

Module Catalogue

for the Subject

Biology

as vertieft studiertes Fach (studied with a focus on the
scientific discipline)
with the degree "Erste Staatsprüfung für das Lehramt an
Gymnasien"

Examination regulations version: 2009
Responsible: Faculty of Biology

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The subject is divided into

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Abbreviations used

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

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

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

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

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

Conventions

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

Notes

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

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

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

In accordance with

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

LASPO2009

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

7-Aug-2012 (2012-89)

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

(92 ECTS credits)

Compulsory Courses

(92 ECTS credits)

Module title		Abbreviation
Basics of Biology - Cytology and Anatomy		07-LA-BIO1-092-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)
11	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	By way of exception, additional prerequisites are listed in the section on assessments.
Contents		
<p>The first part of the course will acquaint students with the elementary building blocks of life as well as biological categories. Building on this knowledge, the course will then discuss the cell, the smallest unit of life, starting with its macroscopic structure before moving on to its microscopic structure. The course will point out differences and similarities between prokaryotic cells (bacteria, archaeobacteria) and eukaryotic cells (animals, plants). Using the examples of plants and animals, the subsequent module components will introduce students to the phylogenetic diversity of eukaryotes. At the level of groups in the plant and animal kingdoms, students will acquire the fundamental knowledge necessary to understand the forms and functions of animal and plant organisms, with morphology and cytology being discussed in an evolutionary and ecological context. The contents of the module are relevant for biological disciplines at all levels of biological organisation. Students will also acquire and practise some of the fundamental preparation skills bioscientists are often required to possess.</p>		
Intended learning outcomes		
<p>Students will be familiar with the elementary building blocks of life, with biological categories as well as with the cell, the smallest unit of life, and its macroscopic and microscopic structure. They will understand the forms and functions of animal and plant organisms as well as morphology and cytology in an evolutionary and ecological context. Students will be able put their fundamental preparation skills into practice.</p>		
Courses (type, number of weekly contact hours, language — if other than German)		
<p>This module comprises 3 module components. Information on courses will be listed separately for each module component.</p> <ul style="list-style-type: none"> • 07-LA-BIO1-1-121: V + Ü (no information on SWS (weekly contact hours) and course language available) • 07-LA-BIO1-2-121: V + Ü (no information on SWS (weekly contact hours) and course language available) • 07-LA-BIO1-3-121: V + Ü (no information on SWS (weekly contact hours) and course language available) 		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
<p>Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.</p> <p>Assessment in module component 07-LA-BIO1-1-121: Structure and Function of Cells (Lecture, Practice) Structure and Function of Cells (Lecture, Practice)</p> <ul style="list-style-type: none"> • 3 ECTS, Method of grading: numerical grade • written examination (30 to 60 minutes) • Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment. <p>Assessment in module component 07-LA-BIO1-2-121: The Plant Kingdom (Lecture, Practice) The Plant Kingdom (Lecture, Practice)</p> <ul style="list-style-type: none"> • 4 ECTS, Method of grading: numerical grade • written examination (30 to 60 minutes) 		

- Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.

Assessment in module component 07-LA-BIO1-3-121: The Animal Kingdom (Lecture, Practice) The Animal Kingdom (Lecture, Practice)

- 4 ECTS, Method of grading: numerical grade
- written examination (approx. 30 to 60 minutes)
- Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.

Allocation of places

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Additional information

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

§ 41 (1) 1. Biologie "Zytologie, Anatomie, Formenkenntnis und Systematik von Pflanzen und Tieren"

§ 41 (1) 2. "Physiologie der Pflanzen und Tiere"

§ 61 (1) 1. Biologie "Zytologie, Anatomie, Formenkenntnis und Systematik von Pflanzen und Tieren"

Module title		Abbreviation
Evolution		07-LA-EVO-092-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)
1	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.
Contents		
This module will address one of the central issues of biology: evolution. Fundamental mechanisms and hypotheses will be discussed, and students will be introduced to major phylogenetic reconstruction methods. In addition, students will become familiar with different mechanisms of speciation from populations. In this context, a particular focus will be on abiotic mechanisms of differentiation, e. g. through geographic separation.		
Intended learning outcomes		
- Ability to recognise evolution as the driving force behind the phylogeny of species. - Ability to construct phylogenetic trees based on morphological characters. - Ability to recognise natural selection as a criterion for the survival of new species. - Ability to differentiate between mechanisms of speciation in habitats.		
Courses (type, number of weekly contact hours, language — if other than German)		
V + Ü (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
written examination (approx. 30 minutes)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
§ 41 (1) 4. Biologie "Ökologie", "Evolutionsbiologie" und "Verhaltensbiologie" § 61 (1) 4. Biologie "Ökologie", "Evolutionsbiologie" und "Verhaltensbiologie"		

Module title			Abbreviation
Basic Microbiology			07-GY-MIBl1-092-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)	
4	numerical grade	--	
Duration	Module level	Other prerequisites	
1 semester	undergraduate	By way of exception, additional prerequisites are listed in the section on assessments.	
Contents			
This module will discuss the prokaryotic ultrastructure with its components and their functions as well as physiological performances of this group of organisms. Peculiarities of prokaryotes and factors that differentiate prokaryotes from eukaryotes will also be addressed. During practical exercises, students will become familiar both with important examples of bacteria and with morphological criteria for the classification of bacteria as well as the quantification of the same. Other experiments on physiology will also be performed during the course.			
Intended learning outcomes			
Knowledge of the structure of prokaryotic cells. Knowledge of the differences between prokaryotic and eukaryotic cells. Knowledge of the specific characteristics of the intracellular structure of prokaryotes. Familiarity with important representatives of the prokaryotic community. Ability to classify prokaryotes based on features visible under the microscope. Knowledge related to the growth of bacterial colonies. Basic familiarity with the biochemistry of bacterial metabolic pathways. Ability to use essential methods in biochemistry in the lab.			
Courses (type, number of weekly contact hours, language — if other than German)			
This module comprises 2 module components. Information on courses will be listed separately for each module component. <ul style="list-style-type: none">• 07-LA-MIBl1-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available)• 07-GY-MIBl1-2-092: V + Ü (no information on SWS (weekly contact hours) and course language available)			
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)			
Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.			
Assessment in module component 07-LA-MIBl1-1-092: Introduction to Microbiology (Lecture, Practice) Introduction to Microbiology (Lecture, Practice) <ul style="list-style-type: none">• 1 ECTS, Method of grading: (not) successfully completed• logs (10 to 15 pages)• Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.			
Assessment in module component 07-GY-MIBl1-2-092: Basic Physiology of Prokaryotes (Lecture, Practice) Basic Physiology of Prokaryotes (Lecture, Practice) <ul style="list-style-type: none">• 3 ECTS, Method of grading: numerical grade• written examination (30 to 60 minutes)• Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.			

Allocation of places
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Additional information
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Referred to in LPO I (examination regulations for teaching-degree programmes)
§ 41 (1) 3. "Genetik oder Mikrobiologie" § 61 (1) 3. Biologie "Genetik und Mikrobiologie"

Module title		Abbreviation
Basic Physiology I		07-LA-PHY1-092-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)
4	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.
Contents		
This module will acquaint students with the principles of the general and comparative physiology of organisms and will provide them with an opportunity to develop the fundamental skills for working in a physiological laboratory. The course will first explain the biochemical bases of the reactions within cells as well as how these reactions are coordinated. The module will then move on to discuss the physiological processes that regulate the internal environment of multicellular organisms such as plants and animals.		
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 + Ü (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
written examination (approx. 30 to 60 minutes)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
§ 41 (1) 2. "Physiologie der Pflanzen und Tiere" § 61 (1) 2. Biologie "Physiologie der Pflanzen und Tiere"		

Module title		Abbreviation
Basic Physiology II		07-LA-PHY2-092-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)
4	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.
Contents		
This module will acquaint students with the principles of the general and comparative physiology of organisms and will provide them with an opportunity to develop the fundamental skills for working in a physiological laboratory. The course will first explain the biochemical bases of the reactions within cells as well as how these reactions are coordinated. The module will then move on to discuss the physiological processes that regulate the internal environment of multicellular organisms such as plants and animals.		
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 + Ü (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
written examination (approx. 30 to 60 minutes)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
§ 41 (1) 2. "Physiologie der Pflanzen und Tiere" § 61 (1) 2. Biologie "Physiologie der Pflanzen und Tiere"		

Module title		Abbreviation
Behavioural Biology		07-GY-ETHO-092-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)
2	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.
Contents		
This module will address the fundamental principles of animal behaviour. After having addressed classical experiments on the ontogeny of learning of the individual (e. g. Pavlov's experiments), the module will move on to discuss the physiological principles underlying behaviour at the level of neural control. The cohabitation of animals in social colonies or animal societies will also be discussed. In this context, the communication between individuals is crucial to the survival of the individual or, respectively, the survival of the group as a whole.		
Intended learning outcomes		
Ability to differentiate between ultimate and proximate causes of behaviour. Familiarity with classical experiments in behavioural biology and the biology of learning. Knowledge of the fundamental principles of sociobiology. Awareness of the need for communication in the animal kingdom. Knowledge of the forms of communication in social insect colonies.		
Courses (type, number of weekly contact hours, language — if other than German)		
V + Ü (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
written examination (approx. 30 minutes)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
§ 61 (1) 4. Biologie "Ökologie", "Evolutionsbiologie" und "Verhaltensbiologie"		

Module title		Abbreviation
Plant and Animal Ecology (Lecture, Practice)		07-GY-OEKO-092-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	By way of exception, additional prerequisites are listed in the section on assessments.
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, will become familiar with examples of research findings and will acquire the fundamental knowledge necessary to develop an understanding of current ecological problems.		
Intended learning outcomes		
Students are familiar with the fundamental principles of research in the field of ecology and with the most important abiotic and biotic factors that influence the distribution and frequency of occurrence of organisms in their environment. In addition, they understand the scientific relevance ecology has to the assessment of environmental issues.		
Courses (type, number of weekly contact hours, language — if other than German)		
This module comprises 2 module components. Information on courses will be listed separately for each module component. <ul style="list-style-type: none"> • 07-GY-OEKO-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available) • 07-GY-OEKO-2-092: V + Ü (no information on SWS (weekly contact hours) and course language available) 		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.		
Assessment in module component 07-GY-OEKO-1-092: Animal Ecology <ul style="list-style-type: none"> • 3 ECTS, Method of grading: numerical grade • written examination (30 to 60 minutes) • Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment. Assessment in module component 07-GY-OEKO-2-092: Plant Ecology <ul style="list-style-type: none"> • 3 ECTS, Method of grading: numerical grade • written examination (30 to 60 minutes) • Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment. 		
Allocation of places		
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Additional information
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Referred to in LPO I (examination regulations for teaching-degree programmes)
§ 61 (1) 4. Biologie "Ökologie", "Evolutionbiologie" und "Verhaltensbiologie"

Module title		Abbreviation
Neurobiology		07-LA-NEUR-092-m01
Module coordinator		Module offered by
holder of the Chair of Neurobiology and Genetics		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	Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.
Contents		
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		
- Familiarity with the structure of neurons. - Explanation of the generation and spread of action potential. - Familiarity with the diversity, efficiency and structure of the nervous systems of different groups of organisms. - Knowledge related to the transduction of chemical stimuli into electrical signals. - Familiarity with applications of neurobiology in medicine.		
Courses (type, number of weekly contact hours, language — if other than German)		
V + Ü (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
written examination (approx. 30 minutes)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
§ 61 (1) 2. Biologie "Physiologie der Pflanzen und Tiere"		

Module title			Abbreviation
Genetics			07-GY-GEN-092-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	By way of exception, additional prerequisites are listed in the section on assessments.	
Contents			
The first part of this module will discuss the structural and molecular fundamentals of the DNA as well as the structure and regulation of the eukaryotic genome. Building on the knowledge they acquired during this first section, the module will provide students with an overview of research methods in genetics and the conclusions to be drawn from research findings. The transmission of genetic information is an essential characteristic of biological systems. Students will become familiar with Mendelian genetics as well as modern findings on the transmission of genetic information and potential errors in the transmission of genetic information.			
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 respective mechanisms. In addition, students are able to discuss current methods in genetics as well as the relevance these have to medicine.			
Courses (type, number of weekly contact hours, language — if other than German)			
This module comprises 2 module components. Information on courses will be listed separately for each module component. <ul style="list-style-type: none">• 07-GY-GEN-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available)• 07-GY-GEN-2-092: V (no information on SWS (weekly contact hours) and course language available)			
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)			
Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.			
Assessment in module component 07-GY-GEN-1-092: Basic Genetics Basic Genetics <ul style="list-style-type: none">• 3 ECTS, Method of grading: (not) successfully completed• written examination (approx. 30 minutes)• Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.			
Assessment in module component 07-GY-GEN-2-092: Advanced Genetics <ul style="list-style-type: none">• 3 ECTS, Method of grading: numerical grade• written examination (60 to 90 minutes)			
Allocation of places			
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Additional information			
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Referred to in LPO I (examination regulations for teaching-degree programmes)			
§ 61 (1) 3. Biologie "Genetik und Mikrobiologie"			
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Module title			Abbreviation
Developmental Biology of Plants and Animals			07-GY-EBIO1T-092-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	By way of exception, additional prerequisites are listed in the section on assessments.	
Contents			
Developmental biology describes all processes involved in the development of a single zygote into a complex organism. Coordinated cell division is essential. Cells combine to form organs. New structures develop that, at a later stage, must be able to interact to carry out complex processes in the organism. The module will focus on the processes involved in animal and plant developmental biology.			
Intended learning outcomes			
Awareness of fundamental principles of developmental biology. Detailed knowledge of processes related to organogenesis and the establishment of embryonic axes. Knowledge of model organisms in developmental biology. Knowledge of the molecular biological processes occurring during development. Awareness of interrelations between ontogeny and evolution (biogenetic law). Ability to perform and interpret lab experiments in developmental biology.			
Courses (type, number of weekly contact hours, language — if other than German)			
This module comprises 2 module components. Information on courses will be listed separately for each module component. <ul style="list-style-type: none">• 07-GY-EBIO1T-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available)• 07-GY-EBIO1T-2-092: V (no information on SWS (weekly contact hours) and course language available)			
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)			
Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.			
Assessment in module component 07-GY-EBIO1T-1-092: Developmental Biology of Animals (Lecture, Practice) Developmental Biology of Animals (Lecture, Practice) <ul style="list-style-type: none">• 4 ECTS, Method of grading: numerical grade• written examination (30 to 60 minutes)• Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.			
Assessment in module component 07-GY-EBIO1T-2-092: Developmental Biology of Plants (Lecture) <ul style="list-style-type: none">• 2 ECTS, Method of grading: numerical grade• written examination (20 to 40 minutes)			
Allocation of places			
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Additional information			
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Referred to in LPO I (examination regulations for teaching-degree programmes)			
§ 61 (1) 2. Biologie "Physiologie der Pflanzen und Tiere"			
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Module title		Abbreviation
The Flora of Germany		07-LA-FLORA-092-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)
6	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	By way of exception, additional prerequisites are listed in the section on assessments.
Contents		
<p>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 <i>Flora von Deutschland</i> 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.</p>		
Intended learning outcomes		
<p>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.</p>		
Courses (type, number of weekly contact hours, language — if other than German)		
<p>This module comprises 2 module components. Information on courses will be listed separately for each module component.</p> <ul style="list-style-type: none"> • 07-LA-FLORA-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available) • 07-LA-FLORA-2-092: E (no information on SWS (weekly contact hours) and course language available) 		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
<p>Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.</p> <p>Assessment in module component 07-LA-FLORA-1-092: Systematics of the Flora of Germany Systematics of the Flora of Germany</p> <ul style="list-style-type: none"> • 4 ECTS, Method of grading: numerical grade • written examination (approx. 45 minutes) and practical identification assignment (approx. 45 minutes) • Assessment offered: once a year, summer semester • Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment. <p>Assessment in module component 07-LA-FLORA-2-092: Field Excursions on the Flora of Germany</p> <ul style="list-style-type: none"> • 2 ECTS, Method of grading: (not) successfully completed • 5 field trip logs (approx. 1 to 2 pages per field trip) • Assessment offered: once a year, summer semester 		
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Allocation of places
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Additional information
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Referred to in LPO I (examination regulations for teaching-degree programmes)
<p>§ 41 (1) 1. Biologie "Zytologie, Anatomie, Formenkenntnis und Systematik von Pflanzen und Tieren"</p> <p>§ 41 (1) 4. Biologie "Ökologie", "Evolutionsbiologie" und "Verhaltensbiologie"</p> <p>§ 61 (1) 1. Biologie "Zytologie, Anatomie, Formenkenntnis und Systematik von Pflanzen und Tieren"</p> <p>§ 61 (1) 4. Biologie "Ökologie", "Evolutionsbiologie" und "Verhaltensbiologie"</p>

Module title		Abbreviation
The Fauna of Germany		07-LA-FAUNA-092-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)
6	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	By way of exception, additional prerequisites are listed in the section on assessments.
Contents		
<p>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 as well as on the quantitative recording of biodiversity and will practise identifying species, using specimens of animals. Selection of specimens will be taxon-specific and will represent specific habitats or lifestyles. Field 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.</p>		
Intended learning outcomes		
<p>Students know how to taxonomically classify selected representatives of the indigenous fauna (vertebrates, invertebrates) and use dichotomous keys. They are familiar with selected Central European habitats and, in particular, their indigenous biotopes as well as with 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.</p>		
Courses (type, number of weekly contact hours, language — if other than German)		
<p>This module comprises 2 module components. Information on courses will be listed separately for each module component.</p> <ul style="list-style-type: none"> • 07-LA-FAUNA-1-092: V + Ü (no information on SWS (weekly contact hours) and course language available) • 07-LA-FAUNA-2-092: E (no information on SWS (weekly contact hours) and course language available) 		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
<p>Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.</p> <p>Assessment in module component 07-LA-FAUNA-1-092: Systematics of the Fauna of Germany Systematics of the Fauna of Germany</p> <ul style="list-style-type: none"> • 4 ECTS, Method of grading: numerical grade • written examination (approx. 45 minutes) and practical identification assignment (approx. 45 minutes) • Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment. <p>Assessment in module component 07-LA-FAUNA-2-092: Field Excursions on the Fauna of Germany</p> <ul style="list-style-type: none"> • 2 ECTS, Method of grading: (not) successfully completed • log (approx. 3 pages) 		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 41 (1) 1. Biologie "Zytologie, Anatomie, Formenkenntnis und Systematik von Pflanzen und Tieren"
 § 41 (1) 4. Biologie "Ökologie", "Evolutionsbiologie" und "Verhaltensbiologie"
 § 61 (1) 1. Biologie "Zytologie, Anatomie, Formenkenntnis und Systematik von Pflanzen und Tieren"
 § 61 (1) 4. Biologie "Ökologie", "Evolutionsbiologie" und "Verhaltensbiologie"

Module title		Abbreviation
Biological Research Methods		07-GY-METH-092-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)
4	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	--
Contents		
Overview of important traditional and modern methods in biology that are applied at the Chairs at the Biocentre, ranging from microscopy and chromatography to polymerase chain reaction (PCR).		
Intended learning outcomes		
Knowledge of the fields of research the Chairs at the Faculty of Biology are investigating. Familiarity with essential methods in botany and zoology. Knowledge of how to address a problem in biology. Knowledge of how research methods may be implemented in the <i>Gymnasium</i> biology classroom.		
Courses (type, number of weekly contact hours, language — if other than German)		
Ü (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
a) written examination (30 to 120 minutes) or b) log (10 to 30 pages) or c) oral examination of one candidate each (20 to 60 minutes) or d) oral examination in groups of up to 3 candidates or e) presentation (20 to 45 minutes) or f) portfolio (30 to 120 hours)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
§ 61 (1) 7. Biologie "Forschungsorientiertes Praktikum"		

Module title		Abbreviation
Biological Research		07-GY-FOR-092-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)
7	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	--
Contents		
Overview of important traditional and modern methods in biology that are applied at the Chairs at the Biocentre, ranging from microscopy and chromatography to polymerase chain reaction (PCR).		
Intended learning outcomes		
Knowledge of the fields of research the Chairs at the Faculty of Biology are investigating. Familiarity with essential methods in botany and zoology. Knowledge of how to address a problem in biology. Knowledge of how research methods may be implemented in the <i>Gymnasium</i> biology classroom.		
Courses (type, number of weekly contact hours, language — if other than German)		
This module comprises 2 module components. Information on courses will be listed separately for each module component. <ul style="list-style-type: none"> • 07-GY-FOR-1-092: S (no information on SWS (weekly contact hours) and course language available) • 07-GY-FOR-2-092: P (no information on SWS (weekly contact hours) and course language available) 		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.		
Assessment in module component 07-GY-FOR-1-092: Statistics in Research (Practice) <ul style="list-style-type: none"> • 1 ECTS, Method of grading: (not) successfully completed • exercises (3 to 5 hours) Assessment in module component 07-GY-FOR-2-092: Research-oriented working in Biology (Practice) <ul style="list-style-type: none"> • 6 ECTS, Method of grading: numerical grade • a) written examination (30 to 120 minutes) or b) log (10 to 30 pages) or c) oral examination of one candidate each (20 to 60 minutes) or d) oral examination in groups of up to 3 candidates or e) presentation (20 to 45 minutes) or f) portfolio (30 to 120 hours) 		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
§ 61 (1) 7. Biologie "Forschungsorientiertes Praktikum"		

Module title		Abbreviation
Human Biology		07-LA-HUBIO-092-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)
9	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	By way of exception, additional prerequisites are listed in the section on assessments.
Contents		
This module will be divided up into three sections covering the following topics: - human genetics (genetic disease, inheritance), - 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)		
This module comprises 2 module components. Information on courses will be listed separately for each module component. <ul style="list-style-type: none"> • 07-LA-HUBIO-1-092: V (no information on SWS (weekly contact hours) and course language available) • 07-LA-HUBIO-2-092: Ü (no information on SWS (weekly contact hours) and course language available) 		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.		
Assessment in module component 07-LA-HUBIO-1-092: Basic Human Biology (Lecture) <ul style="list-style-type: none"> • 5 ECTS, Method of grading: numerical grade • written examination (approx. 60 to 90 minutes) Assessment in module component 07-LA-HUBIO-2-092: Basic Human Biology (Practice) <ul style="list-style-type: none"> • 4 ECTS, Method of grading: (not) successfully completed • logs (approx. 30 hours) and 10 to 15 drawings • Only after successful completion of module components: Successful completion of module component 07-LA-HUBIO-1 is a prerequisite for participation in module component 07-LA-HUBIO-2. • Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment. 		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
§ 41 (1) 5. Biologie "Humanbiologie"		
§ 61 (1) 5. Biologie "Humanbiologie"		

Module title		Abbreviation
Microbiology 2		07-GY-MIBI2-092-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)
3	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.
Contents		
During this lab course, students will deepen their knowledge of the topics covered in the module <i>Grundlagen der Mikrobiologie (Basic Microbiology)</i> . Performing practical laboratory work, students will become familiar with molecular biological methods and approaches.		
Intended learning outcomes		
Students have acquired a fundamental knowledge of methods in both classical microbiology and molecular biology. They are able to use these methods and to discuss current problems in these fields.		
Courses (type, number of weekly contact hours, language — if other than German)		
Ü + V (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
a) written examination (30 to 120 minutes) or b) log (10 to 30 pages) or c) oral examination of one candidate each (20 to 60 minutes) or d) oral examination in groups of up to 3 candidates or e) presentation (20 to 45 minutes) or f) portfolio (30 to 120 hours)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
§ 61 (1) 3. Biologie "Genetik und Mikrobiologie"		

Module title		Abbreviation
Biology in Technics and Medicine		07-GY-PBBT-092-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)
3	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	--
Contents		
Using examples from the fields of biotechnology and pharmaceutical biology, this module will provide teaching degree students with an overview of the applications of biology in technology and medicine. Topics from the area of biotechnology that will be covered include biosensors and environmental biotechnology, microbiotechnology and nanobiotechnology, biomaterials, cryobiotechnology, bioprocess engineering and microbial biotechnology. In the module component on pharmaceutical biology, students will acquire an overview of the study of biogenic drugs. This module component will include an introduction to pharmacokinetics, the discipline that describes the fate of a drug or xenobiotic in an organism. In addition to an insight into pharmacology and the effects of xenobiotics/pollutants, students will thus acquire an overview of industrial processes.		
Intended learning outcomes		
Students have become familiar with the fundamental principles of biotechnology and pharmaceutical biology. They recognise the relevance findings in biology have to technological progress and know how drugs act in the body.		
Courses (type, number of weekly contact hours, language — if other than German)		
V + V (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
2 written examinations (30 to 60 minutes each)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module title			Abbreviation
Advanced Biology Course			07-GY-FBW-092-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)	
8	numerical grade	--	
Duration	Module level	Other prerequisites	
1 semester	undergraduate	By way of exception, additional prerequisites are listed in the section on assessments.	
Contents			
Students may complete the practical course <i>Schwerpunkt-Praktikum</i> 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)			
This module has 2 components; information on courses listed separately for each component. <ul style="list-style-type: none">• 07-GY-FBW-B-1-092: Ü + S (no information on language and number of weekly contact hours available)• 07-GY-FBW-Z-2-092: Ü + S (no information on language and number of weekly contact hours available)			
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)			
This module has the following 2 assessment components. To pass the module as a whole students must pass one of the two assessment components.			
Assessment component to module component 07-GY-FBW-B-1-092: Übung im Schwerpunkt Botanik für das Lehramt Gymnasium <ul style="list-style-type: none">• 8 ECTS credits, method of grading: numerical grade• a) written examination (30-120 minutes) or b) log (10-30 pages) or c) oral examination of on candidate each (20-60 minutes) or d) oral examination in groups up to three candidates or e) presentation (20-45 minutes) or f) portfolio (30-120 hours total)• Other prerequisites: admission prerequisite to assessment: Regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.			
Assessment component to module component 07-GY-FBW-Z-2-092: Übung im Schwerpunkt Zoologie für das Lehramt Gymnasium <ul style="list-style-type: none">• 8 ECTS credits, method of grading: numerical grade• a) written examination (30-120 minutes) or b) log (10-30 pages) or c) oral examination of on candidate each (20-60 minutes) or d) oral examination in groups up to three candidates or e) presentation (20-45 minutes)			
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- Other prerequisites: admission prerequisite to assessment: Regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.

Allocation of places

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Additional information

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

§ 61 (1) 6. Biologie Schwerpunkt "Botanik"
§ 61 (1) 6. Biologie Schwerpunkt "Zoologie"

Teaching

(10 ECTS credits)

Module title		Abbreviation
Basic Didactics in Biology		07-LA-FDGRU-092-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)
7	numerical grade	--
Duration	Module level	Other prerequisites
2 semester	undergraduate	By way of exception, additional prerequisites are listed in the section on assessments.
Contents		
<p>[Version 1: This seminar will provide students preparing for the written state examination with an opportunity to revise key topics in biology didactics. In small teams, students will prepare and deliver presentations on three key areas. The first block will discuss an area of the theory of biology didactics, this will be followed by the discussion of a topic in the biology classroom with respect to aspects of the scientific discipline and a didactic analysis. In the final part of the course, students will solve an exam paper from a previous year.] [Version 2: Using examples from the classroom, the seminar 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 and modern media. 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.]</p>		
Intended learning outcomes		
<p>Familiarity with relevant aspects of biology didactics and awareness of the fact that typical methods of the discipline play a central role in the biology classroom. 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 <i>Grundschule</i>. Ability to prepare scientific analyses of selected topics from the curriculum for <i>Grundschule</i> and to subsequently present these topics in a manner that is tailored to the target group. Ability to prepare didactic analyses of topics from the curriculum for <i>Grundschule</i>. 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. Overview of experiments on botany, zoology and human biology typically performed in the <i>Grundschule</i> biology classroom. Ability to implement the experiments in the classroom and to integrate them into activity and problem-based lessons. Insight into frameworks for education in <i>Grundschule</i>. Insight into legal and social factors that influence schools.</p>		
Courses (type, number of weekly contact hours, language — if other than German)		
<p>This module comprises 2 module components. Information on courses will be listed separately for each module component.</p> <ul style="list-style-type: none"> • 07-LA-FDGRU-2-092: S (no information on SWS (weekly contact hours) and course language available) • 07-LA-FDGRU-1-092: V + S (no information on SWS (weekly contact hours) and course language available) 		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
<p>Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.</p> <p>Assessment in module component 07-LA-FDGRU-2-092: School-Type-Specific Didactics in Biology (Seminar)</p> <ul style="list-style-type: none"> • 2 ECTS, Method of grading: numerical grade • written examination (30 to 45 minutes) or term paper (10 to 15 pages) • Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful 		
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completion of the respective exercises (required percentage as specified at the beginning of the course).
The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.

Assessment in module component 07-LA-FDGRU-1-092: Introduction into Didactics in Biology (Lecture, Practice)

Introduction into Didactics in Biology (Lecture, Practice)

- 5 ECTS, Method of grading: numerical grade
- a) written examination (60 to 90 minutes) and written examination (20 to 30 minutes), weighted 3:2 or b) written examination (60 to 90 minutes) and oral examination of one candidate each (10 to 30 minutes)
- Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course).
The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.

Allocation of places

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Additional information

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

§ 36 (1) 7. Didaktik der Grundschule Biologie
§ 38 (1) 1. Didaktik der Hauptschule Biologie
§ 38 (1) 1. Didaktik der Mittelschule Biologie
§ 41 (1) 6. Biologie Fachdidaktik
§ 61 (1) 8. Biologie Didaktik

Module title		Abbreviation
Special Didactics Biology: Learning Places outside School		07-GY-FDASL1-092-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)
2	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	By way of exception, additional prerequisites are listed in the section on assessments.
Contents		
<p>This module will provide participants with an overview of biology experiments that are suitable for introducing pupils to science, experiments that can be performed in a teach'n'learn lab and can be incorporated into the biology classroom at <i>Gymnasium (Mittelstufe and Oberstufe)</i>. Having gained an overview of traditional and modern methods in biology, participants will learn to incorporate these into school-specific experiments. Students will prepare classroom and lab sessions, will be trained in important techniques for measuring how effective a session was and will practise teaching these sessions to their fellow students in the teach'n'learn lab/teach'n'learn garden. Particular emphasis will be placed on ensuring that it is possible to implement the methods both with groups of pupils in the teach'n'learn lab and in the biology classroom at a <i>Gymnasium</i>.</p>		
Intended learning outcomes		
<p>Knowledge of both traditional and modern methods in biology. Ability to forge and maintain links with out-of-classroom learning environments. Ability to prepare sessions in a teach'n'learn lab and perform the respective follow-up work. Insight into how sessions in the teach'n'learn lab may raise the pupils' level of motivation and interest in biology in general and current topics in biology in particular. Knowledge of how out-of-classroom sessions in the teach'n'learn lab/teach'n'learn garden may be incorporated into biology lessons and, in particular, into lessons designed to introduce pupils in <i>Oberstufe Gymnasium</i> to science. Overview of current topics in didactics as well as potential developments in research on biology didactics. Ability to assess and evaluate the cognitive learning achievement of pupils.</p>		
Courses (type, number of weekly contact hours, language — if other than German)		
<p>This module has 2 components; information on courses listed separately for each component.</p> <ul style="list-style-type: none"> • 07-RG-FDASL1-1-092: Ü (no information on language and number of weekly contact hours available) • 07-RG-FDASL1-2-092: Ü (no information on language and number of weekly contact hours available) 		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
<p>This module has the following 2 assessment components. To pass the module as a whole students must pass one of the two assessment components.</p> <p>Assessment component to module component 07-RG-FDASL1-1-092: Arbeiten im Lehr-Lern-Labor</p> <ul style="list-style-type: none"> • 2 ECTS credits, method of grading: (not) successfully completed • practice study/evaluation (10-15 pages) • Other prerequisites: admission prerequisite to assessment: Regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment. <p>Assessment component to module component 07-RG-FDASL1-2-092: Arbeiten im LehrLernGarten</p> <ul style="list-style-type: none"> • 2 ECTS credits, method of grading: (not) successfully completed • practice study/evaluation (10-15 pages) • Other prerequisites: admission prerequisite to assessment: Regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful 		

completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.
Allocation of places
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Additional information
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Referred to in LPO I (examination regulations for teaching-degree programmes)
§ 41 (1) 6. Biologie Fachdidaktik § 61 (1) 8. Biologie Didaktik

Module title		Abbreviation
Special Didactics in Biology: Teaching Aids		07-GY-FDMED-092-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)
1	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.
Contents		
Using examples from the classroom, the exercise 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		
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 different aspects of biology-specific media (encoding, hardware, software, message, sensory modalities).		
Courses (type, number of weekly contact hours, language — if other than German)		
S (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
seminar paper (7 to 10 pages)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
§ 61 (1) 8. Biologie Didaktik		

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

(0-15 ECTS credits)

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

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

Biology

(ECTS credits)

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

Module title		Abbreviation
Supervising Tutorial for Biology 1		07-LA-TUSB1-092-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. Tutors will help with organisational and personal matters. They will help students organise their teaching placements and will help them plan and structure their entire university education. Together with students, they will develop strategies to detect and 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 and helping students with personal matters. The tutors have thus enhanced their own interpersonal skills and know how to share their expertise in exploring complex topics. In addition, the tutors have learned to plan and organise key elements of their own university education and the university education of the students they mentor.		
Courses (type, number of weekly contact hours, language — if other than German)		
T (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
presentation portfolio (approx. 60 hours total)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module title		Abbreviation
Supervising Tutorial for Biology 2		07-LA-TUSB2-092-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. Tutors will help with organisational and personal matters. They will help students organise their teaching placements and will help them plan and structure their entire university education. Together with students, they will develop strategies to detect and 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 and helping students with personal matters. The tutors have thus enhanced their own interpersonal skills and know how to share their expertise in exploring complex topics. In addition, the tutors have learned to plan and organise key elements of their own university education and the university education of the students they mentor.		
Courses (type, number of weekly contact hours, language — if other than German)		
T (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
presentation portfolio (approx. 90 hours total)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module title		Abbreviation
Supervising Tutorial for Basic Courses in Biology 1		07-LA-TUFB1-092-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 completed in semesters one through three in particular. Tutors will identify the key subject-specific concepts covered in the lectures and 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 acquired the background knowledge needed to be able to answer specific questions and explain 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 (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
portfolio and reports (approx. 60 hours total)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module title		Abbreviation
Supervising Tutorial for Basic Courses in Biology 2		07-LA-TUFB2-092-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 completed in semesters one through three in particular. Tutors will identify the key subject-specific concepts covered in the lectures and 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 acquired the background knowledge needed to be able to answer specific questions and explain 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 (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
portfolio and reports (approx. 90 hours total)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module title		Abbreviation
Supervising Tutorial for Basic Courses in Biology 3		07-LA-TUFB3-092-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 <i>Allgemeine Biologie (General Biology)</i> I through III in particular. Tutors will identify the key subject-specific concepts covered in the lectures and 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 acquired the background knowledge needed to be able to answer specific questions and explain 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 (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
portfolio and reports (approx. 120 hours total)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module title		Abbreviation
Additional Qualification MINT 2		07-LA-ZQN2-092-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 the natural sciences 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. Credit transfer subject to approval.		
Intended learning outcomes		
Students have acquired advanced knowledge as well as additional specialist skills in STEM subjects that will help them specialise in a sub-discipline of biology.		
Courses (type, number of weekly contact hours, language — if other than German)		
V + S + Ü (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
a) written examination (30 to 120 minutes) or b) log (10 to 30 pages) or c) oral examination of one candidate each (20 to 60 minutes) or d) oral examination in groups of up to 3 candidates or e) presentation (20 to 45 minutes) or f) portfolio (30 to 120 hours)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module title		Abbreviation
Additional Qualification MINT 3		07-LA-ZQN3-092-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 the natural sciences 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. Credit transfer subject to approval.		
Intended learning outcomes		
Students have acquired advanced knowledge as well as additional specialist skills in STEM subjects that will help them specialise in a sub-discipline of biology.		
Courses (type, number of weekly contact hours, language — if other than German)		
Ü + S + V (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
a) written examination (30 to 120 minutes) or b) log (10 to 30 pages) or c) oral examination of one candidate each (20 to 60 minutes) or d) oral examination in groups of up to 3 candidates or e) presentation (20 to 45 minutes) or f) portfolio (30 to 120 hours)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module title		Abbreviation
Additional Qualification MINT 4		07-LA-ZQN4-092-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 the natural sciences 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. Credit transfer subject to approval.		
Intended learning outcomes		
Students have acquired advanced knowledge as well as additional specialist skills in STEM subjects that will help them specialise in a sub-discipline of biology.		
Courses (type, number of weekly contact hours, language — if other than German)		
V + S + Ü (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
a) written examination (30 to 120 minutes) or b) log (10 to 30 pages) or c) oral examination of one candidate each (20 to 60 minutes) or d) oral examination in groups of up to 3 candidates or e) presentation (20 to 45 minutes) or f) portfolio (30 to 120 hours)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module title		Abbreviation
Ecology and Developmental Biology of marine organisms		07-4S1MZ3-092-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	By way of exception, additional prerequisites are listed in the section on assessments.
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 are familiar with the morphology, developmental biology, physiology and ecology of organisms in a marine ecosystem.		
Courses (type, number of weekly contact hours, language — if other than German)		
This module comprises 2 module components. Information on courses will be listed separately for each module component. <ul style="list-style-type: none"> 07-4S1MZ3-1MO-092: Ü (no information on SWS (weekly contact hours) and course language available) 07-4S1MZ3-2MO-092: S (no information on SWS (weekly contact hours) and course language available) 		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.		
Assessment in module component 07-4S1MZ3-1MO-092: Ecology and Developmental Biology of Marine Organisms <ul style="list-style-type: none"> 4 ECTS, Method of grading: numerical grade log (approx. 10 to 20 pages) Assessment offered: once a year, summer semester Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises and successful completion of the respective exercises as specified at the beginning of the course. 		
Assessment in module component 07-4S1MZ3-2MO-092: Seminar on Marine Biology <ul style="list-style-type: none"> 1 ECTS, Method of grading: (not) successfully completed presentation (approx. 20 to 30 minutes) Assessment offered: once a year, summer semester 		
Allocation of places		
Information on the allocation of places will be listed separately for each module component. <ul style="list-style-type: none"> 07-4S1MZ3-1MO-092: Number of places: 18. Should the number of applications exceed the number of available places, places will be allocated as follows: Places will primarily be allocated to students of the Bachelor's degree subject Biologie (Biology) with 180 ECTS credits. 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 participant in total) will be allocated to students of the Bachelor's degree subject Biologie (Biology) with 60 ECTS credits and to students of the Bachelor's degree subjects Computational Mathematics and Mathematik (Mathematics), each with 180 ECTS credits, as part of the application-oriented subject Biology (as well as potentially to students of other 'importing' subjects). Should the number of places available in one quota exceed the number of applications, the remaining places will be allocated to applicants from the 		

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

- 07-4S1MZ3-2MO-092: --

Additional information

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

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Module title		Abbreviation
Excursion on Zoology or Botany		07-LA-EXKURS2-092-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)		
S + E (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
log (7 to 10 pages)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module title		Abbreviation
Excursion on Zoology or Botany lasting several days		07-LA-EXKURS1-092-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)		
S + E (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
log (10 to 20 pages) or written examination (30 to 90 minutes)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module title			Abbreviation
Biological Rhetorics and Communication			07-LA-RHET-092-m01
Module coordinator		Module offered by	
Coordinator BioCareers		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 lecture will acquaint teaching degree students with the basic guidelines for teaching topics in biology and will contrast basic rules of rhetoric and communication with biological behaviour. In addition, the lecture will discuss a variety of approaches to explaining personality, character and temperament and will contrast these with established biological models. The lecture will also explain the biological bases of thought and feeling as well as the causes of differences in motivation, in particular with regard to the development of personal skills.			
Intended learning outcomes			
Students are familiar with the fundamental principles of biological processes and models that different personality assessment models are based on. They are familiar with methodical approaches to conflict management and teamwork. In addition, students have enhanced their teaching skills in the area of biology in particular.			
Courses (type, number of weekly contact hours, language — if other than German)			
This module comprises 2 module components. Information on courses will be listed separately for each module component. <ul style="list-style-type: none">• 07-LA-RHET-1-092: V (no information on SWS (weekly contact hours) and course language available)• 07-LA-RHET-2-092: S (no information on SWS (weekly contact hours) and course language available)			
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)			
Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.			
Assessment in module component 07-LA-RHET-1-092: Basics and Possibilities of Communication <ul style="list-style-type: none">• 3 ECTS, Method of grading: (not) successfully completed• written examination (approx. 45 to 60 minutes) including multiple choice questions			
Assessment in module component 07-LA-RHET-2-092: Special Topics on "Basics and Possibilities of Communication" <ul style="list-style-type: none">• 1 ECTS, Method of grading: (not) successfully completed• a) presentation (approx. 20 minutes) or b) term paper (approx. 8 pages)			
Allocation of places			
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Additional information			
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Referred to in LPO I (examination regulations for teaching-degree programmes)			
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Module title		Abbreviation
Special Didactics in Biology: Teacher-Training Lab/Teach'n'LearnGarden		07-RG-FDASL2-092-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	By way of exception, additional prerequisites are listed in the section on assessments.
Contents		
[Version 1: Students may complete the practical course <i>Schwerpunkt-Praktikum</i> 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.] [Version 2: This module will provide students with an overview of practical biology sessions that are implemented in a teach'n'learn lab/teach'n'learn garden. Having acquired an overview of major methods in biology, students will learn to incorporate these into school-specific contexts. Students will prepare classroom and lab sessions, will be trained in important techniques for measuring how effective a session was and will practise teaching these sessions to pupils in the teach'n'learn lab/teach'n'learn garden. This will also require close co-operation with the supervising teacher of the placement class.]		
Intended learning outcomes		
Knowledge of both traditional and modern methods in biology. - Ability to prepare sessions in a teach'n'learn lab/teach'n'learn garden and perform the respective follow-up work. - Familiarity with ways to help pupils become interested and motivated learners.		
Courses (type, number of weekly contact hours, language — if other than German)		
This module comprises 2 module components. Information on courses will be listed separately for each module component. <ul style="list-style-type: none"> • 07-RG-FDASL2-1-092: Ü (no information on SWS (weekly contact hours) and course language available) • 07-RG-FDASL2-2-092: S (no information on SWS (weekly contact hours) and course language available) 		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.		
Assessment in module component 07-RG-FDASL2-1-092: Advanced Course on "Working in the Teacher-Training Lab/Teach'n'LearnGarden" (Practice) <ul style="list-style-type: none"> • 2 ECTS, Method of grading: (not) successfully completed • portfolio (7 to 10 pages) • Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course). The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment. Assessment in module component 07-RG-FDASL2-2-092: Introduction to Educational Research (Seminar) <ul style="list-style-type: none"> • 2 ECTS, Method of grading: (not) successfully completed • term paper (7 to 10 pages) • Other prerequisites: Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful 		

completion of the respective exercises (required percentage as specified at the beginning of the course).
The preparation of logs (10 to 15 pages) is an admission prerequisite to assessment.

Allocation of places

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Additional information

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

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Module title		Abbreviation
Special Didactics in Biology: Preparation for the Written Exam		07-LA-FDSTX-092-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)
2	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course).
Contents		
This seminar will provide students preparing for the written state examination with an opportunity to revise key topics in biology didactics. In small teams, students will prepare and deliver presentations on three key areas. The first block will discuss an area of the theory of biology didactics, this will be followed by the discussion of a topic in the biology classroom with respect to aspects of the scientific discipline and a didactic analysis. In the final part of the course, students will solve an exam paper from a previous year.		
Intended learning outcomes		
<ul style="list-style-type: none"> - Knowledge of what types of problems are typically asked in the written state examination in biology didactics. - Ability to solve an exam paper within the specified time frame. - Ability to gauge the appropriate length of answers to questions. 		
Courses (type, number of weekly contact hours, language — if other than German)		
S (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
seminar paper (7 to 10 pages)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module title		Abbreviation
Special Didactics in Biology: Motivation and Discipline in Biology Education		07-LA-FDDIS-092-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)
2	(not) successfully completed	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	Admission prerequisite to assessment: regular attendance of exercises, seminars and lab courses (weekly courses: a maximum of one incident of unexcused absence and one excused absence for a legitimate reason; fortnightly courses: one incident of unexcused absence) and successful completion of the respective exercises (required percentage as specified at the beginning of the course).
Contents		
<p>The main aim of this seminar is to facilitate your transition from the first to the second phase your training. 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 and you will learn how to effectively fulfil these in your first year as a teacher. We will then analyse typical causes of disruption that junior teachers tend to face during their first year at school and will discuss ways to deal with disruptive pupils and prevent disruption. In this context, you will find out what you have to do before the school year starts and what you can do to prevent classroom disruptions before they occur. We will also reflect on how the way we act affects the way pupils act. We will discuss the use of reinforcements and reprimands, disciplinary measures and the involvement of external authorities, head teachers and parents. You will also acquire an insight into the following acts and regulations: <i>Bayerisches Gesetz über das Erziehungs- und Unterrichtswesen</i> (Bavarian Education Act, BayEUG), <i>Dienstordnung für Lehrkräfte an staatlichen Schulen in Bayern</i> (Regulations for Teachers at State Schools in Bavaria, LDO) as well as <i>Schulordnung für die Gymnasien/Volksschulen/Realschulen in Bayern</i> (Regulations Governing Gymnasien/Volksschulen/Realschulen in Bavaria, GSO/VSO/RSO). The second part of the seminar will acquaint you with a range of methods for designing lessons for the biology classroom of the 21st century. In this context, we will focus on discussing and working on open methods for teaching biology.</p>		
Intended learning outcomes		
Overview of the duties and responsibilities of teachers. - Insight into the following acts and regulations: BayEUG, LDO, GSO, VSO and RSO. - Insight into causes of disruption as well as ways to deal with disruptive pupils and prevent disruption. - Overview of disciplinary measures.		
Courses (type, number of weekly contact hours, language — if other than German)		
S (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
seminar paper (7 to 10 pages)		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Thesis

(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 Gymnasium may write this thesis in one of the subjects they selected as vertieft studiertes Fach (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		07-GY-HA-092-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)
10	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	--
Contents		
Students pursuing a teaching degree <i>Gymnasium</i> who have selected biology as their <i>vertieft studiertes Fach</i> (subject studied with a focus on the scientific discipline) may write their <i>Hausarbeit</i> (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. 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)		
This module comprises 2 module components. Information on courses will be listed separately for each module component. <ul style="list-style-type: none"> • 07-GY-HA-1-092: no courses assigned • 07-GY-HA-2-092: no courses assigned 		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments. <p>Assessment in module component 07-GY-HA-1-092: Thesis in Didactics in Biology</p> <ul style="list-style-type: none"> • 10 ECTS, Method of grading: numerical grade • written thesis (30 to 50 pages) <p>Assessment in module component 07-GY-HA-2-092: Thesis in Science Biology</p> <ul style="list-style-type: none"> • 10 ECTS, Method of grading: numerical grade • written thesis (30 to 50 pages) 		
Allocation of places		
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Additional information		
Additional information on module duration: 1 to 2 semesters.		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
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