Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

Module Catalogue

for the Subject

Biology

as Unterrichtsfach

with the degree "Erste Staatsprüfung für das Lehramt an Realschulen"

Examination regulations version: 2015
Responsible: Faculty of Biology

Contents

The subject is divided into

Abbreviations used

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

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

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

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

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

Conventions

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

Notes

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

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

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

In accordance with

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

LASPO2015

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

20-Oct-2015 (2015-196)

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.

Scientific Discipline

(60 ECTS credits)

Compulsory Courses

(54 ECTS credits)

Module title			Abbreviation
Structure and Function of Cells			07-LA-BIO1-ZE-152-m01
Module coordinator		**Module offered by**	
holder of the Chair of Botany I		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
4	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

The first part of this lecture series will provide you with an overview of the physical and chemical bases of life. We will then explore the internal organisation and the morphology of the cell, the fundamental unit of life. In this context, we will discuss the "general" functional elements of the cell, comparing prokaryotic, animal and plant cells. After having discussed cell evolution, we will set out on a journey through the cell, exploring the extracellular matrix/cell wall, cytoskeleton, organelles and nucleus. To help you understand how a cell functions, we will discuss the functions of these components. During exercises, practical examples will provide you with an opportunity to explore the material in more detail: we will work with microscopic preparations, complete exercises and use multimedia aids. You will learn and practise preparation and light microscopy techniques that you will apply in the exercise of the module *Das Pflanzen- und Tierreich* (*The Plant and Animal Kingdoms*). In addition, we will discuss aspects related to everyday procedures in biological laboratories.

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 (2) + Ü (3)

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

written examination (approx. 60 minutes)
creditable for bonus

Allocation of places

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Additional information

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Workload

120 h

Teaching cycle

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

§ 41 I Nr. 1 (3 ECTS credits) and § 41 I Nr. 3 (1 ECTS credits) (The major part of exercises in the field of Biology at the University of Würzburg is of practical typ and correspond to to the lab courses given in LPO I.)
§ 61 I Nr. 1 (3 ECTS credits) and § 61 I Nr. 3 (1 ECTS credits)

Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Plant Kingdom			07-LA-BIO1-PF-152-m01
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)**	
4	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

The lecture will discuss the evolution and systematics of plants and fungi as well as the anatomy of higher plants. Students will acquire a fundamental knowledge of the major cell and tissue types of higher plants from germination to reproduction. In addition, important groups of fungi, algae, mosses and vascular plants will be discussed in the context of evolutionary biology. Using the example of selected species, the course will investigate the anatomy and evolutionary biology of lower and higher plants. In this context, students will practise working with light microscopes and magnifying glasses and will acquire fundamental preparation skills. They will prepare drawings, documenting and interpreting what they have seen. Media aids will also be used in the exercise.

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 (1.5) + Ü (2.5)

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

written examination (approx. 60 minutes)
creditable for bonus

Allocation of places

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Additional information

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Workload

120 h

Teaching cycle

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

§ 41 I Nr. 1
§ 61 I Nr. 1

Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Evolution and the Animal Kingdom			07-LA-1A1TI-152-m01
Module coordinator		**Module offered by**	
Dean of Studies Biologie (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

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 is creditable for bonus)

written examination (approx. 60 minutes)
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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

§ 41 I Nr. 1 (4 ECTS credits)
§ 41 I Nr. 4 (1 ECTS credits)
§ 61 I Nr. 1 (4 ECTS credits)
§ 61 I Nr. 4 (1 ECTS credits)

Module appears in
First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Plant Physiology - GMR			07-GMR-PHYPF-152-m01
Module coordinator		**Module offered by**	
holder of the Chair of Botany I		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
4	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

This module will acquaint students with the principles of general and comparative plant physiology and will provide them with an opportunity to become proficient in the methods applied in physiological laboratories. The course will first explain the biochemical bases of the reactions within plant cells as well as how these reactions are coordinated. In addition, the physiological processes that are characteristic of plants will be investigated in detail.

Intended learning outcomes

Students acquire an overview of cutting edge research in their field as well as an understanding of new and current methods.

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

Ü (2)

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

written examination (approx. 60 minutes)
creditable for bonus

Allocation of places

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Additional information

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Workload

120 h

Teaching cycle

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

§ 41 I Nr. 2

Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Animal Physiology			07-LA-2A2PHYTI-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)**	
4	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

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 is creditable for bonus)

written examination (approx. 60 minutes)
creditable for bonus

Allocation of places

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Additional information

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Workload

120 h

Teaching cycle

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

§ 41 I Nr. 2
§ 61 I Nr. 2

Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Plant and Animal Ecology - GMR			07-GMR-OEKO-152-m01
Module coordinator		**Module offered by**	
Dean of Studies Biologie (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

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 and ecosystems. Students will be introduced to fundamental model concepts of ecology 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 have developed a fundamental understanding of the assessment of environmental issues.

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 is creditable for bonus)

written examination (approx. 90 minutes)
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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

§ 41 I Nr. 4

Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Genetics and Behaviour			07-GMR-GV-152-m01
Module coordinator		**Module offered by**	
Dean of Studies Biologie (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

Students will become familiar with classic Mendelian genetics as well as modern findings on the transmission of genetic information, potential errors in the transmission of genetic information and the respective consequences for the phenotype. The module will discuss the structural and molecular fundamentals of the DNA as well as the structure of the eukaryotic genome. Building on this knowledge, the module will provide students with an overview of methods in genetics. Having been simplified for teaching purposes, these methods will then be applied in experiments on the model organism Drosophila melanogaster.

Intended learning outcomes

Students are able to recognise the DNA as a repository of information that is a key factor determining the phenotype of an organisms. They understand that regulation is necessary during genome expression and recognise the principles behind the respective mechanisms. In addition, students are able to discuss methods in genetics as well as the relevance these have to medicine. They are able to differentiate between ultimate and proximate causes of behaviour as well as to explain classical experiments in behavioural biology and the biology of learning. Students are also able to describe the fundamental principles of sociobiology and to evaluate the need for communication in the animal kingdom.

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

V (1) + Ü (3.5)

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

written examination (approx. 60 minutes)
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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

§ 41 I Nr. 3 (3 ECTS credits), § 41 I Nr. 4 (2 ECTS credits)

Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
The Flora of Germany			07-LA-FLORA-152-m01
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	Admission prerequisite to assessment: regular attendance of field trips (minimum 80%).	

Contents

The module will discuss the fundamental principles of the systematics and ecology of flowering plants. Students will acquire an overview of the major flowering plants to be found in the temperate zone as well as their ecological and economic importance. Using the field guide *Flora von Deutschland* by Schmeil-Fitschen, 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)

E (2.5) + V (1) + Ü (2)

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

written examination (approx. 45 minutes) and practical identification assignment (approx. 45 minutes)
Assessment offered: Once a year, summer semester
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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

§ 41 I Nr. 1 (3 ECTS credits) and § 41 I Nr. 4 (2 ECTS credits)
§ 61 I Nr. 1 (3 ECTS credits) and § 61 I Nr. 4 (2 ECTS credits)

Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)

First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
The Fauna of Germany			07-LA-FAUNA-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	Admission prerequisite to assessment: regular attendance of field trips (minimum 80%).	

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 (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 is creditable for bonus)

written examination (approx. 45 minutes) and practical identification assignment (approx. 45 minutes)
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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

§ 61 I Nr. 1 (3 ECTS credits) and § 61 I Nr. 4 (2 ECTS credits), 41 I Nr. 1 (3 ECTS credits) and § 41 I Nr. 4 (2 ECTS credits)

Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Basic Human Biology I - GMR			07-GMR-HUBIO-1-152-m01
Module coordinator		**Module offered by**	
holder of the Chair of Cell Biology and Developmental Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
4	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

This module will be divided up into three sections covering the following topics:
- human genetics (genetic disease, inheritance, the issue of euthanasia),
- human physiology (human sensory physiology, nutrition, maintaining physical health),
- human developmental physiology (sex organs, impregnation, embryonic development, evolutionary history of modern humans).

Intended learning outcomes

- Familiarity with the fundamental principles of human genetics

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 is creditable for bonus)

written examination (approx. 60 to 90 minutes)
creditable for bonus

Allocation of places

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Additional information

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Workload

120 h

Teaching cycle

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

§ 41 I Nr. 5

Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Basic Human Biology II			07-LA-HUBIO-2-152-m01
Module coordinator		**Module offered by**	
holder of the Chair of Zoology I		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	(not) successfully completed	07-LA-HUBIO-1 or 07-GMR-HUBIO-1	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Experiments to consolidate the students' knowledge of the topics covered in the lecture: We will examine preparations under the microscope, make drawings, develop genetic diagrams showing the inheritance of diseases, perform experiments on human physiology.

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

Ü (3)

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

Logs (approx. 30 hours) and 10 to 15 drawings
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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

§ 41 I Nr. 5
§ 61 I Nr. 5

Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Module title			Abbreviation
Advanced Microbiology - GMR			07-GMR-MIBI-152-m01
Module coordinator		**Module offered by**	
holder of the Chair of Microbiology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
4	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

This module will provide students with an opportunity to deepen their knowledge and skills related to aspects covered in *Die prokaryotische Zelle* (*The Prokaryotic Cell*) during their first semester. Students will become familiar with the fundamental principles of the metabolic physiology of bacteria and will learn how to differentiate bacteria according to their respective metabolic performance. They will consolidate their knowledge related to the classification of bacteria into archaebacteria and eubacteria based on their respective characters. In addition, the module will discuss the use of microorganisms in industry and technology as well as the pathogenic properties of some species of microorganisms and the diseases caused by these.

Intended learning outcomes

- Familiarity with methods typically used in microbiology labs and ability to use these.
- Knowledge of the difference between gram-negative and gram-positive bacteria.
- Ability to name the different divisions of the bacterial kingdom as well as some important representatives.
- Ability to name metabolic performances of bacteria.
- Familiarity with methods for the differentiation of bacteria according to their metabolic performance.
- Familiarity with the role bacteria play in nutrient cycles in nature.
- Familiarity with industrial processes involving microorganisms and products of these.
- Ability to evaluate the pathogenic potential of bacteria.

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

Ü (2)

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

written examination (approx. 60 minutes)
creditable for bonus

Allocation of places

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Additional information

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Workload

120 h

Teaching cycle

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

§ 41 I Nr. 2 (2 ECTS credits), § 41 I Nr. 3 (2 ECTS credits)

Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))

Compulsory Electives

(6 ECTS credits)

Module title			Abbreviation
Advanced Biology - Botany (RS)			07-RS-FBW-B-152-m01
Module coordinator		**Module offered by**	
Dean of Studies Biologie (Biology)		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
6	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Students may complete the practical course *Schwerpunkt-Praktikum* either in zoology or in botany. The course will build on the knowledge and skills students have acquired in previous courses and will revisit selected aspects. Students will perform experiments to explore these aspects in more detail. The seminar will address classical and current topics in biology with students delivering presentations and discussing the respective topics.

Intended learning outcomes

Students completing the practical course in botany will become familiar with plant molecular physiology. They will learn how to investigate problems related to the development and adaptation of plants in/to different environmental conditions, using methods in molecular biology, cell biology and biophysics. In addition, students will become familiar with the challenges biotic and abiotic environmental factors pose to plants as well as with mechanisms for overcoming these. Students will be introduced to current topics in biology and will learn how to use research literature. They will be able to extract key facts from a scientific text and to present these in a comprehensible way.

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

Ü (5) + S (2)

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

written examination (approx. 60 minutes)
creditable for bonus

Allocation of places

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Additional information

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Workload

180 h

Teaching cycle

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

§ 41 I Nr. 2

Module appears in

First state examination for the teaching degree Realschule Biology (2015)

Module title			Abbreviation
Advanced Biology - Zoology (RS)			07-RS-FBW-Z-152-m01
Module coordinator		**Module offered by**	
Dean of Studies Biologie (Biology)		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
6	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Students may complete the practical course *Schwerpunkt-Praktikum* either in zoology or in botany. The course will build on the knowledge and skills students have acquired in previous courses and will revisit selected aspects. Students will perform experiments to explore these aspects in more detail. The seminar will address classical and current topics in biology with students delivering presentations and discussing the respective topics.

Intended learning outcomes

Students completing the practical course in zoology will have become familiar with the circulatory system of different classes of vertebrates as well as with the internal structures of the organs of a range of vertebrates. In addition, they will know how to address problems in behavioural biology. Students completing the practical course in botany will become familiar with plant molecular physiology. They will learn how to investigate problems related to the development and adaptation of plants in/to different environmental conditions, using methods in molecular biology, cell biology and biophysics. In addition, students will become familiar with the challenges biotic and abiotic environmental factors pose to plants as well as with mechanisms for overcoming these. Students will be introduced to current topics in biology and will learn how to use research literature. They will be able to extract key facts from a scientific text and to present these in a comprehensible way.

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

Ü (5) + S (2)

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

written examination (approx. 60 minutes)
creditable for bonus

Allocation of places

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Additional information

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Workload

180 h

Teaching cycle

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

§ 41 I Nr. 2

Module appears in

First state examination for the teaching degree Realschule Biology (2015)

Teaching

(12 ECTS credits)

Compulsory Courses

(12 ECTS credits)

Module title			Abbreviation
Didactics in Biology I: Basics GMR			07-GMR-FDBIO-1-152-m01
Module coordinator		**Module offered by**	
head of group Didactics of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
6	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

The lecture *Einführung in die Fachdidaktik Biologie* (*Introduction to Biology Didactics*) will discuss central concepts and principles of biology lessons as well as methods in biology and teaching aids. Building on this knowledge, students will learn how to outline problem-based biology lessons. The course will discuss topics such as modes of interaction in the classroom, teaching methods and approaches, the definition of learning outcomes, out-of-classroom learning environments, topics and theories in biology didactics etc. The seminar *Biologieunterricht* (*The Biology Classroom*) will equip students with detailed knowledge on how to plan and design classes for the respective type of school. Students will prepare didactic analyses on topics from the curriculum. They will discuss general aspects of curriculum theory and, working in small teams, will translate the material to be taught, in a didactically reduced manner, into teaching sequences and lessons. At the same time, students will integrate different teaching methods and modes of interaction in the classroom (as well as teaching aids) into their lessons, keeping in mind what is and what is not possible in the respective type of school, and will deliver their lessons or parts of these in the seminar. Didactic aspects will be evaluated and discussed in class. There will be separate seminars for each type of school; please select the seminar for the school type for which you are pursuing a teaching degree. Using examples from the classroom, the seminar *Unterrichtsmittel* (*Teaching Aids*) will acquaint students with specific teaching aids (originals, preparations and media) for use in the biology classroom and will assess these with regard to the media literacy skills to be developed. The seminar will discuss both traditional aids used in the biology classroom (models, blackboard, OHP, transparencies, textbook and worksheets etc.) and modern aids (computer simulations, ppt presentations etc.). After having received a theoretical introduction to teaching aids, students will be arranged into small teams that will deliver lessons or individual phases of lessons on specific topics from the curriculum. They will focus on a teaching aid of their choice which will subsequently be assessed with regard to aspects of media didactics.

Intended learning outcomes

- Familiarity with relevant aspects of biology didactics
- Ability to design lively biology lessons, using original objects and teaching aids.
- Ability to use methods in biology in a way that promotes the learning processes of pupils.
- Familiarity with both biology-specific and interdisciplinary topics from the curriculum for the respective type of school.
- Ability to prepare scientific analyses on selected topics from the curriculum for the respective type of school and to subsequently present these topics in a manner that is tailored to the target group.
- Ability to prepare didactic analyses on topics from the curriculum for the respective type of school.
- Ability to translate, with the help of didactic analyses, selected topics from the curriculum into teaching sequences and lessons as well as to deliver these teaching sequences and lessons, applying problem-based and/or open teaching methods.
- Knowledge of the fact that the term "teaching aids in the biology classroom" refers to originals, preparations and media.
- Familiarity with a biology-specific, didactic definition of the term "media".
- Overview of classifications of media, factors that influence the choice of media as well as the function of media.
- Familiarity with the limitations and problems associated with the use of media in the classroom.
- Practical skills using media of all kinds (hardware side).
- Ability to independently prepare teaching aids.
- Ability to use teaching aids in classroom situations in a way that is appropriate for pupils and the material taught.

- Advantages and disadvantages of specific teaching aids; limitations associated with the use of media in the classroom.

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

V (2) + S (3)

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

written examination (approx. 60 minutes)
creditable for bonus

Allocation of places

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Additional information

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Workload

180 h

Teaching cycle

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

§ 41 I Nr. 6

Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Didactics Biology II: Special Didactics GMR			07-GMR-FDBIO-2-152-m01
Module coordinator		**Module offered by**	
head of group Didactics of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
6	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

In the seminar *Arbeitstechniken und Schulversuche* (*Methods and Experiments in the Classroom*), students will be arranged into small teams and will perform a variety of experiments on classic topics in biology. The experiments, which will be tailored to the requirements of the respective type of school, will subsequently be assessed in class with regard to didactic aspects and/or will be integrated into concrete classroom situations. Students will thus acquire techniques and background knowledge that will enable them to deliver lively and motivating lessons to different age groups. The seminar *Freilandbiologie* (*Outdoor Biology*) will explore general aspects on how students may incorporate field trips to out-of-classroom learning environments into their teaching. In addition to the scientific identification and characterisation of plant and/or animal communities in their natural habitats, the seminar will discuss didactic and pedagogical criteria for the selection of out-of-classroom learning environments that are relevant for the respective type of school. In this context, the course will also discuss the opportunities and limitations of out-of-classroom learning. Designing practice-oriented teaching units, students will practise teaching the identification of indigenous animals and plants to fellow students and/or groups of pupils in selected out-of-classroom learning environments.

Intended learning outcomes

- Ability to implement experiments typically performed in the biology classroom and to integrate them into activity and problem-based lessons.
- Ability to define research methods in the natural sciences and to match these up with selected classroom experiments.
- Ability to analyse and evaluate the practical implementation with experiments in the classroom as well as research methods in the natural sciences, taking didactic aspects into account.
- Ability to evaluate the significance of original encounters with nature in out-of-classroom learning environments as key elements of biology lessons.
- Ability to prepare and deliver a session in an out-of-classroom learning environment and to perform the respective follow-up work.
- Ability to impart a knowledge of species and form in a didactically reduced manner that is tailored to the needs of the respective group of pupils.

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

S (2) + S (2)

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

portfolio (approx. 30 hours)
creditable for bonus

Allocation of places

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Additional information

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Workload

180 h

Teaching cycle
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Referred to in LPO I (examination regulations for teaching-degree programmes)
§ 41 I Nr. 6
Module appears in
First state examination for the teaching degree Grundschule Biology (2015) First state examination for the teaching degree Realschule Biology (2015) First state examination for the teaching degree Mittelschule Biology (2015) First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))

Paper

(4 ECTS credits)

Students studying for a teaching degree Realschule must complete a practical training in didactics and teaching methodology (studienbegleitendes fachdidaktisches Praktikum) which refers to one of the subjects they selected as vertieft studiertes Fach (subject studied with a focus on the scientific discipline) pursuant to Section 34 Subsection 1 No. 4 LPO I (examination regulations for teaching-degree programmes). The obligatory accompanying tutorial is offered by the respective subject. The ECTS credits obtained are counted in the subject Erziehungswissenschaften pursuant to Section 10 Subsection 3 LASPO (general academic and examination regulations for teaching-degree programms).

Module title			Abbreviation
Practical Training in Didactics and Teaching Methodology and accompanying tutorial in Biology (Realschulen)			07-RS-FDSP-152-m01
Module coordinator		**Module offered by**	
head of group Didactics of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
4	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

The one-semester practical training in didactics and teaching methodology (*studienbegleitendes fachdidaktisches Praktikum*) for students pursuing a teaching degree *Realschule* will provide students with an opportunity to make subject-specific observations, under the guidance of an experienced teacher, of how pupils and teachers act in the classroom. In the course accompanying the practical training, students will analyse the experiences they made at school in detail and will become familiar with fundamental principles of biology didactics. They will also acquire an advanced knowledge on how to plan, structure and deliver lessons and will implement what they have learned, delivering several lessons to their placement classes and preparing didactic analyses.

Intended learning outcomes

- Knowledge on how to structure problem-based biology lessons. Overview of teaching methods, modes of interaction in the classroom, teaching aids as well as methods in biology. Insight into the diverse range of tasks a teacher's job includes. Overview of the disciplinary measures teachers may take. Ability to translate topics from the curriculum , in a didactically reduced manner, into teaching sequences, teaching units and lessons. Ability to deliver the respective lessons to a group of pupils.

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

S (2) + P (4)

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

term paper (15 to 20 pages)
Participation in mandatory teaching practice, completion of all set tasks as specified by the placement school.
creditable for bonus

Allocation of places

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Additional information

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Workload

120 h

Teaching cycle

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

§ 34 I S. 1 Nr. 4

Module appears in

First state examination for the teaching degree Realschule Educational Science (2015)

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

(ECTS credits)

Teaching degree students must take modules worth a total of 15 ECTS credits in the area Freier Bereich (general as well as subject-specific electives) (Section 9 LASPO (general academic and examination regulations for teaching-degree programmes)). To achieve the required number of ECTS credits, students may take any modules from the areas below.
Freier Bereich -- interdisciplinary: The interdisciplinary additional offer for a teaching degree can be found in the respective Annex "Ergänzende Bestimmungen für den "Freien Bereich" im Rahmen des Studiums für ein Lehramt".

Biology

(ECTS credits)

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

Module title			Abbreviation
Supervising Tutorial for Basic Courses 3			07-SQF-TFB3-152-m01
Module coordinator		**Module offered by**	
degree programme coordinator Biologie (Biology)		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
3	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

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 is creditable for 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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Workload

90 h

Teaching cycle

--

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

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Module appears in

Bachelor's degree (1 major) Biology (2015)
First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
Bachelor's degree (1 major) Biology (2017)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))
Bachelor's degree (1 major) Biology (2021)
Bachelor's degree (1 major) Biology (2022)

Module title			Abbreviation
Supervising Tutorial for Basic Courses 4			07-SQF-TFB4-152-m01

Module coordinator	Module offered by
degree programme coordinator Biologie (Biology)	Faculty of Biology

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

Duration	Module level	Other prerequisites
1 semester	undergraduate	--

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 is creditable for bonus)

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

Allocation of places

--

Additional information

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Workload

120 h

Teaching cycle

--

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

--

Module appears in

Bachelor's degree (1 major) Biology (2015)
First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
Bachelor's degree (1 major) Biology (2017)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))
Bachelor's degree (1 major) Biology (2021)
Bachelor's degree (1 major) Biology (2022)

Module title			Abbreviation
Supervising Tutorial for Basic Courses 5			07-SQF-TFB5-152-m01
Module coordinator		**Module offered by**	
degree programme coordinator Biologie (Biology)		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

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 is creditable for bonus)

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

Allocation of places

--

Additional information

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Workload

150 h

Teaching cycle

--

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

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Module appears in

Bachelor's degree (1 major) Biology (2015)
First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
Bachelor's degree (1 major) Biology (2017)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))
Bachelor's degree (1 major) Biology (2021)
Bachelor's degree (1 major) Biology (2022)

Module title			Abbreviation
Supervising Tutorial for Biology 2			07-SQF-TSB2-152-m01
Module coordinator		**Module offered by**	
Coordinator BioCareers		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	graduate	--	

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 is creditable for bonus)

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

Allocation of places

--

Additional information

--

Workload

60 h

Teaching cycle

--

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

--

Module appears in

Bachelor's degree (1 major) Biology (2015)
First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
Bachelor's degree (1 major) Biology (2017)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))
Bachelor's degree (1 major) Biology (2021)
Bachelor's degree (1 major) Biology (2022)

Module title			Abbreviation
Supervising Tutorial for Biology 3			07-SQF-TSB3-152-m01
Module coordinator		**Module offered by**	
Coordinator BioCareers		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
3	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

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 is creditable for bonus)

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

Allocation of places

--

Additional information

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Workload

90 h

Teaching cycle

--

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

--

Module appears in

Bachelor's degree (1 major) Biology (2015)
First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
Bachelor's degree (1 major) Biology (2017)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))
Bachelor's degree (1 major) Biology (2021)
Bachelor's degree (1 major) Biology (2022)

Module title			Abbreviation
Additional Qualification MINT 2			07-LA-ZQN2-152-m01
Module coordinator		**Module offered by**	
degree programme coordinator Biologie (Biology)		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 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)

S (2)

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

written examination (approx. 60 minutes)
creditable for bonus

Allocation of places

--

Additional information

--

Workload

60 h

Teaching cycle

--

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

--

Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Grundschule Didactics in Biology (Primary School) (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))
First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Additional Qualification MINT 3			07-LA-ZQN3-152-m01

Module coordinator	Module offered by
degree programme coordinator Biologie (Biology)	Faculty of Biology

ECTS	Method of grading	Only after succ. compl. of module(s)
3	(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 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 (type, number of weekly contact hours, language — if other than German)

S (3)

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

written examination (approx. 60 minutes)
creditable for bonus

Allocation of places

--

Additional information

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Workload

90 h

Teaching cycle

--

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

--

Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Grundschule Didactics in Biology (Primary School) (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))
First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Additional Qualification MINT 4			07-LA-ZQN4-152-m01
Module coordinator		**Module offered by**	
degree programme coordinator Biologie (Biology)		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
4	(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 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)

S (4)

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

written examination (approx. 60 minutes)
creditable for bonus

Allocation of places

--

Additional information

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Workload

120 h

Teaching cycle

--

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

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Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Grundschule Didactics in Biology (Primary School) (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))
First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Additional Qualification MINT 5			07-LA-ZQN5-152-m01
Module coordinator		**Module offered by**	
degree programme coordinator Biologie (Biology)		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	(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 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)

S (4)

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

written examination (approx. 60 minutes)
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

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

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Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Grundschule Didactics in Biology (Primary School) (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))
First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Additional Qualification MINT 6			07-LA-ZQN6-152-m01
Module coordinator		**Module offered by**	
degree programme coordinator Biologie (Biology)		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

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

S (4)

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

written examination (approx. 60 minutes)
creditable for bonus

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

--

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

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Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Grundschule Didactics in Biology (Primary School) (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))
First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Ecology and Developmental Biology of Marine Organisms			07-4S1MEER-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

A combination of lab work and field trips, this module will provide students with an insight both into the organismal 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 (type, number of weekly contact hours, language — if other than German)

Ü (4) + E (2) + S (2)

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

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 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, 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 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 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 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 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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Workload

150 h

Teaching cycle

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

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Module appears in

Bachelor's degree (1 major) Biology (2015)
First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
Bachelor's degree (1 major) Biology (2017)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))
Bachelor's degree (1 major) Biology (2021)
Bachelor's degree (1 major, 1 minor) Biology (Minor, 2021)
Bachelor's degree (1 major) Biology (2022)
exchange program Biosciences (2022)

Module title			Abbreviation
Excursion on Zoology or Botany I			07-LA-EXKURS1-152-m01
Module coordinator		**Module offered by**	
degree programme coordinator Biologie (Biology)		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

During this multi-day botanical or zoological teaching hike, students will explore selected habitats and communities of plants and animals in Germany and abroad.

Intended learning outcomes

Students are familiar with terrestrial plant and animal communities, their habitat requirements as well as the factors that influence the composition of these communities.

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

Ü (2)

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

a) written examination (approx. 45 to 90 minutes) or
b) oral examination of one candidate each (30 to 60 minutes) or
c) term paper (approx. 10 to 30 pages) or
d) portfolio
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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Workload

60 h

Teaching cycle

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

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Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Grundschule Didactics in Biology (Primary School) (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Excursion on Zoology or Botany II			07-LA-EXKURS2-152-m01
Module coordinator		**Module offered by**	
degree programme coordinator Biologie (Biology)		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
4	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

During this multi-day botanical or zoological teaching hike, students will explore selected habitats and communities of plants and animals in Germany and abroad.

Intended learning outcomes

Students are familiar with terrestrial plant and animal communities, their habitat requirements as well as the factors that influence the composition of these communities.

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

Ü (4)

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

a) written examination (approx. 45 to 90 minutes) or
b) oral examination of one candidate each (30 to 60 minutes) or
c) term paper (approx. 10 to 30 pages) or
d) portfolio
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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Workload

120 h

Teaching cycle

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

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Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Grundschule Didactics in Biology (Primary School) (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))

First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))

Module title	Abbreviation
Extracurricular Places of Learning in Biology	07-LA-FB-ASL-152-m01

Module coordinator	Module offered by
head of group Didactics of Biology	Faculty of Biology

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

Duration	Module level	Other prerequisites
1 semester	undergraduate	--

Contents

The seminar *Umweltbildung* (*Environmental Education*) will discuss approaches to environmental education as well as didactic components and will highlight the significance of out-of-classroom learning environments for biology lessons. In the Botanical Garden and indigenous habitats, students will try out practical methods for environmental education and will develop short teaching sequences to be delivered in out-of-classroom learning environments. In the seminar *PraxisPlus im LLL* (*Teach'n'Learn Lab: Intensive Practice*), students will be arranged into teams that will independently deliver existing lessons in a teach'n'learn lab. Applying a range of didactic methods, students will develop an understanding of research in biology didactics. Supervising groups of pupils of different ages, they will enhance their teaching skills. In the seminar *Biologiedidaktische Forschung* (*Research in Biology Didactics*), students will gain an overview of topics in current research on biology didactics and will become proficient in techniques for measuring the progress of pupils in acquiring knowledge and skills.

Intended learning outcomes

- Familiarity with current as well as older approaches to environmental education and ability to identify the factors that may encourage pupils to act responsibly towards nature.
- Ability to explore the scientific principles behind the respective topics.
- Ability to design experience-based lessons on these topics that are tailored to the age of pupils as well as to the respective type of school and local conditions.
- Ability to didactically adapt selected research methods for the age group students are teaching and the type of school at which they are teaching.
- Ability to describe current topics in didactics.
- Ability to assess and evaluate the cognitive learning achievement of pupils.

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

S (2) + S (2)

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

a) written examination (approx. 45 to 90 minutes) or
b) oral examination of one candidate each (30 to 60 minutes) or
c) term paper (approx. 10 to 30 pages) or
d) portfolio
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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Workload

150 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
First state examination for the teaching degree Grundschule Biology (2015) First state examination for the teaching degree Grundschule Didactics in Biology (Primary School) (2015) First state examination for the teaching degree Realschule Biology (2015) First state examination for the teaching degree Gymnasium Biology (2015) First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2015) First state examination for the teaching degree Mittelschule Biology (2015) First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2015) First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015)) First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015)) First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Skills Orientated Learning in Biology			07-LA-FB-KO-152-m01
Module coordinator		**Module offered by**	
head of group Didactics of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

In the seminar *Gesundheitserziehung* (*Health Education*), we will explore the causes and reasons of a broad range of health issues faced by many children and adolescents in Germany today; we will discuss different types of these health issues as well as related theories. We will focus on the following topics: drugs and substance abuse, sex education, unhealthy eating habits and lack of exercise. We will develop lessons to promote a healthy lifestyle that are tailored to the requirements of the respective type of school and will discuss general measures as well as measures related to specific topics. In the seminar *Motivierte und disziplinierte Schüler im Biologieunterricht* (*Motivation and Discipline in the Biology Classroom*), you will learn how to handle difficult situations in class and will develop methodological skills for the biology classroom. We will discuss the duties and responsibilities of teachers as well as ways to effectively fulfil these. We will analyse typical causes of disruption and will discuss ways to deal with disruptive pupils and prevent disruption. The seminar *Kompetenzorientierte Unterrichtsmodelle am Beispiel HOBOS* (*Skill-Oriented Instructional Models: the HOBOS Learning Platform*) will provide you with an introduction to the HOBOS learning platform and will acquaint you with the concepts of skill-oriented learning and educational standards. Discussing concrete examples, we will find out what effects output orientation may have on teaching. In addition, you will learn to plan and implement lessons, observing the principle of individualisation. You will acquire broad range of methods that will allow you to do so.

Intended learning outcomes

- Ability to explain both selected explanatory approaches to understanding health-impairing behaviours and historical as well as current approaches to the prevention of these behaviours.
- Ability to translate topics in the area of health education and disease prevention from the curriculum for the respective type of school, in a didactically reduced manner, into lessons.
- Ability to name the duties and responsibilities of teachers as well as fundamental principles set out in the following acts and regulations: Bayerisches Gesetz über das Erziehungs- und Unterrichtswesen (Bavarian Education Act, BayEUG), Dienstordnung für Lehrkräfte an staatlichen Schulen in Bayern (Regulations for Teachers at State Schools in Bavaria, LDO) as well as Schulordnung für die Gymnasien/Volksschulen/Realschulen in Bayern (Regulations Governing Gymnasien/Volksschulen/Realschulen in Bavaria, GSO/VSO/RSO).
- Ability to recognise causes of disruption

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

S (2) + S (2)

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

a) written examination (approx. 45 to 90 minutes) or
b) oral examination of one candidate each (30 to 60 minutes) or
c) term paper (approx. 10 to 30 pages) or
d) portfolio
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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Workload
150 h
Teaching cycle
--
Referred to in LPO I (examination regulations for teaching-degree programmes)
--
Module appears in
First state examination for the teaching degree Grundschule Biology (2015) First state examination for the teaching degree Grundschule Didactics in Biology (Primary School) (2015) First state examination for the teaching degree Realschule Biology (2015) First state examination for the teaching degree Gymnasium Biology (2015) First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2015) First state examination for the teaching degree Mittelschule Biology (2015) First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2015) First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015)) First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015)) First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Habitats of Germany			07-LA-FB-EL-152-m01
Module coordinator		**Module offered by**	
head of group Didactics of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
2 semester	undergraduate	--	

Contents

The exercise *Einheimische Lebensräume im Biologieunterricht* (*Indigenous Habitats in the Biology Classroom*) will provide students with an opportunity to explore the topic "teaching biology in out-of-classroom learning environments" in more detail. The course will focus on the methodological aspect of environmental education. Students will adapt existing teaching units on water, forest, grassland, farmland and/or hedgerow habitats, will deliver the respective units to groups of pupils, preferably during a project day at an environmental education centre, and will subsequently evaluate the sessions. Students will develop an activity and problem-based lesson on a concrete topic related to the respective habitat, a lesson that is tailored to their target group and develops their pupils' affective, methodological and cognitive skills.

Intended learning outcomes

- Ability to develop activity-based and multisensory lessons in out-of-classroom learning environments that are tailored to the target group as well as ability to adapt and evaluate lessons.
- Ability to independently organise and run project days.
- Ability to critically reflect on the respective lessons, taking aspects of environmental education into consideration.

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

Ü (3)

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

a) written examination (approx. 45 to 90 minutes) or
b) oral examination of one candidate each (30 to 60 minutes) or
c) term paper (approx. 10 to 30 pages) or
d) portfolio
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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Workload

150 h

Teaching cycle

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

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Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Grundschule Didactics in Biology (Primary School) (2015)
First state examination for the teaching degree Realschule Biology (2015)

First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))
First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))

Module title			Abbreviation
Advanced Didactics in Biology			07-LA-FB-VFD-152-m01
Module coordinator		**Module offered by**	
head of group Didactics of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
4	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

This module will provide students with in-depth insights into the theory and practice of biology didactics.

Intended learning outcomes

Students will be able to apply the fundamental knowledge they have acquired to a range of aspects of biology didactics.

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

S (2)

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

a) written examination (approx. 45 to 90 minutes) or
b) oral examination of one candidate each (30 to 60 minutes) or
c) term paper (approx. 10 to 30 pages) or
d) portfolio
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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Workload

120 h

Teaching cycle

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

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Module appears in

First state examination for the teaching degree Grundschule Biology (2015)
First state examination for the teaching degree Grundschule Didactics in Biology (Primary School) (2015)
First state examination for the teaching degree Realschule Biology (2015)
First state examination for the teaching degree Gymnasium Biology (2015)
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2015)
First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2015)
First state examination for the teaching degree Mittelschule Biology (2020 (Prüfungsordnungsversion 2015))
First state examination for the teaching degree Sonderpädagogik Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))
First state examination for the teaching degree Mittelschule Didactics in Biology (Middle School) (2020 (Prüfungsordnungsversion 2015))

Paper

(10 ECTS credits)

Preparation of a written Hausarbeit (thesis) in accordance with the provisions of Section 29 LPO I (examination regulations for teaching-degree programmes) is a prerequisite for teaching degree students to be admitted to the Erste Staatsprüfung (First State Examination). In accordance with the provisions of Section 29 LPO I, students studying for a teaching degree Realschule may write this thesis in one of the subjects they selected as Unterrichtsfach (subject studied with a focus on the scientific discipline) or in the subject Erziehungswissenschaften (Educational Science). Pursuant to Section 29 Subsection 1 Sentence 2 LPO I, students may also choose to write an interdisciplinary thesis.

Module title			Abbreviation
Thesis in Biology (Realschulen)			07-RS-HA-152-m01
Module coordinator		**Module offered by**	
Dean of Studies Biologie (Biology)		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1-2 semester	undergraduate	--	

Contents

Students pursuing a teaching degree *Realschule* who have selected biology as their *Unterrichtsfach* (subject studied with a focus on the scientific discipline) may write their *Hausarbeit* (thesis) in biology didactics or in a subject discipline of biology. Within a given time frame, students will independently research and write on a topic, applying the necessary methods.

Intended learning outcomes

Students will be able to address a defined problem, applying scientific approaches and methods. They will use didactic or scientific methods appropriate to the respective topic. They will present their findings in a written thesis. Working on this thesis, students will enhance their scientific writing skills (structuring papers, citing sources etc.).

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

No courses assigned to module

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

written thesis (30 to 50 pages)

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

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

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Module appears in

First state examination for the teaching degree Realschule Biology (2015)