNA technologies, recombinant antibodies, molecular diagnostics, nanobiotechnology, biomaterials, bioprocess engineering, microbial biotechnology, transgenic animals and plants, microfluidics. The lecture Einführung in die Pharmakokinetik (Introduction to Pharmacokinetics) will provide students with an overview of the rational development of drugs and active agents. The module component will discuss an important aspect for biologists in more detail: the optimisation of the pharmacokinetics of small molecules and proteins. Pharmacokinetics describes the uptake, distribution, metabolism and elimination of a drug or xenobiotic in an organism.

Intended learning outcomes:
Students possess an advanced knowledge on genome evolution and the regulation of gene expression and are familiar with current methods in genetics as well as methods for the analysis of DNA and protein databases. They have acquired an overview of both traditional and modern methods in biotechnology and are familiar with fundamental topics in biotechnology. Students have acquired an overview of the fundamental principles of the development and review of active agents in research, clinical practice and the pharmaceutical industry. They are familiar with methods and technologies in biology and are able to evaluate potential applications of these in research and industry.

Courses (type, number of weekly contact hours, language — if other than German)
V (4)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
written examination (approx. 90 minutes)
creditable for bonus

Allocation of places: --

Additional information: --

Referred to in LPO I (examination regulations for teaching-degree programmes) --
### Subdivided Module Catalogue for the Subject Biology

Bachelor’s with 1 major, 180 ECTS credits

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<td>Dean of Studies Biologie (Biology)</td>
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<th>Other prerequisites</th>
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<tbody>
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<td>Admission prerequisite to assessment: exercises. Regular attendance (minimum 80%) and successful completion of exercises (approx. 25 to 30 hours) are prerequisites for admission to assessment.</td>
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</table>

### Contents

Fundamental principles of genetics, neurobiology and behavioural biology.

### Intended learning outcomes

Students will understand that there are molecular, cellular and system biological mechanisms and processes involved in animal behaviour and will be able to relate animal behaviour to the molecular and formal bases of inheritance.

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

| V (3) |

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Written examination (approx. 60 to 90 minutes)

Creditable for bonus

### Allocation of places

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### Additional information

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

- § 61 I Nr. 2 (2 ECTS credits)
- § 61 I Nr. 3 (1 ECTS credits)
- § 61 I Nr. 4 (1 ECTS credits)
**Module title**  
**Designing a Scientific Poster**

<table>
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**Module coordinator**  
Coordinator BioCareers

**Module offered by**  
Faculty of Biology

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</table>

**Contents**

In this module, students will present the results of (their own) research - conducted for their thesis or during lab course projects, for example - in the form of a poster meeting the standards of (international) conferences. Preparation of the poster will be supervised and graded by the respective thesis/project supervisor.

**Intended learning outcomes**

Students will be able to present the results of their work in a condensed yet comprehensible form. They will be able to present key aspects of their work in a clear and appropriate manner, providing all the necessary information to allow both experts in the field and scientists who are not familiar with every detail to understand the matter. Having prepared scientific posters, students will find it easier to structure scientific manuscripts.

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

Ü (0.5)

Module taught in: German and/or English

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Completed poster meeting the standards of national and international conferences

Language of assessment: German and/or English

creditable for bonus

**Allocation of places**

--

**Additional information**

--

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

--
Module title | Abbreviation
--- | ---
Global Acting in Globally and Locally linked Decision Processes | 07-SQF-GHE-152-m01

Module coordinator | Module offered by
holder of the Chair of Bioinformatics | Faculty of Biology

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

Duration | Module level | Other prerequisites
1 semester | undergraduate | --

Contents

Decision making processes in the context of global and local requirements. The course will discuss findings from different fields of biology and/or biotechnology with regard to their socio-political relevance. Topics will vary and will reflect the latest trends and developments. Topics that might be covered include: - Global threats -- making the right decision. - Decision making and disposal. - Decision making processes of social insects. - Ecosystems as an example of "ecology vs. economy".

Intended learning outcomes

Students will be able to meet global requirements in spite of local constraints and requirements and will understand the limitations in decision making processes. They will have developed a deeper awareness of complex issues and will be better qualified to adapt the opportunities and/or necessities associated with global challenges to specific local conditions as well as to implement these. With the help of topical examples from nature (e.g. ecology, sociobiology), the course will have acquainted students with principles that may help understand problems relevant to society and develop approaches to solution.

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

V (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Log (approx. 10 to 20 pages)
Language of assessment: German and/or English
creditable for bonus

Allocation of places

25 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their...
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Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

---

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

---
### Module title
Basic Biochemistry

### Abbreviation
07-3A3BC-152-m01

### Module coordinator
Dean of Studies Biologie (Biologie)

### Module offered by
Faculty of Biology

### ECTS
4

### Method of grading
numerical grade

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

### Duration
1 semester

### Module level
undergraduate

### Other prerequisites
Admission prerequisite to assessment: exercises. Regular attendance of exercises (minimum 80%) and successful completion of the respective exercises (approx. 25 to 30 hours) are prerequisites for admission to assessment.

### Contents
With the module component Makromoleküle (Macromolecules) as a starting point, the lecture will provide students with deeper insights into the molecular biology and biochemistry of prokaryotes and eukaryotes. Students will become familiar with fundamental principles of molecular biology (replication, transcription, splicing and translation) and the biochemistry of carbohydrates, lipids, proteins and nucleic acids. Experiments will be performed on selected topics that were discussed in the lecture. The exercise will cover practical aspects of lab work (PCR, DNA and protein gel electrophoresis, blot, enzyme kinetics and detection, protein isolation).

### Intended learning outcomes
Students are familiar with the fundamental principles of biochemistry.

### Courses
V (1) + Ü (2)

### Method of assessment
written examination (approx. 60 minutes)
creditable for bonus

### Allocation of places
--

### Additional information
--

### Referred to in LPO I
(examination regulations for teaching-degree programmes)
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<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</table>

**Contents**

Using the examples of selected systems, this module will introduce students to the theoretical fundamentals of the interaction between plants and their environment and will make students familiar with the molecular biological, chemical analytical as well as ecophysiological methods necessary to investigate this interaction.

**Intended learning outcomes**

Students will be able to recognise, describe and evaluate interactions between plants and their environment. They will be able to perform basic experiments to analyse these interactions.

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

| V (1) + Ü (5) |

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- written examination (approx. 60 minutes)
- creditable for bonus

**Allocation of places**

48 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie and Biologie with 60 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biologie) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology;
among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery. Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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

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Module title | Abbreviation
---|---
Biology and Ecology of Arthropods | 07-4S1NV05-152-m01

Module coordinator | Module offered by
---|---
holder of the Chair of Animal Ecology and Tropical Biology | Faculty of Biology

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

Duration | Module level | Other prerequisites
---|---|---
1 semester | undergraduate | --

Contents
More in-depth discussion of the structure and dynamics of human and animal populations; regulation of population density; management.

Intended learning outcomes
Students are able to interpret the structure and dynamics of populations and metapopulations on the basis of model concepts in population ecology and to apply more advanced methods of quantitative analysis to these.

Courses (type, number of weekly contact hours, language — if other than German)
Ü (4) + S (1)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Allocation of places
15 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: first, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.
Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

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<td>Faculty of Biology</td>
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<td>1 semester</td>
<td>undergraduate</td>
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### Contents

The lecture will introduce students to the functioning of a variety of operating systems (Linux, Mac OSX, Windows). Practical exercises in the computer room will accompany the interactive lecture.

### Intended learning outcomes

Students will demonstrate a basic familiarity with the operating systems discussed and will be able to perform basic operations in different system environments. They will be able to work with a broader range of operating systems than just one.

### Courses

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

V (0.5) + Ü (0.5)

Module taught in: German and/or English

### Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination or practical examination (approx. 30 minutes)

Language of assessment: German and/or English

creditable for bonus

### Allocation of places

20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.
Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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

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<table>
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<tr>
<td>Basics in Ecology of Animals</td>
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**Module coordinator**
holder of the Chair of Animal Ecology and Tropical Biology

**Module offered by**
Faculty of Biology

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**Duration**
1 semester

**Module level**
undergraduate

**Other prerequisites**
--

**Contents**
Selected topics in autecology and synecology; experimental design, data collection and analysis in animal ecology.

**Intended learning outcomes**
Students have acquired an advanced knowledge in the area of animal ecology. They are able to design simple ecological lab and field experiments as well as to interpret and present their findings.

**Courses** *(type, number of weekly contact hours, language — if other than German)*
V (1) + Ü (5)

**Method of assessment** *(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)*

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.

**Allocation of places**

40 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

**Selection process group 1 (95%):** Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: first, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.
Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

Referred to in LPO 1 (examination regulations for teaching-degree programmes)

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Subdivided Module Catalogue for the Subject Biology
Bachelor's with 1 major, 180 ECTS credits

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<tbody>
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<td>1 semester</td>
<td>undergraduate</td>
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</table>

**Contents**

This module will provide students with a theoretical and methodological introduction to fundamental techniques in molecular biology and drug analysis. (For more information, please refer to www.pbio.biozentrum.uni-wuerzburg.de.)

**Intended learning outcomes**

Students are able to analyse groups of drugs, using a variety of methods.

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

Ü (4) + S (1)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

**Allocation of places**

6 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: first, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (quantitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.
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Additional information

Referred to in LPO I (examination regulations for teaching-degree programmes)
**Basic Principles for Laboratory Work**

**Module title**

Basic Principles for Laboratory Work

**Abbreviation**

07-SQF-GGL-152-m01

**Module coordinator**

degree programme coordinator Biologie (Biology)

**Module offered by**

Faculty of Biology

**ECTS**

3

**Method of grading**

numerical grade

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


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**Contents**

This module will teach students basic rules regarding everyday lab procedures, e.g. designing experiments, the sensible use of checks, keeping lab notebooks, handling of reagents, storage and disposal, maintenance of lab equipment, handling of radioactivity; background knowledge on electrophoresis, centrifugation and light microscopy. In addition, the course will discuss fundamental cell culture techniques (eukaryotic and bacterial) as well as fundamental techniques for the molecular biological analysis of DNA, RNA and proteins.

**Intended learning outcomes**

Students are able to effectively structure research projects - from experiment design through to the publication of findings -, to design relevant follow-up experiments if initial experiments suggest certain findings, and to progress from hypotheses to ready-to-publish results.

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

V (1) + Ü (1)

Module taught in: German and/or English

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination or practical examination (approx. 20 minutes)

Language of assessment: German and/or English

creditable for bonus

**Allocation of places**

50 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits they have achieved, and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

---

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

---
**Module title**  | **Abbreviation**  
---|---
Teamwork in Natural Science  | 07-SQF-GTA-152-m01

**Module coordinator**  | **Module offered by**  
Coordinator BioCareers  | Faculty of Biology

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<th><strong>ECTS</strong></th>
<th><strong>Method of grading</strong></th>
<th><strong>Only after succ. compl. of module(s)</strong></th>
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<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</table>

**Contents**

Working in (interdisciplinary) teams: features and opportunities, development and phases of team building. In teams of 3 to 7 students, participants will work on a range of problems/projects. They will summarise and deliver a presentation on their results.

**Intended learning outcomes**

Having investigated specific problems in small teams, students will have acquired experience working in a team-based environment. They will know how their team projects were different from real teamwork. Students will be familiar with the advantages of teamwork as well as with disadvantages teamwork has compared to individual work. In addition, they will have become familiar with the different phases of team building.

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

S (1)  
Module taught in: German and/or English

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English  
Creditable for bonus

**Allocation of places**

--

**Additional information**

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

--
### Good Practices in Laboratory, Clinics and Production

<table>
<thead>
<tr>
<th>Module title</th>
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<td>Good Practices in Laboratory, Clinics and Production</td>
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<td>Coordinator BioCareers</td>
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</table>

#### Contents

This module component will acquaint students with the legal provisions and ethical guidelines for work in both the laboratory and clinical context, including clinical research, as well as in pharmaceutical, chemical and biotechnological production. The course will discuss the guidelines for safeguarding good scientific practice that are in place at American, European and German authorities, universities and organisations that are active in the abovementioned areas. In addition, the course will teach students basic rules regarding everyday lab procedures, e.g. designing experiments, the sensible use of checks, keeping lab notebooks, handling of reagents, storage and disposal, maintenance of lab equipment, handling of radioactivity, background knowledge on electrophoresis, centrifugation and light microscopy. In addition, the course will discuss fundamental cell culture techniques (eukaryotic and bacterial) as well as fundamental techniques for the molecular biological analysis of DNA, RNA and proteins.

#### Intended learning outcomes

Students have acquired an overview of general and specific rules and regulations governing scientific research, work in research labs, clinical trials as well as pharmaceutical and biotechnological production. They are familiar with the competent national and international regulatory bodies and standardisation authorities and, where necessary, are able to come up with answers to specific problems, referring to the relevant regulations. Students are able to adhere to existing guidelines, both during lab courses at university and in their future workplace. They are able to effectively structure research projects - from experiment design through to the publication of findings - to design relevant follow-up experiments if initial experiments suggest certain findings, and to progress from hypotheses to ready-to-publish results.

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

V (2)  
Module taught in: German and/or English

#### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination or practical examination (approx. 20 minutes)  
Language of assessment: German and/or English  
creditable for bonus

#### Allocation of places

Should the number of applications exceed the number of available places, places will be allocated as follows: Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery. Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information
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Referred to in LPO I (examination regulations for teaching-degree programmes)
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### Outstanding Publications in Biology

<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<td>Outstanding Publications in Biology</td>
<td>07-SQF-HVB-152-m01</td>
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### Contents

Students will discuss selected scientific publications in the field of biology, publications that are either of historical significance and therefore considered ground-breaking or that discuss methods and techniques that helped advance research in the area of biology.

### Intended learning outcomes

Students are able to trace the development of a modern discipline in the natural sciences, using the example of biology. They understand the importance of ground-breaking ideas and methods that opened up new horizons. Students are able to understand as well as to critically present and discuss key elements of major scientific findings/publications. A retrospective review of these "key publications" has given students a feeling for how to evaluate new developments in science.

### Courses

| (type, number of weekly contact hours, language — if other than German) |
|---|-----------------|------------------|
| S (2) | Module taught in: German and/or English |

### Method of assessment

| (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus) |
|---|---------------------------------|
| presentation (approx. 20 to 30 minutes) | Language of assessment: German and/or English |
| creditable for bonus |

### Allocation of places

25 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.

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Bachelor's with 1 major Biology (2015) • IMU Würzburg • generated 20-Jul-2022 • exam. reg. data record Bachelor (180 ECTS) Biologie - 2015
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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

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Module title | Abbreviation
---|---
Human Genetics | 03-4S1HUG-152-m01

Module coordinator | Module offered by
holder of the Chair of Human Genetics | Faculty of Medicine

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<td>1 semester</td>
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</table>

Contents

Fundamentals of and analytical methods in human and vertebrate cytogenetics. Characterisation of the normal human karyotype and chromosome aberrations. Introduction to chromosome evolution.

Intended learning outcomes

Students who complete this module will acquire the theoretical basis of and practical experience in human cytogenetics. They will learn how to prepare and identify human chromosomes and critically interpret cytogenetic findings.

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

V (1) + Ü (1.5) + S (0.5)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 30 minutes)

Allocation of places

15 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biologie) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biologie) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biologie) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biologie) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25%...
of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery. Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

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

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Immunology 1

Abbreviation: 03-4S1IMM-152-m01

Module coordinator: holder of the Professorship of Immunogenetics
Module offered by: Faculty of Medicine

ECTS: 5
Method of grading: numerical grade
Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents:
This module gives an introduction to immunology. The following questions will be addressed: How does the body recognise and eliminate pathogens and tumour cells? How can the immune system damage its own body (allergies, autoimmunity)? Organs, cells and molecules of the immune system will be presented with an emphasis on genetic and molecular mechanisms of recognition and elimination of foreign substances by the immune system. The most important immunological techniques will be introduced and applied.

Intended learning outcomes:
The students acquire a practical knowledge of cellular and molecular techniques for the analysis of the immune system. They are familiar with the mechanisms of self and non-self discrimination by the adaptive and innate immune systems. They acquire a fundamental knowledge of lymphocyte development as well as major immune effector cell functions and molecules.

Courses:
(type, number of weekly contact hours, language — if other than German)
V (1) + Ü (1) + P (3)

Method of assessment:
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
written examination (approx. 45 minutes)
Assessment offered: Once a year, summer semester

Allocation of places:
BA Biologie: 16 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
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Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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Module title | Abbreviation
---|---
Immunology 2 | 03-5S2IM-152-m01

Module coordinator | Module offered by
holder of the Professorship of Immunogenetics | Faculty of Medicine

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

Duration | Module level | Other prerequisites
---|---|---
1 semester | undergraduate | --

Contents
Specific problems in immunology such as immune modulation, immunogenetics, infection immunology, signal transduction in immune cells.

Intended learning outcomes
The students acquire specific competence about the functional mechanisms of the immune system. They are qualified to plan and perform experiments under supervision and present the data, taking into account current literature.

Courses (type, number of weekly contact hours, language — if other than German)
P (8)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.
Language of assessment: German and/or English

Allocation of places
3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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

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Module title: Immunology 3

Abbreviation: 03-6S3IM-152-m01

Module coordinator: holder of the Professorship of Immunogenetics

Module offered by: Faculty of Medicine

ECTS: 15

Method of grading: numerical grade

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

Duration: 1 semester

Module level: undergraduate

Other prerequisites: --

Contents:

In 6-week lab courses that will be accompanied by seminars, the module will address specific problems in immunology such as immunomodulation, immunogenetics, infection immunology, signal transduction in immune cells.

Intended learning outcomes:

The students acquire extended knowledge and skills in the area of immune functions. They are qualified to plan and perform experiments under supervision and present the data, taking into account current literature.

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

Ü (9) + S (1) Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus):

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

Allocation of places:

3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

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<th>Additional information</th>
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Referred to in LPO I (examination regulations for teaching-degree programmes)

| --                     |
Module title: Integrative Behavioral Biology 1  
Abbreviation: 07-4StNVO2-152-m01

Module coordinator: holder of the Chair of Behavioral Physiology and Sociobiology

Module offered by: Faculty of Biology

ECTS: 5  
Numerical grade: Only after succ. compl. of module(s)

Method of grading: numerical grade

Duration: 1 semester  
Module level: undergraduate

Other prerequisites: --

Contents:
Communication in the animal kingdom, neuroethology and behavioural development, perception and processing of olfactory signals, temporal organisation of behaviour, adaptive feeding behaviour, reproductive behaviour, social behaviour, orientation mechanisms.

Intended learning outcomes:
Students have acquired an advanced knowledge in the area of behavioural biology and are able to deliver presentations on current studies on relevant topics.

Courses:
V (2) + S (2)

Method of assessment:
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.

Allocation of places:
20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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<td>07-5S2NVO2-152-m01</td>
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<td>holder of the Chair of Behavioral Physiology and Sociobiology</td>
<td>Faculty of Biology</td>
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<td>1 semester</td>
<td>undergraduate</td>
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</table>

### Contents

In this module, students will acquire an in-depth insight into behavioural physiology and sociobiology with a particular focus on the biology of social insects.

### Intended learning outcomes

Students have acquired knowledge and skills in the areas of behavioural physiology and sociobiology. They are familiar with hypotheses and are proficient in methods used in research on social insects.

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

V (1) + Ü (7)

Module taught in: German and/or English

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

creditable for bonus

### Allocation of places

18 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other importing subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking
will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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

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### Module title
Integrative Behavioural Biology 3

### Abbreviation
07-6S3NVO2-152-m01

### Module coordinator
holder of the Chair of Behavioral Physiology and Sociobiology

### Module offered by
Faculty of Biology

### ECTS
15

### Method of grading
numerical grade

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

### Duration
1 semester

### Module level
undergraduate

### Other prerequisites
--

### Contents
In this module, students will acquire specific insights into topics, approaches and methods in integrative behavioural biology. Students will also be involved in current research projects in the area of experimental behavioural physiology and sociobiology.

### Intended learning outcomes
Students will be proficient in the theory and practice of research in the field of integrative behavioural biology and will have developed skills required for a career in research.

### Courses
(abbreviations can be defined in the text, type, number of weekly contact hours, language — if other than German)
Ü (9) + S (1)

Module taught in: German and/or English

### Method of assessment
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.
Language of assessment: German and/or English

### Creditable for bonus

### Allocation of places
18 places.

Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according
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Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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

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## Subdivided Module Catalogue for the Subject Biology

### Bachelor's with 1 major, 180 ECTS credits

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<td>Coordinator BioCareers</td>
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<td>1 semester</td>
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<td>Please consult with course advisory service in advance.</td>
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</table>

### Contents

Contents of the project to be determined by the competent coordinators; contents will vary according to topic.

### Intended learning outcomes

 Students have developed skills which qualify them to work in their profession.

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

**R (5)**  
Module taught in: German and/or English

### Method of assessment (type, scope, language — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).  
Students will be informed about the method and length of the assessment prior to the course.  
creditable for bonus

### Allocation of places

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### Additional information

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

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### Contents

Contents of the project to be determined by the competent coordinators; contents will vary according to topic.

### Intended learning outcomes

Students have developed skills which qualify them to work in their profession.

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

R (8)

Module taught in: German and/or English

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English creditable for bonus

### Allocation of places

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### Additional information

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

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### Module title

**Interdisciplinary Project III**

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### Contents

Contents of the project to be determined by the competent coordinators; contents will vary according to topic.

### Intended learning outcomes

Students have developed skills which qualify them to work in their profession.

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

| R (10) | Module taught in: German and/or English |

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

### Allocation of places

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### Additional information

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### Referred to in LPO 1 (examination regulations for teaching-degree programmes)

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Module title: Clinical Biochemistry 1 / Laboratory Medicine
Abbreviation: 03-5S2KB-152-m01

Module coordinator: holder of the Chair of Clinical Biochemistry and Pathobiology
Module offered by: Faculty of Medicine

ECTS: 10
Method of grading: numerical grade
Only after succ. compl. of module(s): --

Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents:
Basic research practice and analytical approaches that are used in pathobiology and clinical biochemistry are presented by means of selected examples. Pathological mechanisms are compared to the respective regular physiological processes (e.g. thrombocyte function, cardiovascular transformation) and the underlying biochemical and genetic variations are discussed.

Intended learning outcomes:
Students have developed a fundamental knowledge of techniques and approaches that are commonly used in modern molecular biology and biochemistry and have developed a fundamental understanding of how to approach, analyse and interpret problems in clinical biochemistry. They also have developed skills in experimental design, bench work, data analysis and the presentation of scientific results both orally and in writing.

Courses (type, number of weekly contact hours, language — if other than German):
Ü (6) + S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus):
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.
Language of assessment: German and/or English

Allocation of places:
3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)).
at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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Referred to in LPO 1 (examination regulations for teaching-degree programmes)

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### Module title
**Clinical Biochemistry 3 / Laboratory Medicine**

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### Module coordinator
holder of the Professorship Clinical Biochemistry at the Rudolf Virchow Center for Experimental Biomedicine

### Module offered by
Faculty of Medicine

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### Duration
1 semester

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<th>Other prerequisites</th>
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<tbody>
<tr>
<td>undergraduate</td>
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### Contents
Basic research practice and analytical approaches that are used in clinical biochemistry II are presented by means of selected examples. Pathological mechanisms are compared to the respective regular physiological processes (e.g. thrombocyte function, cardiovascular transformation). Molecular genetic and functional biochemical networks are presented using examples from pathobiochemistry and cellular biochemistry.

### Intended learning outcomes
Students have developed a fundamental knowledge of techniques and approaches that are commonly used in modern molecular biology and biochemistry and have developed a fundamental understanding of how to approach, analyse and interpret problems in clinical biochemistry. They also have developed skills in experimental design, bench work, data analysis and the presentation of scientific results both orally and in writing.

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

- Ü (9) + S (1)

Module taught in: German and/or English

### Method of assessment
**(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)**

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

### Allocation of places

3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics))
at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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Module title: Clinical Neurobiology 2
Abbreviation: 03-5S2KN-152-m01

Module coordinator: holder of the Chair of Clinical Neurobiology
Module offered by: Faculty of Medicine

ECTS: 10
Method of grading: numerical grade
Only after succ. compl. of module(s): --

Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents:
Students who successfully completed this module will have acquired insights into the foundations of clinical neurobiology. In this module, the cellular and molecular mechanisms which are important for survival as well as the cell death of neurons and glial cells of vertebrates will be compared during development as well as under pathological conditions. The module will also focus on the function of neurons and glial cells, synaptic activity, plasticity as well as disturbances in these functions and diseases of the nervous system, comparison of physiological processes in pathological conditions of neurodegenerative disorders such as motoneuron disorders. Using distinct examples in neurobiology, molecular genetic and functional biochemical connections will be analysed.

Intended learning outcomes:
Students who successfully complete this module will have a fair knowledge of the basic functions of the nervous system. Students will be able to independently work on a distinct project using techniques of modern neurobiology, to solve general problems and to understand the mechanisms of neurodegenerative disorders. They will be able to analyse data and to interpret it in the context of literature. They will also have developed skills in experimental design, bench work, data analysis and the presentation of scientific results both orally and in writing.

Courses (type, number of weekly contact hours, language — if other than German)
Ü (6) + S (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.
Language of assessment: German and/or English

Allocation of places:
3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

Referred to in LPO I (examination regulations for teaching-degree programmes)
Clinical Neurobiology 3

**Module title**

**Abbreviation**

Clinical Neurobiology 3

03-6S3KN-152-m01

**Module coordinator**

holder of the Chair of Clinical Neurobiology

**Module offered by**

Faculty of Medicine

**ECTS**

15

**Method of grading**

numerical grade

**Duration**

1 semester

**Module level**

undergraduate

**Other prerequisites**

--

**Contents**

Using the example of specific problems in the neurobiology of humans, this module will acquaint students with the fundamental principles of as well as analytical techniques used in clinical neurobiology. Physiological processes will be compared with pathological conditions (e.g. Parkinson's and Alzheimer's disease). Using selected examples of neurobiology, the module will discuss molecular, genetic and functional biochemical correlations to distinct diseases.

**Intended learning outcomes**

Students who successfully complete this module will have a fair knowledge that will enable them to work on individual tasks, using techniques of modern neurobiology to solve, analyse and interpret general problems. Students will also have a fair knowledge that will enable them to plan and perform experiments as well as to interpret their data and present their research results both orally and in writing.

**Courses**

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

Ü (9) + S (1)

Module taught in: German and/or English

**Method of assessment**

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

**Allocation of places**

3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics))
at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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### Module title
Career Perspectives, Personal Competence and Communication Skills

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<tr>
<th>Abbreviation</th>
<th>07-SQF-KEB-152-m01</th>
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### Module coordinator
Coordinator BioCareers

### Module offered by
Faculty of Biology

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<th>ECTS</th>
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<th>Module level</th>
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<tr>
<td>1 semester</td>
<td>undergraduate</td>
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### Contents
This module will provide students with information on potential areas of employment for life scientists and will address the topic of job application and staff selection. It will discuss methods for analysing personality types and will acquaint students with criteria for developing personal and social skills. Building on this, the module will develop fundamental criteria for working in groups and teams. The fundamental principles of a project-oriented approach to work and of communication (incl. rhetoric and body language) will be discussed. Students will also receive advice on how to design and structure talks.

### Intended learning outcomes
Students know what it takes to succeed in the job market. They are familiar with current developments in the job market, know how to go job hunting, and are familiar with recruitment practices of employers. Students have developed a fundamental knowledge of personality assessment methods and are familiar with conflict management methods. They are able to work in a team-based environment and have developed a fundamental knowledge of project management methods and approaches. Students have enhanced their teaching skills and are proficient in the theory and practice of communication. They know how to design and structure talks as well as to present data in both oral and written form. Students are aware of what body language may communicate.

### Courses
(V (1) + S (2)
Module taught in: German and/or English

- **Method of assessment**
  - written examination (approx. 30 to 60 minutes)
  - Language of assessment: German and/or English
creditable for bonus

### Allocation of places
120 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

- Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

- A waiting list will be maintained and places re-allocated as they become available.

- Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components.
in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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### Module title
Mathematics for students in Chemistry and Biology

### Abbreviation
10-M-MCB-152-m01

### Module coordinator
Dean of Studies Mathematik (Mathematics)

### Module offered by
Institute of Mathematics

### ECTS
5

### Method of grading
numerical grade

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

### Duration
1 semester

### Module level
undergraduate

### Other prerequisites
--

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

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

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

V (3) + Ü (2)

### Method of assessment
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 90 to 120 minutes) and written exercises (approx. 25)

### Allocation of places
--

### Additional information
Pursuant to Section 2 Subsection 2 Sentence 2 Verordnung über die Ausbildung und Prüfung der Staatlich geprüften Lebensmittelchemikerinnen und Lebensmittelchemiker (Regulation on the training and examination of state-certified food chemists, APOLmCh) in conjunction with No. 1 2. Letter f) of Annex 1 of APOLmCh.

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

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<tr>
<td>holder of the Chair of Bioinformatics</td>
<td>Faculty of Biology</td>
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</table>

**Contents**

Fundamental principles of the most important mathematical and statistical methods in biology.

**Intended learning outcomes**

Students will have acquired fundamental skills in the evaluation of experiments, the interpretation of readings and numbers as well as the mathematical description of biological processes.

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

V (2) + Ü (2)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 60 minutes)

creditable for bonus

**Allocation of places**

--

**Additional information**

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

--
Membranebiology of Plants for Advanced Students

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<td>Membranebiology of Plants for Advanced Students</td>
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<tbody>
<tr>
<td>holder of the Chair of Plant Physiology and Biophysics</td>
<td>Faculty of Biology</td>
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Contents

In this module, students will acquire the general fundamentals of plant membrane transport and the biophysical methods with which it can be characterised. For this purpose, students will be introduced to modern methods of molecular biology and imaging as well as data collection and analysis.

Intended learning outcomes

Students understand basic membrane transport processes and are able to use experimental methods in experiments with intact plants, isolated plant cells as well as animal expression systems.

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

| V (1) | Ü (5) |

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.

creditable for bonus

Allocation of places

16 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas:

Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot.

Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot.

Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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Methods in Plant Ecophysiology

Module title

Abbreviation

Module coordinator

Module offered by

holder of the Chair of Plant Physiology and Biophysics

Faculty of Biology

ECTS

Method of grading

Only after succ. compl. of module(s)

5
numerical grade

Duration

Module level

Other prerequisites

1 semester

undergraduate

Contents

Complex experiments to introduce students to the current state of research in plant ecophysiology as well as discussion of experimental findings in a comprehensive scientific context.

Intended learning outcomes

Students are able to use current methods in plant ecophysiology as well as to document experimental findings and put these in a scientific context.

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

Ü (4) + S (1)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Log (approx. 10 to 20 pages)

creditable for bonus

Allocation of places

15 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.

Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 %
of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery. Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

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Module title: Microbiology for Advanced Students
Abbreviation: 07-4BFMZ3-152-m01

Module coordinator: holder of the Chair of Microbiology
Module offered by: Faculty of Biology
ECTS: 5
Method of grading: numerical grade
Only after succ. compl. of module(s):

Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents:
This module comprises a lecture and accompanying exercises. During the theoretical part, students will acquire the fundamentals of bacterial genetics; during exercises, these will be illustrated by help of suitable experiments.

Intended learning outcomes:
Students are familiar with the fundamental principles of bacterial genetics. They are familiar with simple experimental techniques for addressing scientific issues in bacterial genetics and are able to apply these.

Courses (type, number of weekly contact hours, language — if other than German):
V (1) + Ü (5)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus):
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Creditable for bonus:
Allocation of places:
40 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota.

A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: first, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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**Referred to in LPO 1** (examination regulations for teaching-degree programmes)

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Module title: Basics in Light- and Electron-Microscopy
Abbreviation: 07-4S1MZ1-152-m01

Module coordinator: head of the Department of Electronmicroscopy
Module offered by: Faculty of Biology

ECTS: 5
Method of grading: numerical grade
Only after succ. compl. of module(s)

Duration: 1 semester
Module level: undergraduate
Other prerequisites:

Contents:
Fundamental principles of confocal laser scanning microscopy and electron microscopy.

Intended learning outcomes:
Students have acquired theoretical knowledge and practical skills in the area of light and electron microscopy.

Courses (type, number of weekly contact hours, language — if other than German):
V (1) + Ü (5)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus):
written examination (approx. 30 to 60 minutes)
creditable for bonus

Allocation of places:
18 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.
Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.
Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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

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Module title | Abbreviation
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Ecological Modelling | 07-6S3NVO32-152-m01

Module coordinator | Module offered by
holder of the Chair of Animal Ecology and Tropical Biology | Faculty of Biology

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

Duration | Module level | Other prerequisites
1 semester | undergraduate | --

Contents
On the basis of exemplary tasks in ecology, the students will learn about different simulation techniques and modelling methods. At the same time, they will develop their own simulation program to address demographical or evolutionary questions.

Intended learning outcomes
The students will expand their knowledge in the theory and practice of ecological modelling. They will be able to develop, apply and interpret adequate modelling techniques.

Courses (type, number of weekly contact hours, language — if other than German)
V (1) + Ü (1) + S (1)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
written examination (approx. 30 to 60 minutes) or log (approx. 10 to 30 pages)
Language of assessment: German and/or English
creditable for bonus

Allocation of places
20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.
Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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

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### Module title
**Aspects of Molecular Biotechnology**

### Abbreviation
07-4StMOLB-152-m01

### Module coordinator
holder of the Chair of Biotechnology and Biophysics

### Module offered by
Faculty of Biology

### ECTS
5

### Method of grading
numerical grade

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

### Duration
1 semester

### Module level
undergraduate

### Other prerequisites
--

### Contents
Fundamental principles of "white" biotechnology, bioreactors, biocatalysis, immobilisation of cells and enzymes, production of biomolecules, molecular biology, recombinant DNA technology, protein engineering, biosensor design, drug design, drug targeting, molecular diagnostics, recombinant antibodies, hybridoma technology, electromanipulation of cells.

### Intended learning outcomes
Students will gain an overview of traditional and modern methods in biotechnology and their respective advantages and disadvantages. They will learn to decide what method is most suitable for addressing a particular issue. Students will acquire a knowledge of fundamental methods in biotechnology that will enable them to independently review relevant literature. In addition, they will become acquainted with - or, where necessary, will be able to independently acquaint themselves with - relevant mechanisms.

### Courses
**V (2) + S (2)**

### Method of assessment
written examination (approx. 30 to 60 minutes)
creditable for bonus

### Allocation of places
25 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

### Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

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

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**Module title**
Molecular Physiology for Advanced Students

**Abbreviation**
07-4BFPS1-152-m01

**Module coordinator**
holder of the Chair of Plant Physiology and Biophysics

**Module offered by**
Faculty of Biology

**ECTS**
5

**Method of grading**
numerical grade

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

**Duration**
1 semester

**Module level**
undergraduate

**Other prerequisites**
--

**Contents**
This module will equip students with the theoretical foundations of fundamental processes in plants, such as nitrogen and carbon metabolism. The methodological approaches in experimental plant physiology will be discussed and the molecular techniques for functional gene analysis (reverse genetics and other techniques) will be applied.

**Intended learning outcomes**
Students have acquired fundamental knowledge on plant nutrient cycles and are proficient in molecular and physiological methods in experimental plant physiology.

**Courses**
(type, number of weekly contact hours, language — if other than German)
V (1) + Ü (5)

**Method of assessment**
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

**Allocation of places**
16 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

Referred to in LPO 1 (examination regulations for teaching-degree programmes)

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Module title: Molecular modelling - From DNA to Protein
Abbreviation: 07-4S1PS1-152-m01

Module coordinator: holder of the Chair of Plant Physiology and Biophysics
Module offered by: Faculty of Biology
ECTS: 5
Method of grading: numerical grade
Duration: 1 semester
Other prerequisites: undergraduate

Contents:
This module will equip students with advanced knowledge on the structure and function of nucleic acids and proteins as well as on the search for and analysis and modelling of plant macromolecules using databases and specific software.

Intended learning outcomes:
Students have acquired a specialist knowledge of the structure-function relationships of macromolecules and are able to work with relevant databases and software.

Courses:
V (1) + Ü (5)

Method of assessment:
computerised practical examination (approx. 6 hours)
creditable for bonus

Allocation of places:
18 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.
Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25%...
of places): number of subject semesters of the respective applicant; among applicants with the same number of
subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.
Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, pla-
ces will be allocated according to the selection process of group 1.

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

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Module title: Nature Conservation Biology

Abbreviation: 07-6S3NVO33-152-m01

Module coordinator: holder of the Chair of Animal Ecology and Tropical Biology

Module offered by: Faculty of Biology

ECTS: 5

Method of grading: numerical grade

Only after succ. compl. of module(s)

Duration: 1 semester

Module level: undergraduate

Other prerequisites:

Contents:
The module will discuss biodiversity, focusing on the issue of biodiversity loss and related issues in the area of nature conservation. By way of examples, students will be introduced to the theory and practice of conservation biology.

Intended learning outcomes:
Students have developed skills in the area of national and international nature conservation. They are able to critically evaluate whether particular steps in the project management cycle can help reach the defined conservation targets.

Courses:

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<td>V (1)</td>
<td>S (1)</td>
<td>E (1)</td>
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Module taught in: German and/or English

Method of assessment:

presentation (approx. 20 to 45 minutes)

Language of assessment: German and/or English

creditable for bonus

Allocation of places:

20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: first, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.
Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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<tr>
<td>Neurobiology 1</td>
<td>07-4StNVO1-152-m01</td>
</tr>
</tbody>
</table>

**Module coordinator**
holder of the Chair of Neurobiology and Genetics

**Module offered by**
Faculty of Biology

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

**Duration**
1 semester

**Module level**
undergraduate

**Other prerequisites**
--

**Contents**
Neurobiology and methods in molecular neurobiology (neurogenetic model system Drosophila and humans) -- focus: sleep behaviour and endogenous clock.

**Intended learning outcomes**
Students have acquired an advanced knowledge of the neurobiology of a model organism and are able to apply the relevant methods in neurobiology.

**Courses** (type, number of weekly contact hours, language — if other than German)
Ü (4) + S (1)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

**Allocation of places**
20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biologie) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biologie) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biologie) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematik), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biologie) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematik)) at the time of application. This will be done as follows: first, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.
Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery. Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

--
Subdivided Module Catalogue for the Subject Biology
Bachelor’s with 1 major, 180 ECTS credits

<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
</tr>
</thead>
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<td>Neurobiology 2</td>
<td>07-5S2NVO1-152-m01</td>
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</table>

<table>
<thead>
<tr>
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<th>Module offered by</th>
</tr>
</thead>
<tbody>
<tr>
<td>holder of the Chair of Neurobiology and Genetics</td>
<td>Faculty of Biology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ECTS</th>
<th>Method of grading</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
<td>--</td>
</tr>
</tbody>
</table>

Contents

This module will provide students with deeper insights into the following topics: the neuronal bases of cognition, sensory systems, learning and memory. Using suitable model systems, the module will train students in modern methods in neurobiology, ranging from fundamental methods in histology and immunohistochemistry, ultrastructural analysis, in vivo imaging and behavioural experiments through to methods in molecular biology. Students will also acquire an in-depth insight into the theory of molecular and clinical neurobiology and will obtain an overview of current research focuses at the University of Würzburg. The module will comprise a lecture, practical exercises on the contents of the lecture as well as a seminar during which students will deliver presentations on the experiments performed during exercises or will present and discuss literature on individual topics.

Intended learning outcomes

Students are able to acquaint themselves with and deliver presentations on advanced topics in neurobiology, taking into account current literature.

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

V (1) + Ü (7)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

Creditable for bonus

Allocation of places

20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they ha-
Achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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Subdivided Module Catalogue for the Subject Biology
Bachelor's with 1 major, 180 ECTS credits

<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<td>Neurobiology 3</td>
<td>07-6S3NVO1-152-m01</td>
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<table>
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<th>Module offered by</th>
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<tbody>
<tr>
<td>holder of the Chair of Neurobiology and Genetics</td>
<td>Faculty of Biology</td>
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<tr>
<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
<td>--</td>
</tr>
</tbody>
</table>

### Contents

In this module, students will acquire specific insights into topics, approaches and methods in neurobiology. Students will also be involved in current research projects.

### Intended learning outcomes

Students will be proficient in the theory and practice of research in the field of neurobiology and will have developed skills required for a career in research.

### Courses

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

Ü (9) + S (1)

Module taught in: German and/or English

### Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

### Allocation of places

16 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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

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Module title: Neurobiology for Advanced Students
Abbreviation: 07-4BFNVO1-152-m01

Module coordinator: holder of the Chair of Neurobiology and Genetics
Module offered by: Faculty of Biology

ECTS: 5
Method of grading: numerical grade
Only after succ. compl. of module(s): --

Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents:
The module Neurobiologie für Fortgeschrittene (Neurobiology for Advanced Students) will comprise lectures, exercises and talks. The lecture will address different aspects of the human brain, and students will acquire a knowledge of the respective fundamental principles. A new aspect will be discussed each day. Wherever possible, parallels will be drawn with the neurobiology of the fruit fly, Drosophila melanogaster, and advantages and limitations of this model organism will be discussed. Students will deliver short talks to complement the lecture. The topics of these talks will have a connection with the topics covered in the lecture and will be assigned to students prior to the lab course. The module will also include small-scale exercises/experiments on the contents of each lecture.

Intended learning outcomes:
Students have acquired an advanced knowledge in the area of neurobiology and recognise the relevance research findings in neurobiology have to medicine.

Courses (type, number of weekly contact hours, language — if other than German):
V (1) + Ü (5)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus):
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Allocation of places:
40 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics))
at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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

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### Module title
Plant and Animal Ecology

### Abbreviation
07-3A3OEKO-152-m01

### Module coordinator
Dean of Studies Biologie (Biology)

### Module offered by
Faculty of Biology

### ECTS
6

### Method of grading
numerical grade

### Duration
1 semester

### Module level
undergraduate

### Other prerequisites
--

## Contents
This module will provide students with an overview of the interactions of plants and animals with their abiotic and biotic environments. The module will focus on the functional adaptation to environmental conditions as well as on the structure and dynamics of populations, communities and ecosystems. Students will be introduced to fundamental model concepts of ecology, will become familiar with examples of research findings and will acquire the fundamental knowledge necessary to develop an understanding of current ecological problems.

## Intended learning outcomes
Students are familiar with the fundamental principles of research in the field of ecology and with the most important abiotic and biotic factors that influence the distribution and frequency of occurrence of organisms in their environment. In addition, they understand the scientific relevance ecology has to the assessment of environmental issues.

### Courses

<table>
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<tr>
<th>Type</th>
<th>Number of weekly contact hours</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Ü</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

### Method of assessment

- written examination (approx. 90 minutes)
- creditable for bonus

### Allocation of places
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### Additional information
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### Referred to in LPO I

§ 61 I Nr. 4
Module title: Ecology and Developmental Biology of Marine Organisms
Abbreviation: 07-4S1MEER-152-m01

Module coordinator: head of the Department of Electronmicroscopy
Module offered by: Faculty of Biology

ECTS: 5
Method of grading: numerical grade
Only after succ. compl. of module(s)

Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents:
A combination of lab work and field trips, this module will provide students with an insight both into the organi-
mal diversity of a marine ecosystem and into the biocenosis of the littoral of the island of Helgoland in the North
Sea.

Intended learning outcomes:
Students will have enhanced their knowledge of form as well as their understanding of concepts in synecology.
In addition, they will have learned how to systematically collect ecological field data.

Courses:
(4) + E (2) + S (2)

Method of assessment:
Log (approx. 10 to 20 pages)
creditable for bonus

Allocation of places:
18 places. Should the number of applications exceed the number of available places, places will be allocated as
follows:
Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential con-
sideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be alloca-
ted to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a mi-
nimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with
60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik
(Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as poten-
tially to students of other 'importing' subjects). Should the number of places available in one quota exceed the
number of applications, the remaining places will be allocated to applicants from the other quota. Should there
be, within one module, several courses with a restricted number of places, there will be a uniform regulation for
the courses of one module. In this case, places on all courses of a module that are concerned will be allocated in
the same procedure.
A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous acade-
mic achievements.
For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their
average grade of all assessments taken in all modules in the subject of Biologie (Biology) (excluding Chemie
(Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as fol-
lows: First, applicants will be ranked, firstly, according to their average grade weighted according to the num-
ber of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved
(quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two ran-
kings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwi-
se by lot.
Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of pla-
ces): total number of ECTS credits already achieved in modules of the Faculty of Biology; among applicants with
the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of
subject semesters of the respective applicant; among applicants with the same number of subject semesters,
places will be allocated by lot. Quota 3 (25% of places): lottery. Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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

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Module title: Organisation and Safety in Biosciences
Abbreviation: 07-SQF-OSB-152-m01
Module coordinator: Coordinator BioCareers
Module offered by: Faculty of Biology

ECTS: 5
Method of grading: numerical grade
Only after succ. compl. of module(s): --

Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents:
Safety procedures in the biosciences, in particular radiation protection, handling of genetically modified organisms, hygiene procedures and hazardous substances, working with lab animals. Fundamental concepts that help ensure an effective and efficient workflow in the biosciences. Structure and organisation of institutions in the bioscience/biotech sector. Process-based project management. HR management in the biosciences, responsibilities of managers/supervisors, appraisal interviews, target agreements, management styles.

Intended learning outcomes:
Students have developed a fundamental knowledge of the regulations governing work in the bioscience sector and are familiar with fundamental organisational principles that are relevant for work in research and production. They are also familiar with fundamental principles of process-based project work in the biosciences.

Courses (type, number of weekly contact hours, language — if other than German):
V (1) + S (2)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus):
written examination (60 minutes)
Language of assessment: German and/or English
creditable for bonus

Allocation of places:
120 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: first, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

Referred to in LPO I (examination regulations for teaching-degree programmes)
### Module title
Organic Chemistry for Students of Biology

<table>
<thead>
<tr>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>08-OC-Bio-152-m01</td>
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### Module coordinator

| lecturer of lecture "Organische Chemie für Studierende der Medizin, Biomedizin, Zahnmedizin, Ingenieur- und Naturwissenschaften" |
| Institute of Organic Chemistry |

### ECTS

| 10 | numerical grade | Only after succ. compl. of module(s) |

### Duration

| 2 semester | undergraduate | Successful completion of the written examination serves as proof of all safety-related skills and is a prerequisite for attendance of the lab course. |

### Contents

This module will provide students with an overview of organic chemistry. Furthermore, in a lab course it introduces the basics techniques of organic chemistry.

### Intended learning outcomes

Students have become familiar with the fundamental principles of organic chemistry. They are able to identify fundamental problems in chemistry and perform experiments to solve them.

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

| V (2) + V (3) + P (5) |

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- written examination (approx. 60 minutes) and assessment of practical skills during lab course (ungraded): Vor- testate/Nachtestate (pre and post-experiment exams, approx. 15 minutes each), assessment of practical assignments, log (approx. 5 to 10 pages)
- Assessment offered: Once a year, winter semester

### Allocation of places

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### Additional information

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

--
Module title: Patents in Biology

Abbreviation: 07-SQF-PRB-152-m01

Module coordinator: Coordinator BioCareers

Module offered by: Faculty of Biology

ECTS: 2

Method of grading: numerical grade

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

Duration: 1 semester

Module level: undergraduate

Other prerequisites: --

Contents:
Patents in biology: types, application, specification, patent rights, patent search.

Intended learning outcomes:
Students have acquired a fundamental knowledge of the criteria that determine whether ideas, inventions and developments in the life sciences in general and in biotechnology in particular are patentable. They are familiar with patent authorities and relevant data sources. Students are able to judge whether ideas, developments and inventions are patentable and, where necessary, to consult with competent advisors at the University that will help them conduct a cost-benefit analysis prior to publishing their ideas.

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

V (0.5) + S (0.5)

Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus):

written examination (approx. 20 minutes)

Language of assessment: German and/or English

creditable for bonus

Allocation of places:

25 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: first, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.
Selection process group 2 (5\%): Places will be allocated according to the following quotas: Quota 1 (50 \% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 \% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 \% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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

---
## Module title
Plant Physiology

### Abbreviation
07-2A2PHYPF-152-m01

### Module coordinator
Dean of Studies Biologie (Biology)

### Module offered by
Faculty of Biology

### ECTS
4

### Method of grading
numerical grade

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

### Duration
1 semester

### Module level
undergraduate

### Other prerequisites
Admission prerequisite to assessment: exercises. Regular attendance (minimum 80%) and successful completion of exercises (approx. 25 to 30 hours) are prerequisites for admission to assessment.

### Contents
This module will acquaint students with the principles of general plant physiology and will provide them with an opportunity to develop the fundamental skills for working in a biological laboratory. The module will first address the biochemistry of the cell and will then move on to discuss the physiological processes that regulate the internal environment of plants in particular. Using the example of plants, the module will introduce students to the general principles of physiology. The module will also elaborate on the characteristic peculiarities of plants in comparison with animals and prokaryotes.

### Intended learning outcomes
- Familiarity with general physiological processes in plants and the regulation of these.
- Familiarity with the factors that distinguish plant physiology from animal and prokaryotic physiology.
- Fundamental knowledge and skills on how to perform, analyse and present scientific experiments.
- Essential lab skills.
- Familiarity with methods for the investigation of fundamental physiological processes in plants.

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

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<tr>
<th>Type</th>
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<tr>
<td>V (1) + Ü (2)</td>
<td></td>
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</table>

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- Written examination (approx. 60 minutes)
- Creditable for bonus

### Allocation of places
--

### Additional information
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### Referred to in LPO I (examination regulations for teaching-degree programmes)
§ 61 I Nr. 2
Subdivided Module Catalogue for the Subject Biology
Bachelor's with 1 major, 180 ECTS credits

<table>
<thead>
<tr>
<th>Module title</th>
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<td>Pharmaceutical Drugs in Plants</td>
<td>07-4S1PS3-152-m01</td>
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<tr>
<td>holder of the Chair of Pharmaceutical Biology</td>
<td>Faculty of Biology</td>
</tr>
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</table>

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<thead>
<tr>
<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
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</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
<td>--</td>
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</table>

**Contents**

This module will introduce students to the major active agent groups in medicinal plants and phytopharmaceuticals as well as to their application in pharmacy. Microscopic and phytochemical analyses will be performed and the requirements and analytical methods of the pharmacopoeia will be explained.

**Intended learning outcomes**

Students have acquired a specialist knowledge on active agents from medicinal plants and phytopharmaceuticals as well as on the requirements and analytical methods of the pharmacopoeia.

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

Ü (4) + S (1)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

**Allocation of places**

15 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

**Selection process group 1 (95%)**:

Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: first, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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**Referred to in LPO 1** (examination regulations for teaching-degree programmes)

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Module title | Abbreviation
---|---
Pharmaceutical Bioanalytics | 07-4BFPS5-152-m01

Module coordinator | Module offered by
holder of the Chair of Pharmaceutical Biology | Faculty of Biology

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

Duration | Module level | Other prerequisites
---|---|---
1 semester | undergraduate | --

Contents

In this module, students will acquire the theoretical and methodological fundamentals of drug and metabolite analysis. It will include an introduction to chromatographic methods of analysis as well as modern methods in computational chemistry. Qualitative and quantitative analyses of active agents and metabolites will be performed on, for example, complex drug, plant and urine samples.

Intended learning outcomes

Students have developed fundamental knowledge and skills in the area of drug and metabolite analysis and are proficient in chromatographic methods.

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

Ü (4) + S (1)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.

creditable for bonus

Allocation of places

16 places. Should the number of applications exceed the number of available places, places will be allocated as follows: Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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**Referred to in LPO 1** (examination regulations for teaching-degree programmes)

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Pharmaceutical Biotechnology

Module coordinator
holder of the Chair of Pharmaceutical Biology

Module offered by
Faculty of Biology

ECTS
5

Method of grading
numerical grade

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

Duration
1 semester

Module level
undergraduate

Other prerequisites
--

Contents
This module will focus on the molecular biological and protein chemical methods of pharmaceutical biotechnology. The following methods/topics will be addressed: Methods: construction of vector plasmids (cloning), production of genetically modified plants (Agrobacterium-mediated transformation, transient transformation of protoplasts), detection of heterologous gene expression (real-time PCR, Western blot, GFP, GUS and LUC reporter genes), usage of inducible promoters. Topics: Agrobacterium tumefaciens, function of transcription factors, pharmaceutical products in plants.

Intended learning outcomes
Students have gained an insight into current technologies and are able to choose the appropriate technology to solve a scientific problem.

Courses
Ü (4) + S (1)

Method of assessment
(a) written examination (approx. 45 to 60 minutes) or (b) log (approx. 10 to 20 pages) or (c) oral examination of one candidate each (approx. 30 minutes) or (d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or (e) presentation (approx. 20 to 30 minutes) or (f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Allocation of places
16 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places reallocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according
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Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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### Physical Chemistry for Biology Majors

<table>
<thead>
<tr>
<th>Module coordinator</th>
<th>Module offered by</th>
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</thead>
<tbody>
<tr>
<td>lecturer of lecture &quot;Thermodynamik, Kinetik, Elektrochemie für Studierende der Biologie and Lebensmittelchemie&quot;</td>
<td>Institute of Physical and Theoretical Chemistry</td>
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<th>ECTS</th>
<th>Method of grading</th>
<th>Only after succ. compl. of module(s)</th>
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<tbody>
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<td>5</td>
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<td>--</td>
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<table>
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<tr>
<th>Duration</th>
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<th>Other prerequisites</th>
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</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
<td>Successful completion of the written examination serves as proof of all safety-related skills and is a prerequisite for attendance of the lab course.</td>
</tr>
</tbody>
</table>

### Contents

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

### Intended learning outcomes

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

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

V (2) + Ü (1) + P (1)

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 60 minutes) and assessment of practical skills during lab course (ungraded): Vor- testate/Nachtestate (pre and post-experiment exams, approx. 15 minutes each), assessment of practical assignments, log (approx. 5 to 10 pages)

Assessment offered: Once a year, winter semester

### Allocation of places

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### Additional information

Pursuant to Section 2 Subsection 2 Sentence 2 Verordnung über die Ausbildung und Prüfung der Staatlich geprüften Lebensmittelchemikerinnen und Lebensmittelchemiker (Regulation on the training and examination of state-certified food chemists, APOlMCh) in conjunction with No. I 2. Letter c) and No. I 1. Letter c) of Annex 1 of APOlMCh and No. 3 of Annex 2 of APOlMCh.

Referred to in LPO I (examination regulations for teaching-degree programmes)
Module title: Physiology
Abbreviation: 03-6S3PH-152-m01

Module coordinator: holder of the Chair of Physiology I
Module offered by: Faculty of Medicine

ECTS: 15
Method of grading: Only after succ. compl. of module(s)

<table>
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</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
<td>--</td>
</tr>
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</table>

Contents:
In this module, students will become familiar with the fundamental principles of as well as analytical procedures in physiology. Physiological processes will be compared with pathological conditions (e.g., hormonal or cardiovascular disorders). Using selected examples of physiological and pathophysiological conditions, the module will explain the underlying physiological and biochemical mechanisms.

Intended learning outcomes:
Students have developed the ability to approach, analyse and interpret specific problems in physiology based on individually assigned tasks, using techniques of modern physiology and biochemistry. They also have developed skills in experimental design, bench work, data analysis and the presentation of scientific results.

Courses (type, number of weekly contact hours, language — if other than German):
Ü (9) + S (1)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus):
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.
Language of assessment: German and/or English

Allocation of places:
3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according...
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Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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**Referral to LPO** (examination regulations for teaching-degree programmes)

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<td>Dean of Studies Biologie (Biology)</td>
<td>Faculty of Biology</td>
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<td>undergraduate</td>
<td>Admission prerequisite to assessment: exercises. Regular attendance (minimum 80%) and successful completion of exercises (approx. 25 to 30 hours) are prerequisites for admission to assessment.</td>
</tr>
</tbody>
</table>

**Contents**

Fundamentals of the effector mechanisms of pathogenicity factors, specific examples of prokaryotic and eukaryotic pathogens; current methods in infection biology.

**Intended learning outcomes**

Students understand the fundamental theories relevant to current research on the pathogenicity of microorganisms, infection biology and the emergence of infectious diseases.

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

V (1) + Ü (2)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 60 minutes)

creditable for bonus

**Allocation of places**

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**Additional information**

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

§ 61 I Nr. 3
<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tr>
<td>Physiological Chemistry 2</td>
<td>03-5S2PC-152-m01</td>
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<tr>
<td>holders of the Chairs of Physiological Chemistry, Developmental Biochemistry, Biochemistry and Molecular Biology</td>
<td>Faculty of Medicine</td>
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**Contents**

Fundamentals and analytical approaches of physiological chemistry are taught based on selected questions from human biochemistry. Physiological processes are compared with examples of pathological aberrations. Molecular genetic and functional biochemical networks are presented using examples from developmental biochemistry, pathobiochemistry and cellular biochemistry.

**Intended learning outcomes**

Students have developed the ability to approach, analyse and interpret general problems in physiological chemistry based on individually assigned tasks, using techniques of modern molecular biology and biochemistry. They also have developed skills in experimental design, bench work, data analysis and the presentation of scientific results.

**Courses**

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

Ü (7) + S (1)

Module taught in: German and/or English

**Method of assessment**

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 45 to 60 minutes) or
- b) log (approx. 10 to 20 pages) or
- c) oral examination of one candidate each (approx. 30 minutes) or
- d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or
- e) presentation (approx. 20 to 30 minutes) or
- f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

**Allocation of places**

3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics))
at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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

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**Contents**

Advanced knowledge and research-oriented approaches of physiological chemistry are taught based on selected questions from human biochemistry. Physiological processes are compared with examples of pathological aberrations. Molecular genetic and functional biochemical networks are presented using examples from developmental biochemistry, pathobiochemistry and cellular biochemistry.

**Intended learning outcomes**

Students have developed the ability to approach, analyse and interpret special problems in physiological chemistry based on individually assigned tasks, using techniques of modern molecular biology and biochemistry. They also have developed in-depth skills in experimental design, bench work, data analysis and the presentation of scientific results.

**Courses**

(See the table format for module details.)

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<th>Schedule</th>
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<td>German and/or English</td>
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</table>

**Method of assessment**

(a) written examination (approx. 45 to 60 minutes) or (b) log (approx. 10 to 20 pages) or (c) oral examination of one candidate each (approx. 30 minutes) or (d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or (e) presentation (approx. 20 to 30 minutes) or (f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

**Language of assessment:** German and/or English

**Allocation of places**

3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

**Selection process group 1 (95%):** Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)).
at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information
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Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module title: Principles of Image Data Processing
Abbreviation: 07-SQF-PBD-152-m01

Module coordinator: degree programme coordinator Biologie (Biology)
Module offered by: Faculty of Biology

ECTS: 2
Method of grading: Only after succ. compl. of module(s)
Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents:
Students are familiar with fundamental principles of image data processing as well as different data formats, compression and storage methods.

Intended learning outcomes:
Students will be familiar with the methods discussed in class and will know what problems may be addressed with these methods.

Courses:
V (0.5) + Ü (0.5)
Module taught in: German and/or English

Method of assessment:
written examination or practical examination (approx. 30 minutes)
Language of assessment: German and/or English
creditable for bonus

Allocation of places:
20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology;
among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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

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Module title: Protein Biochemistry and Photobiology for Advanced Students

Module coordinator: holder of the Chair of Plant Physiology and Biophysics

Module offered by: Faculty of Biology

ECTS: 5

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

Duration: 1 semester

CONTENTS

In this module, students will become acquainted with the most important plant, biological and microbial photoreceptors and will learn the fundamental principles of the biochemical and molecular biological methods for the expression, isolation and purification as well as the biophysical characterisation of receptors.

INTENDED LEARNING OUTCOMES

Students are familiar with the biochemistry, molecular biology and function of biological photoreceptors and are able to analyse these using appropriate methods.

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

V (1) + Ü (5)

METHOD OF ASSESSMENT (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.

ALLOCATION OF PLACES

16 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas:
- Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot.
- Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot.
- Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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

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Module title: Research, Presentation, Information  
Abbreviation: 07-SQF-RPI-152-m01

Module coordinator: degree programme coordinator Biologie (Biology)  
Module offered by: Faculty of Biology

ECTS: 5  
Method of grading: numerical grade  
Only after succ. compl. of module(s): --

Duration: 1 semester  
Module level: undergraduate  
Other prerequisites: --

Contents:
This module is aimed at students with an interest in zoology who would like to practise searching for material as well as preparing and delivering talks. Students will deliver talks on topics from the area of zoology using, among others, objects from the zoological teaching collection of the Biocentre. In an introductory lecture, students will receive information and advice on how to prepare and/or deliver talks, presentations and position papers.

Intended learning outcomes:
Students will have learned how to gather information and present complex concepts in both oral and written form, using media aids.

Courses:
V (0.5) + S (1.5)  
Module taught in: German and/or English

Method of assessment:
presentation (approx. 10 to 20 minutes)  
Language of assessment: German and/or English  
creditable for bonus

Allocation of places:
20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: first, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

Referred to in LPO I (examination regulations for teaching-degree programmes)
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<td>07-SQF-RETH-152-m01</td>
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<th>Other prerequisites</th>
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<td>Admission prerequisite to assessment: exercises. Regular attendance of exercises (minimum 80%) and successful completion of the respective exercises (approx. 25 to 30 hours) are prerequisites for admission to assessment.</td>
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**Contents**

Good scientific practice; legal and ethical aspects surrounding stem cell research, cloning, transgenic animals, animal testing, genetic engineering in agriculture, biodiversity and nature conservation, biotechnology and microbiology, medicine and neurogenetics.

**Intended learning outcomes**

Students are familiar with the principles of good scientific practice. They are familiar with legal aspects surrounding stem cell research, cloning, transgenic animals, animal testing, genetic engineering in agriculture, biodiversity and nature conservation, biotechnology and microbiology, medicine and neurogenetics and are able to evaluate these in different cultural contexts. Students are able to critically reflect on and critically discuss these topics.

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

V (1) + Ü (1)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Written examination (approx. 30 to 60 minutes)
Language of assessment: German and/or English
_creditable for bonus_

**Allocation of places**

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**Additional information**

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

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<td>Coordinator BioCareers</td>
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**Contents**

This practical course is offered by an institution that is part of the University. Contents to be determined by the respective institution.

**Intended learning outcomes**

Students have developed skills which qualify them to work in their profession.

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

P (5)

Module taught in: German and/or English

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

**Allocation of places**

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**Additional information**

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**Contents**

This practical course is offered by an institution that is part of the University. Contents to be determined by the respective institution.

**Intended learning outcomes**

Students are familiar with the structures of internal institutions and have developed skills which qualify them to work in their profession.

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

P (8)

Module taught in: German and/or English

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

creditable for bonus

**Allocation of places**

--

**Additional information**

--

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

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<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory Practical Course III</td>
<td>07-S3-LP3-152-m01</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Coordinator</th>
<th>Module offered by</th>
</tr>
</thead>
<tbody>
<tr>
<td>BioCareers</td>
<td>Faculty of Biology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ECTS</th>
<th>Method of grading</th>
<th>Only after succ. compl. of module(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>numerical grade</td>
<td>--</td>
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<thead>
<tr>
<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
<td>Please consult with course advisory service in advance.</td>
</tr>
</tbody>
</table>

### Contents

This practical course is offered by an institution that is part of the University. Contents to be determined by the respective institution.

### Intended learning outcomes

Students are familiar with the structures of internal institutions and have developed skills which qualify them to work in their profession.

### Courses

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

P (10)

Module taught in: German and/or English

### Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 45 to 60 minutes)
- b) log (approx. 10 to 20 pages)
- c) oral examination of one candidate each (approx. 30 minutes)
- d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate)
- e) presentation (approx. 20 to 30 minutes)
- f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

### Allocation of places

--

### Additional information

--

### Referred to in LPO I

(examination regulations for teaching-degree programmes)

--
Subdivided Module Catalogue for the Subject Biology
Bachelor’s with 1 major, 180 ECTS credits

<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Safety in Ecophysiological Laboratories</td>
<td>07-SQF-SAL-152-m01</td>
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<table>
<thead>
<tr>
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<tr>
<td>degree programme coordinator Biologie (Biology)</td>
<td>Faculty of Biology</td>
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<table>
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<th>Method of grading</th>
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<td>numerical grade</td>
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<tr>
<th>Duration</th>
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<th>Other prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are risks and hazards associated with working in ecophysiology and analytical chemistry laboratories. In this module, students will become familiar with the fundamentals for recognising, assessing, avoiding and eliminating potential safety hazards and will practise safe laboratory working procedures in accordance with statutory provisions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intended learning outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students know how to handle hazardous substances typically used in ecophysiology and analytical chemistry laboratories and are able to recognise and eliminate safety hazards. They are familiar with the most important statutory provisions on health and safety and accident prevention. Students are able to adhere to the respective safety practices when working in the lab and have developed an increased alertness toward potential safety hazards in the lab.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Courses (type, number of weekly contact hours, language — if other than German)</th>
</tr>
</thead>
<tbody>
<tr>
<td>V (0.5) + Ü (0.5)</td>
</tr>
<tr>
<td>Module taught in: German and/or English</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)</th>
</tr>
</thead>
<tbody>
<tr>
<td>written examination (approx. 15 minutes)</td>
</tr>
<tr>
<td>Language of assessment: German and/or English</td>
</tr>
<tr>
<td>creditable for bonus</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Allocation of places</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:</td>
</tr>
<tr>
<td>Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.</td>
</tr>
<tr>
<td>A waiting list will be maintained and places re-allocated as they become available. Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking...</td>
</tr>
</tbody>
</table>
will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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### Module title
**Special Bioinformatics 1**

### Abbreviation
07-4S1MZ6-152-m01

### Module coordinator
holder of the Chair of Bioinformatics

### Module offered by
Faculty of Biology

### ECTS
5

### Method of grading
numerical grade

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

### Duration
1 semester

### Module level
undergraduate

### Other prerequisites
--

### Contents
Fundamental principles of the tree of life, fundamental principles of phylogenetics (methods and markers), fundamental principles of evolutionary biology (concepts), sequence analysis, RNA structure prediction, phylogenetic reconstruction.

### Intended learning outcomes
Students are able to use software and databases for sequence analysis, RNA structure prediction and phylogenetic reconstruction.

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

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of Contact Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>(1)</td>
</tr>
<tr>
<td>Ü</td>
<td>(5)</td>
</tr>
</tbody>
</table>

### Method of assessment
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Log (approx. 10 to 20 pages)
Language of assessment: German or English
creditable for bonus

### Allocation of places
20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Bioinformatics and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other importing subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%):
Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%):
Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology;
among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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

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Module title: Specific Bioinformatics 2
Abbreviation: 07-5S2MZ3-152-m01

Module coordinator: holder of the Chair of Bioinformatics
Module offered by: Faculty of Biology
ECTS: 10
Method of grading: numerical grade
Only after succ. compl. of module(s): --
Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents:
The module will cover two topics from the area of bioinformatics to be selected from the following list: - sequence analysis, phylogenetics and evolution - gene expression profiling - protein structure analysis - programming for bioinformatics - network analysis

Intended learning outcomes:
Students have acquired knowledge about general strategies and methods of bioinformatics. They are able to independently perform scientific laboratory work.

Courses (type, number of weekly contact hours, language — if other than German):
V (1) + Ü (7)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus):
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).
Students will be informed about the method and length of the assessment prior to the course.
Language of assessment: German and/or English
creditable for bonus

Allocation of places:
16 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking...
will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>Specific Bioinformatics 3</td>
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<table>
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<th>Module coordinator</th>
<th>Module offered by</th>
</tr>
</thead>
<tbody>
<tr>
<td>holder of the Chair of Bioinformatics</td>
<td>Faculty of Biology</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>ECTS</th>
<th>Method of grading</th>
<th>Only after succ. compl. of module(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>numerical grade</td>
<td>--</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
<td>--</td>
</tr>
</tbody>
</table>

**Contents**

In this module, students will acquire an in-depth insight into approaches and methods in bioinformatics. Students will learn to address a scientific problem in bioinformatics.

**Intended learning outcomes**

The students are able to independently address scientific issues in bioinformatics, using appropriate methods. They are able to design the appropriate experiments as well as to analyse, present and interpret the results.

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

Ü (9) + S (1)

Module taught in: German and/or English

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

**Allocation of places**

18 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places reallocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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

--
Module title: Specific Biotechnology 2  
Abbreviation: 07-5S2MZ4-152-m01

Module coordinator: holder of the Chair of Biotechnology and Biophysics  
Module offered by: Faculty of Biology

ECTS: 10  
Method of grading: Only after succ. compl. of module(s)

Duration: 1 semester  
Module level: undergraduate  
Other prerequisites: --

Contents:
This practical course provides students with an insight into different biotechnological and biophysical topics. Under expert guidance, students will perform selected experiments on the following topics: cellular and molecular biotechnology, nano and microsystems biotechnology, biomaterials and biosensors, high-resolution fluorescence microscopy, fluorescence spectroscopy, analysis and electromanipulation of cells.

Intended learning outcomes:
Students will have acquired a knowledge of fundamental biotechnological and biophysical methods and their applications that will enable them to independently review relevant literature. In addition, they will have become acquainted with - or, where necessary, will be able to independently acquaint themselves with - biophysical mechanisms. Students will have acquired practical experience performing experiments, using a variety of scientific tools. In the seminar, students will have acquired detailed theoretical knowledge on these experiments and will have delivered a short presentation (15 minutes) on one of the experiments they performed.

Courses:

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of Weekly Contact Hours</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ü (7) + S (1)</td>
<td></td>
<td>German and/or English</td>
</tr>
</tbody>
</table>

Method of assessment:

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course. Language of assessment: German and/or English creditable for bonus

Allocation of places:

18 places. Should the number of applications exceed the number of available places, places will be allocated as follows: Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they ha-
ve achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

Referred to in LPO I (examination regulations for teaching-degree programmes)
Module title | Abbreviation
--- | ---
Specific Biotechnology 3 | 07-6S3MZ4-152-m01

Module coordinator | Module offered by
holder of the Chair of Biotechnology and Biophysics | Faculty of Biology

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

Duration | Module level | Other prerequisites
--- | --- | ---
1 semester | undergraduate | --

Contents
This practical course provides students with an insight into different biotechnological and biophysical topics and is close to laboratory research. Under expert guidance, students will perform selected experiments on one of the following topics: cellular and molecular biotechnology, nano and microsystems biotechnology, biomaterials and biosensors, high-resolution fluorescence microscopy, fluorescence spectroscopy, analysis and electromagnetication of cells. Performing experiments under expert guidance, students will become acquainted with techniques and instruments. Over the duration of the course, students will then be required to work increasingly independently on current research topics. Work on current research topics will spark the students' interest in topics and will help them select a topic for their Bachelor's thesis.

Intended learning outcomes
Students will become acquainted with modern biophysical methods and their applications in biotechnology. They will be able to independently work on scientific problems, to independently study relevant literature and to develop a quantitative understanding of biophysical mechanisms. In the seminar, students will acquire further theoretical knowledge on experiments and will give short presentations on experiments performed.

Courses (type, number of weekly contact hours, language — if other than German)
Ü (9) + S (1)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English creditable for bonus

Allocation of places
18 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

Refereed to in LPO I (examination regulations for teaching-degree programmes)
Module title | Abbreviation
--- | ---
Specific Membranebiology of Plants 2 | 07-5S2PS1-152-m01

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<th>Module offered by</th>
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<tbody>
<tr>
<td>holder of the Chair of Plant Physiology and Biophysics</td>
<td>Faculty of Biology</td>
</tr>
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</table>

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

Duration | Module level | Other prerequisites
--- | --- | ---
1 semester | undergraduate | --

Contents
The module will address topics in contemporary research on plant membrane transport with modern molecular biological and biophysical methods. On the basis of current scientific publications, different aspects of plant physiology will be presented and discussed.

Intended learning outcomes
Students are familiar with current research in the field of plant membrane transport as well as with the methods used. They are able to interpret and deliver presentations on scientific publications.

Courses (type, number of weekly contact hours, language — if other than German)
Ü (7) + S (1)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.
Language of assessment: German and/or English

Allocation of places
5 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking
will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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Specific Membrane Biology of Plants 3

Module coordinator
holder of the Chair of Ecophysiology and Vegetation Ecology

Module offered by
Faculty of Biology

ECTS
15

Method of grading
numerical grade

Duration
1 semester

Other prerequisites
-

Contents
Using the examples of topics in contemporary research, students will be introduced to the concepts of good scientific practice, including planning research strategies, performing complex experiments as well as documenting and communicating research findings in the form of a presentation, a publication or a term paper. Students will be involved in ongoing research and will learn how to independently apply advanced methods in molecular biology and biophysics. In addition they will acquire an advanced knowledge of membrane transport in particular.

Intended learning outcomes
Students are able to independently use advanced methods in the experimental biology of membrane transport. They are able to independently address and document questions in the field of plant biology, adhering to the principles of good scientific practice.

Courses
(9) + S (1)

Module taught in: German and/or English

Method of assessment
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

Allocation of places
5 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they ha-
Subdivided Module Catalogue for the Subject Biology
Bachelor's with 1 major, 180 ECTS credits

ve achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

Referred to in LPO I (examination regulations for teaching-degree programmes)
Molecular Biological Methods in Pharmaceutical Biology

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**Contents**

Being involved in a current research project, students will become proficient in advanced methods in molecular biology, molecular biochemistry or metabolite analysis.

**Intended learning outcomes**

Students are proficient in advanced methods in pharmaceutical biology with a focus on molecular biology or molecular biochemistry and possess the skills necessary for conducting research in the context of research projects.

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

Ü (7) + S (1)

Module taught in: German and/or English

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

credible for bonus

**Allocation of places**

10 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking
will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

### Additional information

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

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**Module title**: Specific Methods in Proteinbiochemistry and Cell Biology  
**Abbreviation**: 07.4S1MZ8-152-m01  
**Module coordinator**: holder of the Chair of Cell Biology and Developmental Biology  
**Module offered by**: Faculty of Biology  
**ECTS**: 5  
**Method of grading**: numerical grade  
**Only after succ. compl. of module(s)**: --  
**Duration**: 1 semester  
**Module level**: undergraduate  
**Other prerequisites**: --  

**Contents**

Fundamental principles, theory and application of modern methods in cell biology. Since many of these methods are based on molecular biology and protein chemistry approaches, we will also discuss these techniques. Using practical examples, this course will acquaint students with the following methods: - cell fractionation - protein separation by one- and two-dimensional gel electrophoresis - identification of proteins and protein complexes with immunoblots - immunoprecipitation - overlay techniques or pull-down experiment - intracellular localisation of proteins by immunofluorescence microscopy - preparing cultivated cells and tissues for immunofluorescence microscopy - whole-mount immunolocalisation for the analysis of the expression pattern of a protein in the Xenopus embryo - whole-mount in situ hybridisation for the analysis of the expression pattern of an mRNA in the Xenopus embryo - investigation of the dynamic behaviour of proteins in living cells: expression of a fluorescent (GFP) fusion protein in human cells after transfection with a DNA vector - determination of the subclass of antibodies by immunodiffusion (Ouchterlony test). Basic experiments in molecular biology.

**Intended learning outcomes**

Students will be familiar with the methods discussed in class and will know what problems in cell biology may be addressed with these methods.

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

V (1) + Ü (5)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course. Creditable for bonus

**Allocation of places**

20 places. Should the number of applications exceed the number of available places, places will be allocated as follows: Students of the Bachelor’s degree subject Biologie (Biologie) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biologie) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biologie) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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Subdivided Module Catalogue for the Subject Biology
Bachelor’s with 1 major, 180 ECTS credits

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<td>07-5S2MZ2/-1-152-m01</td>
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<td>Faculty of Biology</td>
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</table>

### Contents

In this module, students will investigate relevant problems in the infection biology of a variety of pathogenic microorganisms. Students will investigate interactions of obligate intracellular and facultative intracellular bacteria with their host cells, e.g. the internalisation of pathogens by mammalian cells or interactions with cellular signal pathways.

### Intended learning outcomes

German intended learning outcomes available but not translated yet.

Die Studierenden erlernen die methodischen Grundlagen der Zell- und Mikrobiologie (= zelluläre Mikrobiologie) und wenden diese an. Dazu gehört die Kultur von menschlichen Epithelzellen, die Infektion dieser Wirtszenen mit pathogenen Mikroorganismen, die Analyse der Wirts-Pathogen-Beziehungen mittels Lichtmikroskopie, Konfokaler Laserraster Fluoreszenzmikroskopie, Durchflusszytometrie, Western Blot und klassischen Verfahren zur Bestimmung der Virulenz, wie etwa Adhäsions- und Internalisationsexperimente, etc.

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

Ü (7) + S (1)
Module taught in: German and/or English

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English
creditable for bonus

### Allocation of places

30 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information
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Referred to in LPO I (examination regulations for teaching-degree programmes)
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### Specific Microbiology 3

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**Contents**

Using the example of a problem taken from a current research project, this module will provide students with an opportunity to acquire an in-depth insight into modern methods in microbiology.

**Intended learning outcomes**

Students are able to independently address a problem in microbiology, to design appropriate experiments as well as to analyse, interpret and present their findings.

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

Ü (9) + S (1)

Module taught in: German and/or English

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 45 to 60 minutes)
- b) log (approx. 10 to 20 pages)
- c) oral examination of one candidate each (approx. 30 minutes)
- d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate)
- e) presentation (approx. 20 to 30 minutes)
- f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

**Language of assessment:** German and/or English creditable for bonus

**Allocation of places**

25 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

**Selection process group 1 (95%)**

Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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### Specific Molecular Physiology of Plants 2

**Abbreviation**

07-5S2PS2-152-m01

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<td>Specific Molecular Physiology of Plants 2</td>
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#### Module coordinator

holder of the Chair of Plant Physiology and Biophysics

#### Module offered by

Faculty of Biology

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

#### Contents

In this module, students will acquire advanced knowledge and skills in techniques of molecular biology for questions of plant physiology. Every student will perform a physiological experiment that will be analysed using the methods the students have learned. Current scientific publications in the field of plant physiology will be presented and discussed.

#### Intended learning outcomes

Students are able to perform advanced experiments in plant physiology as well as to interpret and deliver presentations on scientific publications.

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

Ü (7) + S (1)

Module taught in: German and/or English

#### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

### Allocation of places

5 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according
to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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Module title: Specific molecular Physiology of Plants 3
Abbreviation: 07-6S3PS1-152-m01

Module coordinator: holder of the Chair of Plant Physiology and Biophysics
Module offered by: Faculty of Biology

ECTS: 15
Method of grading: numerical grade
Only after succ. compl. of module(s)

Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents:
Using the examples of topics in contemporary research, students will be introduced to the concepts of good scientific practice, including planning research strategies, performing complex experiments as well as documenting and communicating research findings in the form of a presentation, a publication or a term paper. Students will be involved in ongoing research and will learn how to independently apply advanced methods in modern plant sciences. In addition they will acquire an advanced knowledge of the molecular basics of membrane transport.

Intended learning outcomes:
Students are able to independently use advanced methods in plant molecular biology. They are able to independently address and document questions in the field of plant biology, adhering to the principles of good scientific practice.

Courses (type, number of weekly contact hours, language — if other than German):
Ü (9) + S (1)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus):
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

Allocation of places:
5 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components.
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Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwi-
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Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of pla-
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of places): number of subject semesters of the respective applicant; among applicants with the same number of
subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.
Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, pla-
ces will be allocated according to the selection process of group 1.

Additional information

Referred to in LPO I (examination regulations for teaching-degree programmes)
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<td>Faculty of Biology</td>
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<td>1 semester</td>
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</table>

**Contents**

In this module, students will learn to independently apply advanced molecular biological, chemical analytical or ecological methods. Experimental findings will be evaluated, interpreted and documented in the context of the current state of research.

**Intended learning outcomes**

Students are able to independently perform complex experiments in the field of plant ecophysiology, to interpret their findings in the context of the current state of research as well as to document these.

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

Ü (7) + S (1)

Module taught in: German and/or English

**Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)**

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

**Allocation of places**

15 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking
will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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Module title | Abbreviation
--- | ---
Advanced Animal Ecology 3 | 07-6S3NVO31-152-m01

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<td>holder of the Chair of Animal Ecology and Tropical Biology</td>
<td>Faculty of Biology</td>
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<tbody>
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</table>

Contents

In this module, students will acquire insights into topics, approaches and methods in special animal ecology. Students will also be involved in current research projects. Module component 07-6S3NVO3-1 is mandatory. Out of the other module components, one must be selected.

Intended learning outcomes

Students are proficient in the theory and practice of research in the field of special animal ecology. They are able to analyse their own research findings, to present these as well as to discuss these in the context of current publications.

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

Ü (6) + S (1)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Log (approx. 10 to 30 pages)
Language of assessment: German and/or English
creditable for bonus

Allocation of places

20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (Biology) (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: first, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.
Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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

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**ECTS** | **Method of grading** | **Only after succ. compl. of module(s)** |
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**Duration** | **Module level** | **Other prerequisites** |
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<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</tbody>
</table>

**Contents**

In this course, you will acquire practical experience of developmental biology. Imaging and genetic methods such as time-resolved stereo fluorescence microscopy, electron microscopy, in-situ hybridisation and RNA interference will be used to make processes visible as well as to manipulate and digitally document these. This module will provide you with an opportunity to use transgenic *c. elegans*, *Chlamydomonas*, *Dictyostelium*, *Drosophila*, Hydra, *Trypanosoma* and mammalian cells as model organisms. Hopefully, we will also get a chance to work with urchins - this is virtually a must at the Theodor-Boveri-Institute. The main aim of this practical course is to provide you with an opportunity to use cutting-edge technologies to explore selected fundamental concepts of cellular developmental biology.

**Intended learning outcomes**

Ability to use basic and advanced methods to approach simple problems in animal developmental biology.

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

| V (1) + Ü (5) |

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

**Allocation of places**

40 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

**Selection process group 1 (95%)**: Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics))
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Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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

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**Contents**

Advanced cell and developmental biology II: The cell cycle. This 4-week practical course will focus on dynamic cell cycle control and the part the cell cycle plays in the development of organisms. We will offer a variety of model organisms ranging from bacteria and yeasts to frogs and mammals. How is growth controlled? How are cell components redistributed during the cell cycle? What controls mitosis and replication? We will perform experiments to answer these and other fundamental questions. In addition to the practical part, the course will also include lectures, eLectures and, in particular, virtual experiments that will teach you how to independently design series of experiments. The methods you will use range from in vitro fertilisation as well as quantitative fluorescence and electron microscopy to methods in molecular biology such as Western blot and RNA interference.

**Intended learning outcomes**

Students have acquired knowledge about general strategies and methods of molecular and cell biology. They are able to independently perform scientific laboratory work.

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

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<tbody>
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<td>Module taught in: German and/or English</td>
</tr>
</tbody>
</table>

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

**Allocation of places**

20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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

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Module title: Specific Cell- and Developmental Biology 3
Abbreviation: 07-6S3MZ1-152-m01

Module coordinator: holder of the Chair of Cell Biology and Developmental Biology
Module offered by: Faculty of Biology

ECTS: 15
Method of grading: numerical grade
Only after succ. compl. of module(s): --

Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents:
In this module, students will acquire an in-depth insight into approaches and methods in cell biology. Students will learn to apply methods in cell biology to address a scientific question.

Intended learning outcomes:
The students are able to independently address scientific issues in molecular cell biology, using appropriate methods. They are able to design the appropriate experiments as well as to analyse, present and interpret the results.

Courses:
(4) + (1)
Module taught in: German and/or English

Method of assessment:
(a) written examination (approx. 45 to 60 minutes) or (b) log (approx. 10 to 20 pages) or (c) oral examination of one candidate each (approx. 30 minutes) or (d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or (e) presentation (approx. 20 to 30 minutes) or (f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

Allocation of places:
20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (Biology) (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according...
to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

---
**Module title**  
Structural Biology 2

**Abbreviation**  
03-5S2ST-152-m01

**Module coordinator**  
holder of the Chair of Structural Biology

**Module offered by**  
Faculty of Medicine

**ECTS**  
10

**Method of grading**  
numerical grade

**Duration**  
1 semester

**Module level**  
undergraduate

**Other prerequisites**  
--

### Contents

This module will use examples from current research reflecting different topics to provide fundamental biological insights and to also illustrate the fundamental concepts of structural biology. Scientific projects may be selected from the following list: DNA repair, ubiquitin-dependent protein degradation, transport and anchoring of inhibitory neurotransmitter receptors and structure-based design of new pharmaceutical agents.

### Intended learning outcomes

Students will gain the ability to solve problems in structural biology on the basis of individually assigned tasks, employing different techniques from the fields of molecular biology, biochemistry and crystallography. They will also acquire skills in the design of experiments, their performance and evaluation as well as in the oral and written presentation of scientific results.

### Courses

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<td>S</td>
<td>2</td>
<td>German and/or English</td>
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</table>

**Module taught in:** German and/or English

### Method of assessment

- a) written examination (approx. 45 to 60 minutes) or
- b) log (approx. 10 to 20 pages) or
- c) oral examination of one candidate each (approx. 30 minutes) or
- d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or
- e) presentation (approx. 20 to 30 minutes) or
- f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course. Language of assessment: German and/or English

### Allocation of places

3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their...
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Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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

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Module title: Structural Biology 3
Abbreviation: 03-6S3ST-152-m01

Module coordinator: holder of the Chair of Structural Biology
Module offered by: Faculty of Medicine

ECTS: 15
Method of grading: numerical grade
Only after succ. compl. of module(s): --

Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents:
This module will use examples from current research reflecting different topics to provide fundamental biological insights and to also illustrate the fundamental concepts of structural biology. Scientific projects may be selected from the following list: DNA repair, protein folding in the endoplasmic reticulum, ubiquitin-dependent protein degradation and structure-based design of new pharmaceutical agents.

Intended learning outcomes:
Students will gain the ability to solve problems in structural biology on the basis of individually assigned tasks, employing different techniques from the fields of molecular biology, biochemistry and crystallography. They will also acquire skills in the design of experiments, their performance and evaluation as well as in the oral and written presentation of scientific results.

Courses (type, number of weekly contact hours, language — if other than German):
Ü (9) + S (1)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus):
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).
Students will be informed about the method and length of the assessment prior to the course.
Language of assessment: German and/or English

Allocation of places:
3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their...
average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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**Module title**  
Structural and functional Analysis of Biosensors 3

**Abbreviation**  
07-6S3PS2-152-m01

**Module coordinator**  
holder of the Chair of Plant Physiology and Biophysics

**Module offered by**  
Faculty of Biology

**ECTS**  
15

**Method of grading**  
numerical grade

**Duration**  
1 semester

**Module level**  
undergraduate

**Other prerequisites**  
--

## Contents

Using the examples of topics in contemporary research, students will be introduced to the concepts of good scientific practice, including planning research strategies, performing complex experiments as well as documenting and communicating research findings in the form of a presentation, a publication or a term paper. Students will be involved in ongoing research and will learn to independently apply advanced methods in biophysics and protein chemistry. In addition, they will acquire an advanced knowledge of the mechanisms and structure-function relationships of chemo- and photoreceptors in particular.

## Intended learning outcomes

Students are able to independently use advanced methods in the protein chemistry of biosensors. They are able to independently address and document questions in the field of plant biology, adhering to the principles of good scientific practice.

## Courses

<table>
<thead>
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<th>Type</th>
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<th>Language</th>
<th>German and/or English</th>
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<td>S (1)</td>
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</tbody>
</table>

Module taught in: German and/or English

## Method of assessment

- a) written examination (approx. 45 to 60 minutes) or
- b) log (approx. 10 to 20 pages) or
- c) oral examination of one candidate each (approx. 30 minutes) or
- d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or
- e) presentation (approx. 20 to 30 minutes) or
- f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

Creditable for bonus

## Allocation of places

5 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components.
in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

Referred to in LPO I (examination regulations for teaching-degree programmes)
Supervising Tutorial for Biology 2

07-SQF-TSB2-152-m01

Coordinator BioCareers

Faculty of Biology

ECTS: 2

Method of grading: Only after successfully completed module(s)

Duration: 1 semester

Module level: graduate

Other prerequisites: --

Contents:
Regular specific lecture, seminar, workshop, retreat or practical course (1 weekly contact hour), offered by JMU or other institutions, in which students will acquire additional skills in areas other than biology or the natural sciences. Assessment ungraded, pass required (2 ECTS credits); decision on credit transfer to be made by module coordinators. Possible subjects are philosophy, pedagogy, history, languages, social studies, psychology, economics, and law.

Intended learning outcomes:
Specific skills and knowledge on a specific subject in an area other than biology or the natural sciences.

Courses:

T (0)

Method of assessment:
Proof of tutoring activities and report (approx. 2 to 3 pages) creditable for bonus

Allocation of places:
--

Additional information:
--

Referred to in LPO I (examination regulations for teaching-degree programmes):
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## Supervising Tutorial for Biology 3

### Module title
Supervising Tutorial for Biology 3

### Abbreviation
07-SQF-TSB3-152-m01

### Module coordinator
Coordinator BioCareers

### Module offered by
Faculty of Biology

### ECTS
3

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

### (not) successfully completed
--

### Duration
1 semester

### Module level
graduate

### Other prerequisites
--

### Contents
Regular specific lecture, seminar, workshop, retreat or practical course (1 weekly contact hour), offered by JMU or other institutions, in which students will acquire additional skills in areas other than biology or the natural sciences. Assessment ungraded, pass required (2 ECTS credits); decision on credit transfer to be made by module coordinators. Possible subjects are philosophy, pedagogy, history, languages, social studies, psychology, economics, and law.

### Intended learning outcomes
Specific skills and knowledge on a specific subject in an area other than biology or the natural sciences.

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

T (0)

### Method of assessment
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Proof of tutoring activities and report (approx. 2 to 3 pages) creditable for bonus

### Allocation of places
--

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

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<table>
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<td>07-5S2NVO3-152-m01</td>
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<td>holder of the Chair of Animal Ecology and Tropical Biology</td>
<td>Faculty of Biology</td>
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<table>
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<th>Method of grading</th>
<th>Only after succ. compl. of module(s)</th>
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<tr>
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<tr>
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</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</table>

Contents

In this module, students will acquire an insight into the statistical analysis of data in animal ecology and into experiment design. The module will comprise exercises in statistics as well as experiments during which students will have an opportunity to put their acquired knowledge and skills into practice.

Intended learning outcomes

Students are able to design appropriate experiments to address a scientific issue as well as to analyse, present and interpret the results.

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

Ü (6) + V (1) + S (1)

Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English creditable for bonus

Allocation of places

20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other “importing” subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking
will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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<table>
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<td>07-6S3NVO7-152-m01</td>
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<th>Module offered by</th>
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<tbody>
<tr>
<td>holder of the Chair of Animal Ecology and Tropical Biology</td>
<td>Faculty of Biology</td>
</tr>
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<table>
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<tr>
<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</tr>
</tbody>
</table>

**Contents**

In this module, students will acquire insights into topics, approaches and methods in special animal ecology. Students will also be involved in current research projects. Module component 07-6S3NVO3-1 is mandatory. Out of the other module components, one must be selected.

**Intended learning outcomes**

Students are proficient in the theory and practice of research in the field of special animal ecology. They are able to analyse their own research findings, to present these as well as to discuss these in the context of current publications.

**Courses**

<table>
<thead>
<tr>
<th>type, number of weekly contact hours, language — if other than German</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ü (9) + S (1)</td>
</tr>
</tbody>
</table>

*Module taught in: German and/or English*

**Method of assessment**

<table>
<thead>
<tr>
<th>type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log (approx. 10 to 30 pages)</td>
</tr>
</tbody>
</table>

*Language of assessment: German and/or English*  
*creditable for bonus*

**Allocation of places**

20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: first, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.
Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.
Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

<table>
<thead>
<tr>
<th>Additional information</th>
<th></th>
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<tbody>
<tr>
<td>Referred to in LPO I (examination regulations for teaching-degree programmes)</td>
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<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>Animal Physiology</td>
<td>07-2A2PHYTI-152-m01</td>
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</table>

<table>
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<th>Module coordinator</th>
<th>Module offered by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dean of Studies Biologie (Biology)</td>
<td>Faculty of Biology</td>
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<table>
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<tr>
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<th>Module level</th>
<th>Other prerequisites</th>
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</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
<td>Admission prerequisite to assessment: exercises. Regular attendance (minimum 80%) and successful completion of exercises (approx. 25 to 30 hours) are prerequisites for admission to assessment.</td>
</tr>
</tbody>
</table>

### Contents

This module will acquaint students with the principles of general and comparative animal physiology and will provide them with an opportunity to develop the fundamental skills for working in a physiological laboratory. The module will focus on neurophysiology and sensory physiology as well as aspects of metabolic physiology (respiration and excretion).

### Intended learning outcomes

Students have developed an understanding of the physiological functions and regulation of organisms. They have acquired fundamental knowledge on planning, setup, interpretation and presentation of scientific results.

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

V (1) + Ü (2)

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 60 minutes)

creditable for bonus

### Allocation of places

--

### Additional information

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

§ 61 I Nr. 2

§ 41 I Nr. 2
Subdivided Module Catalogue for the Subject Biology
Bachelor's with 1 major, 180 ECTS credits

<table>
<thead>
<tr>
<th>Module title</th>
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<tbody>
<tr>
<td>Tissue engineering 2</td>
<td>03-5S2TE-152-m01</td>
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</table>

<table>
<thead>
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<th>Module offered by</th>
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</thead>
<tbody>
<tr>
<td>holder of the Chair of Tissue Engineering (University Hospital)</td>
<td>Faculty of Medicine</td>
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</table>

<table>
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</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</tbody>
</table>

**Contents**

Cell culture, tissue culture for medical applications, development of bioreactors in which tissue grows, simulation of physiological circumstances for culturing functional tissue.

**Intended learning outcomes**

Students have developed a fundamental knowledge of cell biology, cell culture, tissue engineering and regenerative medicine. In addition, they have acquired hands-on expertise in histological, molecular and biochemical methods for the quantitative and qualitative characterisation of cells and tissue.

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

Ü (6) + S (2)

Module taught in: German and/or English

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

**Allocation of places**

3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants' previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits they have achieved (quantitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking
will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

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<tr>
<th>Additional information</th>
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<tr>
<th>Referred to in LPO I (examination regulations for teaching-degree programmes)</th>
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<td>--</td>
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</tbody>
</table>
Module title | Abbreviation
--- | ---
Tissue Engineering 3 | 03-6S3TE-152-m01

Module coordinator | Module offered by
--- | ---
holder of the Chair of Tissue Engineering (University Hospital) | Faculty of Medicine

<table>
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<th>ECTS</th>
<th>Method of grading</th>
<th>Only after succ. compl. of module(s)</th>
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<th>Module level</th>
<th>Other prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</tr>
</tbody>
</table>

Contents

Cell culture, tissue culture for medical applications, development of bioreactors in which tissue grows, simulation of physiological circumstances for culturing functional tissue.

Intended learning outcomes

The students have acquired knowledge on both the latest research in the field of tissue engineering and the methods used. They are able to work on scientific problems.

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

Ü (9) + S (1)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

Allocation of places

3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

- Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

- A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

--

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

--
### Subdivided Module Catalogue for the Subject Biology

**Bachelor’s with 1 major, 180 ECTS credits**

<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>Tropical Biology</td>
<td>07-6S3NVO34-152-m01</td>
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<td>holder of the Chair of Animal Ecology and Tropical Biology</td>
<td>Faculty of Biology</td>
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<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
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</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</tr>
</tbody>
</table>

### Contents

This module provides the fundamentals of the biology of tropical habitats and tropical communities.

### Intended learning outcomes

Students will be able to recognise the special position of tropical habitats within the biosphere and to explain the significance tropical habitats have for the ecosystem. They will be able to discuss and deliver presentations on current publications in the field of tropical biology.

### Courses

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

<table>
<thead>
<tr>
<th>V (1) + S (2)</th>
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Module taught in: German and/or English

<table>
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<tr>
<th>Method of assessment</th>
<th>(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)</th>
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</thead>
<tbody>
<tr>
<td>written examination</td>
<td>(approx. 30 to 60 minutes) Language of assessment: German and/or English creditable for bonus</td>
</tr>
</tbody>
</table>

### Allocation of places

20 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits quality ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same rank, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology;
among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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

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### Module title
Tutorial Intercultural Competence

### Abbreviation
07-SQF-IKK-152-m01

### Module coordinator
Coordinator BioCareers

### Module offered by
Faculty of Biology

### ECTS
4

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

### (not) successfully completed
--

### Duration
2 semester

### Module level
undergraduate

### Other prerequisites
--

### Contents
To support international students on their way toward academic success and to foster the international focus of the Faculty of Biology at the University of Würzburg, we aim to offer more intensive mentoring for first-year students from abroad (in particular from non-EU states) studying biology. For this purpose, we train tutors to help international students with issues regarding scientific contents, to overcome language problems with the help of small-group tutorials and to help encourage the integration of international students in general.

### Intended learning outcomes
The tutors will acquire general transferable skills including intercultural and international competencies, the ability to communicate complex concepts in a clear and structured way as well as the ability to supervise groups.

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

<table>
<thead>
<tr>
<th>Ü (2)</th>
<th>T (1)</th>
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</thead>
<tbody>
<tr>
<td>Module taught in: German and/or English</td>
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### Method of assessment
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

| Log (approx. 10 to 20 pages) |
| Language of assessment: German and/or English |
| creditable for bonus |

### Allocation of places
4 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

- Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

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

Environmental Education in the Botanic Garden of Würzburg University

Abbreviation

07-SQF-UBG-152-m01

Module coordinator

head of Botanical Garden

Module offered by

Faculty of Biology

ECTS

2

Method of grading

Only after succ. compl. of module(s)

(3) not successfully completed

Duration

1 semester

Module level

undergraduate

Other prerequisites

--

Contents

The Botanical Garden of the University of Würzburg is primarily used for teaching and research-related activities. In addition, it is used for activities in the area of general environmental education with the plants in the different sections and collections being used to inform interested members of the public about topics in the areas of botany, ecology and gardening. In this module, students will develop appropriate educational concepts for imparting, in a comprehensible way, specialist knowledge to interested laypersons. They will practise designing and using appropriate aids (information boards, leaflets etc.) and applying methodological approaches (guidelines) for the comprehensible presentation of complex concepts. Students will be organised into teams to complete the following tasks: develop contents tailored to the needs of selected target groups, acquire the specialist knowledge necessary for presenting these contents, select appropriate methods for presenting these contents.

Intended learning outcomes

Students will be able to communicate concepts in ecology and botany to a lay audience. They will be able to tailor contents to a target audience, selecting and using appropriate aids and techniques. Students will have acquired an overview of the sectors of the Botanical Garden and will be able to prepare information material on individual sections. They will have developed both botanical knowledge and teaching skills that will enable them to guide tours through the Botanical Garden, imparting knowledge in a way that is tailored to their target audience.

Courses

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

Ü (0.5) + E (0.5)

Module taught in: German and/or English

Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

term paper or preparing educational materials and materials for demonstrations (approx. 10 to 20 pages)

Language of assessment: German and/or English

creditable for bonus

Allocation of places

6 places.

Additional information

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

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<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tr>
<td>Entrepreneurial Thinking in Biosciences</td>
<td>07-SQF-UDB-152-m01</td>
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<table>
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<td>BioCareers</td>
<td>Faculty of Biology</td>
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<tr>
<th>ECTS</th>
<th>Method of grading</th>
<th>Only after succ. compl. of module(s)</th>
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<td>(not) successfully completed</td>
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<tr>
<th>Duration</th>
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<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</table>

**Contents**

This module will provide students with an insight into how the biotech and pharma industry functions: innovative therapeutics: from bench to bedside · the work of scouts · introduction to pharmaceutical drug development · the long journey from the research project via biotechnology and the pharma industry to the patient · biotech, pharma industry and the academic world: why join forces? · development of therapeutics at Novo Nordisk · what makes a successful biotech entrepreneur? · advances in antibody-based immunotherapy · the development of antibodies: a success story · risks and side effects · the TGN1412 study · current trends in antibody development.

**Intended learning outcomes**

Students will see behind the curtain of businesses and will understand the procedures and processes used by businesses in the bioscience sector.

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

V (1) + S (2)
Module taught in: German and/or English

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English creditable for bonus

**Allocation of places**

--

**Additional information**

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

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Module title | Module title | Abbreviation
---|---|---
Behavioral Physiology | 07-4BFNVO2-152-m01

Module coordinator | Module offered by
holder of the Chair of Behavioral Physiology and Sociobiology | Faculty of Biology

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

Duration | Module level | Other prerequisites
---|---|---
1 semester | undergraduate | --

Contents
Specific and comparative animal physiology with a focus on neurophysiology, sensory physiology and behavioural ecology.

Intended learning outcomes
Students have acquired knowledge and skills in the area of behavioural physiology. They are familiar with hypotheses and are proficient in methods used in research in this field.

Courses (type, number of weekly contact hours, language — if other than German)
V (1) + Ü (5)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.

Allocation of places
36 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: first, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas:
- Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot.
- Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot.
- Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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**Subdivided Module Catalogue for the Subject Biology**

Bachelor's with 1 major, 180 ECTS credits

<table>
<thead>
<tr>
<th>Module title</th>
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<tbody>
<tr>
<td>Virology 1</td>
<td>03-4S1VIR-152-m01</td>
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</table>

**Module coordinator**

holder of the Chair of Virology

**Module offered by**

Faculty of Medicine

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<tr>
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</table>

**Contents**

Introduction to virology; the infectious cycle; virus structure and assembly; adsorption and entry; genomes and genetics; RNA-viruses: mRNA-synthesis and RNA-genome replication; retroviruses: reverse transcription and integration; DNA-viruses: transcription and genome replication. Foundations of cell biology. Introduction to the scientific method and scientific approach; principles of antiviral therapy and vaccination; introduction to clinical virology; HIV and AIDS. Safe work in a BSL-2 laboratory; cell culture; virus production, titre test; virus sequencing, phylogenetic analysis of viral quasispecies.

**Intended learning outcomes**

Fundamental knowledge of molecular virology, the structure and replication of viruses and virus-host interactions; principles of antiviral vaccines and chemotherapeutics; principal techniques in cell and molecular biology for virological research.

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

V (1) + S (1) + P (3)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Assessment offered: Once a year, summer semester

**Allocation of places**

BA Biologie: 18 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their
average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according
to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking
will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwi-
se by lot.
Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of pla-
ces): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology;
among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 %
of places): number of subject semesters of the respective applicant; among applicants with the same number of
subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.
Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, pla-
ces will be allocated according to the selection process of group 1.

**Additional information**

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

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**Module title**
Virology 2

**Abbreviation**
03-5S2VL-152-m01

**Module coordinator**
holder of the Chair of Virology

**Module offered by**
Faculty of Medicine

**ECTS**
10

**Method of grading**
numerical grade

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

**Duration**
1 semester

**Module level**
undergraduate

**Other prerequisites**
--

**Contents**
This module addresses special virological problems using selected examples such as viral pathogenesis, interaction of viruses with host cells or the complete host, new developments in molecular virology, prevention and treatment of viral infections and the pathogenesis of prion diseases.

**Intended learning outcomes**
The students have acquired a specific knowledge of molecular virology. They are able to plan and perform experiments under guidance as well as to present them, taking into account current literature.

**Courses**
(temperature, number of weekly contact hours, language — if other than German)
V (1) + S (1) + P (6)

Module taught in: German and/or English

**Method of assessment**
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

**Allocation of places**
3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.
Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.
Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information
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Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module title | Virology 3
--- | ---
Abbreviation | 03-6S3VL-152-m01

Module coordinator | holder of the Chair of Virology
Module offered by | Faculty of Medicine

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

Duration | Module level | Other prerequisites
1 semester | undergraduate | --

Contents
In 6-week lab courses that will be accompanied by seminars, the module will address specific and current problems in virology and, in particular, questions of the viral pathogenesis of selected viruses and viral gene therapy.

Intended learning outcomes
The students acquire an advanced knowledge of molecular and cellular virology including the application of viral vectors (retroviral, adenoviral or AAV-based vectors) for gene therapy of innate or acquired diseases. They also develop skills in experimental design, the performance and evaluation of experiments as well as in the oral and written presentation of scientific results, taking into account current literature.

Courses (type, number of weekly contact hours, language — if other than German)
Ü (8) + S (1)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.
Language of assessment: German and/or English

Allocation of places
3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according
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Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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

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Scientific Work in Plant Ecophysiology

Module coordinator
holder of the Chair of Ecophysiology and Vegetation Ecology

Module offered by
Faculty of Biology

ECTS 15

Method of grading numerical grade

Only after succ. compl. of module(s)

Duration 1 semester

Module level undergraduate

Other prerequisites --

Contents
Using the examples of topics in contemporary research, students will be introduced to the concepts of good scientific practice, including planning research strategies, performing complex experiments as well as documenting and communicating research findings in the form of a presentation, a publication or a term paper. Students will be involved in ongoing research and will learn how to independently apply advanced methods in ecophysiology, analytical chemistry or molecular biology.

Intended learning outcomes
Students are able to independently conduct research on the ecophysiology of plants. They are able to independently address and document questions in the field of plant biology, adhering to the principles of good scientific practice.

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

Ü (8) + R (1) + S (1)
Module taught in: German and/or English

Method of assessment
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

creditable for bonus

Allocation of places
15 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biologie) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biologie) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biologie) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components...
in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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Publishing Scientific Data

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<th>Abbreviation</th>
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<td>Faculty of Biology</td>
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</table>

### Contents

Either alone or in small groups of two or three persons, students will select several journal articles from the field of life sciences. These will serve as the basis for a review article to be prepared by students. With two or three "core publications" as a basis, students will search data bases (e.g. PubMed) for literature that is directly related to these articles. The most important current original publications will be summed up in a review article; where applicable, students may also use their own raw data. The structure of this review article will comply with the standards of the scientific community as defined in the instructions to authors of a scientific journal. The article will contain at least one figure, one table as well as one schematic representation of the contents and will be divided up into the following sections: title, abstract, introduction and/or hypothesis/problem to be investigated, summary of results as well as current developments and discussion thereof. The article will also contain citations in the specified format. Students will also deliver a presentation on the contents of the article.

### Intended learning outcomes

Students will have learned to conduct a literature search on a specific topic. They will know how to get an overview of recent publications on a specific topic and will be familiar with basic rules for summing up original publications in a review article complying with the standards of the scientific community. Students will be familiar with the standards regarding the structure of reviews and will be able to properly cite sources. They will thus know what to keep in mind when writing scientific articles. In addition, students will be able to prepare and deliver an oral presentation on raw scientific data.

### Courses

S (2)
Module taught in: German and/or English

### Method of assessment

(1) (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- term paper (approx. 5 to 10 pages) and presentation (approx. 15 minutes), weighted 2:1
- Language of assessment: German and/or English
- creditable for bonus

### Allocation of places

30 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biologe) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biologe) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biologe) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathemathik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information
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Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module title: Molecular Biology of Cells 2
Abbreviation: 03-5S2ZM-152-m01

Module coordinator: holder of the Chair of Medical Radiation and Cell Research
Module offered by: Faculty of Medicine
ECTS: 10
Method of grading: numerical grade
Duration: 1 semester
Module level: undergraduate

Contents:
In this module, current problems in the research areas of stem cell biology and cellular differentiation will be discussed and specific solutions will be taught. With the help of selected examples, participants will acquire practical molecular biological techniques.

Intended learning outcomes:
Students have developed the ability to approach, analyse and critically interpret current problems in cellular molecular biology based on individually assigned tasks, using techniques of modern molecular and cell biology. They also have developed skills in experimental design, bench work, data analysis and the presentation of scientific results both orally and in writing.

Courses:
Module taught in: German and/or English

Method of assessment:
(a) written examination (approx. 45 to 60 minutes) or (b) log (approx. 10 to 20 pages) or (c) oral examination of one candidate each (approx. 30 minutes) or (d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or (e) presentation (approx. 20 to 30 minutes) or (f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

Allocation of places:
3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according
to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50 % of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25 % of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25 % of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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

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Module title: Cellular Molecular Biology 3
Abbreviation: 03-653ZM-152-m01

Module coordinator: holder of the Chair of Medical Radiation and Cell Research
Module offered by: Faculty of Medicine
ECTS: 15
Method of grading: numerical grade
Only after succ. compl. of module(s): --
Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents:
In this module, current problems in the research areas of stem cell biology and cellular differentiation will be discussed and specific solutions will be taught. With the help of selected examples, participants will acquire practical molecular biological techniques.

Intended learning outcomes:
Students have developed the ability to approach, analyse and critically interpret current problems in cellular molecular biology based on individually assigned tasks, using techniques of modern molecular and cell biology. They also have developed skills in experimental design, bench work, data analysis and the presentation of scientific results both orally and in writing.

Courses:
(type, number of weekly contact hours, language — if other than German)
Ü (9) + S (1)
Module taught in: German and/or English

Method of assessment:
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).
Students will be informed about the method and length of the assessment prior to the course.
Language of assessment: German and/or English

Allocation of places:
3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:
Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.
A waiting list will be maintained and places re-allocated as they become available.
Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according
to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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### Module title

<table>
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<th>Cellular Tumorbiology 2</th>
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</thead>
</table>

### Abbreviation

| 03-5S2ZT-152-m01 |

### Module coordinator

| Chair of Rudolf Virchow Center for Experimental Biomedicine |

### Module offered by

| Faculty of Medicine |

### ECTS

| 10 |

### Method of grading

| numerical grade |

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

| -- |

### Duration

| 1 semester |

### Module level

| undergraduate |

### Other prerequisites

| -- |

### Contents

Using specific examples and applying both biochemical analytical procedures and imaging techniques, this module will provide students with fundamental insights into cellular tumour biology and will acquaint them with the approaches of cellular tumour biology. With the help of selected examples, the module will explain fundamental causal relationships and approaches.

### Intended learning outcomes

Students have developed the ability to approach, analyse and critically interpret general problems in tumour biology based on individually assigned tasks, using techniques of modern cell biology and, in particular, imaging methods. They also have developed skills in experimental design, bench work, data analysis and the presentation of scientific results.

### Courses

**Type, number of weekly contact hours, language — if other than German**

| Ü (6) + S (2) |

Module taught in: German and/or English

### Method of assessment

**Type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus**

| a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). |

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

### Allocation of places

3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

### Selection process group 1 (95%)

Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)).
at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

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

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<td>03-6S3ZT-152-m01</td>
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<th>Module offered by</th>
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<td>Chair of Rudolf Virchow Center for Experimental Biomedicine</td>
<td>Faculty of Medicine</td>
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<th>Module level</th>
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</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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</tbody>
</table>

**Contents**

Discussing specific problems, this module will impart to students a more in-depth knowledge of tumour biology and will acquaint them with approaches in tumour biology.

**Intended learning outcomes**

Students have developed the ability to approach, analyse and critically interpret specific problems in tumour biology based on individually assigned tasks, using modern techniques and, in particular, imaging methods. They also have developed advanced skills in experimental design, bench work, data analysis and the presentation of scientific results.

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

Ü (9) + S (1)
Module taught in: German and/or English

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

**Allocation of places**

3 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: First, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according
to their total number of ECTS credits achieved (quantitative ranking). The applicants' position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking. Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

Additional information

Referred to in LPO I (examination regulations for teaching-degree programmes)
Module title: Cell- and Developmental Biology for Advanced Students
Abbreviation: 07-4BFMZ1-152-m01

Module coordinator: holder of the Chair of Cell Biology and Developmental Biology
Module offered by: Faculty of Biology

ECTS: 5
Method of grading: numerical grade
Duration: 1 semester
Module level: undergraduate
Other prerequisites: --

Contents
This module will acquaint students with the fundamental principles of the molecular developmental biology of animals. Particular emphasis will be placed on providing students with an opportunity to become proficient in fundamental methods and applications, using the help of examples.

Intended learning outcomes
Students are able to use fundamental methods to approach simple problems in animal developmental biology.

Courses (type, number of weekly contact hours, language — if other than German)
V (1) + Ü (5)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Creditable for bonus

Allocation of places
32 places. Should the number of applications exceed the number of available places, places will be allocated as follows:

Students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits will be given preferential consideration. Should the module be used in other subjects, there will be two quotas: 95% of places will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 180 ECTS credits and 5% of places (a minimum of one place in total) will be allocated to students of the Bachelor’s degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor’s degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biologie (as well as potentially to students of other ‘importing’ subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the other quota. Should there be, within one module component, several courses with a restricted number of places, there will be a uniform regulation for the courses of one module component. In this case, places on all courses of a module component that are concerned will be allocated in the same procedure. In this procedure, applicants who already have successfully completed at least one other module component of the respective module will be given preferential consideration.

A waiting list will be maintained and places re-allocated as they become available.

Selection process group 1 (95%): Places will primarily be allocated according to the applicants’ previous academic achievements. For this purpose, applicants will be ranked according to the number of ECTS credits they have achieved and their average grade of all assessments taken during their studies or of all module components in the subject of Biologie (Biology) (excluding Chemie (Chemistry), Physik (Physics), Mathematik (Mathematics)) at the time of application. This will be done as follows: first, applicants will be ranked, firstly, according to their average grade weighted according to the number of ECTS credits (qualitative ranking) and, secondly, according to their total number of ECTS credits achieved (quantitative ranking). The applicants’ position in a third ranking will be calculated as the sum of these two rankings, and places will be allocated according to this third ranking.
Among applicants with the same ranking, places will be allocated according to the qualitative ranking or otherwise by lot.

Selection process group 2 (5%): Places will be allocated according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in modules/module components of the Faculty of Biology; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): lottery.

Should the module be used only in the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits, places will be allocated according to the selection process of group 1.

**Additional information**

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

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Module title                              | Abbreviation
----------------------------------------|---------------
Additional Qualification outside Natural Sciences 2 | 07-SQF-ZQA2-152-m01

Module coordinator: BioCareers
Module offered by: Faculty of Biology

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

Duration | Module level | Other prerequisites
---------|--------------|---------------------
1 semester | undergraduate | --

Contents

Courses in areas other than the natural sciences that are not offered as part of the pool of general transferable skills (ASQ) and that provide students with an opportunity to strengthen their general background in the natural sciences. These courses may be offered by the University of Würzburg or by external institutions. Decision on credit transfer to be made by examination committee. Will include 2 to 3 all-day courses.

Intended learning outcomes

Students have expanded their interdisciplinary knowledge and have thus enhanced their general scientific skills. They have acquired additional expertise and have developed additional skills in areas other than biology.

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

V (0.5) + S (0.5)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English creditable for bonus

Allocation of places
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Additional information
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Referred to in LPO I (examination regulations for teaching-degree programmes)
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### Additional Qualification outside Natural Sciences 3

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#### Contents

Courses in areas other than the natural sciences that are not offered as part of the pool of general transferable skills (ASQ) and that provide students with an opportunity to strengthen their general background in the natural sciences. These courses may be offered by the University of Würzburg or by external institutions. Decision on credit transfer to be made by examination committee. Will include courses with 1 weekly contact hour.

#### Intended learning outcomes

Students have expanded their interdisciplinary knowledge and have thus enhanced their general scientific skills. They have acquired additional expertise and have developed additional skills in areas other than biology.

#### Courses

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#### Method of assessment

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#### Allocation of places

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#### Additional information

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#### Referred to in LPO I

(examination regulations for teaching-degree programmes)
### Additional Qualification outside Natural Sciences 4

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### Contents

Courses in areas other than the natural sciences that are not offered as part of the pool of general transferable skills (ASQ) and that provide students with an opportunity to strengthen their general background in the natural sciences. These courses may be offered by the University of Würzburg or by external institutions. Decision on credit transfer to be made by examination committee. Will include one week of all-day courses.

### Intended learning outcomes

Students have expanded their interdisciplinary knowledge and have thus enhanced their general scientific skills. They have acquired additional expertise and have developed additional skills in areas other than biology.

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

V (0.5) + S (1.5)  
Module taught in: German and/or English

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or  
b) log (approx. 10 to 20 pages) or  
c) oral examination of one candidate each (approx. 30 minutes) or  
d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or  
e) presentation (approx. 20 to 30 minutes) or  
f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).  
Students will be informed about the method and length of the assessment prior to the course.  
Language of assessment: German and/or English  
creditable for bonus

### Allocation of places

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### Additional information

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

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### Additional Qualification outside Natural Sciences 5

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### Contents

Courses in areas other than the natural sciences that are not offered as part of the pool of general transferable skills (ASQ) and that provide students with an opportunity to strengthen their general background in the natural sciences. These courses may be offered by the University of Würzburg or by external institutions. Decision on credit transfer to be made by examination committee. Will include courses with 2 weekly contact hours.

### Intended learning outcomes

Students have expanded their interdisciplinary knowledge and have thus enhanced their general scientific skills. They have acquired additional expertise and have developed additional skills in areas other than biology.

### Courses

V (0.5) + S (2)

Module taught in: German and/or English

### Method of assessment

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

### Allocation of places

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### Additional information

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### Referred to in LPO I

(examination regulations for teaching-degree programmes)
Subdivided Module Catalogue for the Subject Biology
Bachelor's with 1 major, 180 ECTS credits

### Module title
Additional Qualification outside Natural Sciences 6

### Abbreviation
07-SQF-ZQA6-152-m01

### Module coordinator
BioCareers

### Module offered by
Faculty of Biology

### ECTS
5

### Method of grading
numerical grade

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

### Module level
undergraduate

### Other prerequisites
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### Contents
Courses in the natural sciences not offered as part of the pool of general transferable skills (ASQ) that equip students with advanced knowledge in the natural sciences that is related to their discipline. These courses may be offered by the University of Würzburg or by external institutions. Decision on credit transfer to be made by examination committee.

### Intended learning outcomes
Students have developed an improved scientific knowledge and have thus enhanced their specific qualifications. They have acquired additional expertise that will help them specialise in their field.

### Courses

**V (0.5) + S (2)**

Module taught in: German and/or English

### Method of assessment

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

creditable for bonus

### Allocation of places
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### Additional information
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### Referred to in LPO 1
(examination regulations for teaching-degree programmes)
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**Intended learning outcomes**

Students have developed an improved scientific knowledge and have thus enhanced their specific qualifications. They have acquired additional expertise that will help them specialise in their field.

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

V (0.5) + S (0.5) + Ü (0.5)

Module taught in: German and/or English

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English
creditable for bonus

**Allocation of places**

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**Additional information**

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

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### Intended learning outcomes

Students have developed an improved scientific knowledge and have thus enhanced their specific qualifications. They have acquired additional expertise that will help them specialise in their field.

### Courses

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Module taught in: German and/or English

### Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

- a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours). Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

### Allocation of places

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### Additional information

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### Referred to in LPO I

(examination regulations for teaching-degree programmes)

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### Additional Qualification in Natural Sciences 4

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#### Module coordinator
Coordinator: BioCareers

#### Module offered by
Faculty of Biology

#### ECTS
4

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

#### Duration
1 semester

#### Module level
Undergraduate

#### Other prerequisites
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### Contents
Courses in the natural sciences not offered as part of the pool of general transferable skills (ASQ) that equip students with advanced knowledge in the natural sciences that is related to their discipline. These courses may be offered by the University of Würzburg or by external institutions. Decision on credit transfer to be made by examination committee.

### Intended learning outcomes
Students have developed an improved scientific knowledge and have thus enhanced their specific qualifications. They have acquired additional expertise that will help them specialise in their field.

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Module taught in: German and/or English

### Method of assessment

- a) written examination (approx. 45 to 60 minutes)
- b) log (approx. 10 to 20 pages)
- c) oral examination of one candidate each (approx. 30 minutes)
- d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate)
- e) presentation (approx. 20 to 30 minutes)
- f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

creditable for bonus

### Allocation of places
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### Additional information
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### Referred to in LPO I
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### Intended learning outcomes

Students have developed an improved scientific knowledge and have thus enhanced their specific qualifications. They have acquired additional expertise that will help them specialise in their field.

### Courses

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

V (1) + S (1) + Ü (1)

Module taught in: German and/or English

### Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

creditable for bonus

### Allocation of places

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### Additional information

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### Referred to in LPO 1

(examination regulations for teaching-degree programmes)

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Additional Qualification in Natural Sciences 6

Module title

Abbreviation

07-SQF-ZQN6-152-m01

Module coordinator

Coordinator BioCareers

Module offered by

Faculty of Biology

ECTS

Method of grading

Only after succ. compl. of module(s)

5

numerical grade

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Duration

Module level

Other prerequisites

1 semester

undergraduate

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Courses in the natural sciences not offered as part of the pool of general transferable skills (ASQ) that equip students with advanced knowledge in the natural sciences that is related to their discipline. These courses may be offered by the University of Würzburg or by external institutions. Decision on credit transfer to be made by examination committee.

Intended learning outcomes

Students have developed an improved scientific knowledge and have thus enhanced their specific qualifications. They have acquired additional expertise that will help them specialise in their field.

Courses

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

V (1) + S (1) + Ü (1)

Module taught in: German and/or English

Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) written examination (approx. 45 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (approx. 30 minutes) or d) oral examination in groups of up to 3 candidates (approx. 20 minutes per candidate) or e) presentation (approx. 20 to 30 minutes) or f) practical examination (on average approx. 2 hours; time to complete will vary according to subject area but will not exceed a maximum of 4 hours).

Students will be informed about the method and length of the assessment prior to the course.

Language of assessment: German and/or English

creditable for bonus

Allocation of places

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Additional information

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

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