Note:
The following curriculum is a consolidated version. It is legally non-binding and for informational purposes only.
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Curriculum for the **Bachelor's Programme in Biology** at the Faculty of Biology, University of Innsbruck

§ 1 Profile

(1) The bachelor's programme is grouped among the natural sciences.

(2) The goal of the Bachelor's Programme in Biology at the University of Innsbruck is to provide a profound education of the basics of natural sciences (chemistry, physics, mathematics) and the individual branches of biology. The major focus of the courses lies on the transfer of analytical and practical skills based on a high degree of practical courses as well as on the promotion of teamwork and autonomous working methods. Students acquire the necessary skills to autonomously develop scientific work. Moreover, they are able to demonstrate their abilities to formulate and substantiate arguments scientifically and critically on the basis of the biological fundamentals and to find solutions to problems. Individual specialisations are available for students by choosing elective modules from the individual branches of biology which specifies the education with regard to the students' individual future occupational profiles. The bachelor's programme also prepares students for a Master's Programme in Biology.

(3) The Bachelor's Programme in Biology specifically prepares students for activities in private and public companies and institutions in the fields of agriculture and forestry, environment and nature conservation, landscape planning and conservation, pharmacy, medicine, in public administration, museums and libraries, in botanical and zoological gardens and nature reserves.

§ 2 Scope and duration

The Bachelor's Programme in Biology covers 180 ECTS-Credits, with a duration of six semesters. One ECTS-Credit is equivalent to a work-load of 25 hours.

§ 3 Courses and numbers of participants

(1) With the exception of lectures (VO), all courses are courses with continuous performance assessment. Decisive factors for the maximum number of students per course and the necessary support and mentoring to students are safety aspects, available space, and necessary equipment.

(2) Courses are divided into the following types:

1. **Lecture (VO ‚*Vorlesung*‘):** In this type of course, significant content and schools of thought of a special area are presented and explained by a lecturer. Maximum number of students per course: 500.
2. **Practical course (UE ‚*Übung*‘)**: Practical courses enable participants to study and apply scientific knowledge and working methods in practice. Maximum number of students per course: 8-40.
3. **Lecture with integrated practical parts (VU ‚*Vorlesung mit Übung*‘):** Integrated course where lecture parts are combined with practical parts. Maximum number of participants: 12-20.
4. **Introductory seminar (PS ‚*Proseminar*‘):** Conveys basic skills in the respective subject, with active participation of students. Maximum number of participants: 14-25.
5. **Seminar (SE ‚*Seminar*‘)**: In guided self-study programmes, including lecture presentations, written contributions and/or scientific discussions, students reflect on subject matter and methods of a special area. Maximum number of participants: 18-30.
6. **Project study (PJ ‚*Projektstudie*‘)**: In these courses, selected scientific methods are applied in special projects. Maximum number of students per course: 12-20.
7. **Excursion (EX ‚*Exkursion*‘)**: In excursions, issues and problems of a subject are demonstrated and treated outside the premises of the university. Maximum number of students per course: 20
8. **Excursion with integrated practical parts (EU ‚*Exkursion mit Übung*‘)**: Integrated course where a field trip is combined with practical parts. Maximum number of students per course: 20

§ 4 Allocation of places in courses with a limited number of participants

In courses with a limited number of participants, course places are allocated as follows:

1. Presence at the preliminary meeting (personal or represented by a proxy).
2. Date of fulfilment of the necessary admission requirement(s); students who fulfilled the admission requirement(s) at an earlier time are to be given priority.
3. Number of semesters the student has been enrolled for the Bachelor’s Degree in Biology programme; students who have been enrolled for a longer time are to be given priority.
4. By lot.

§ 5 Compulsory and elective modules

(1) Compulsory modules amounting 120 ECTS-Credits (three modules of 10 ECTS-Credits each and twelve modules of 7.5 ECTS-Credits each), and elective modules amounting 45 ECTS-Credits (six modules of 7.5 ECTS-Credits each) are to be taken.

(2) The following compulsory modules are to be taken

Compulsory module 1: Basics I	10 ECTS-Credits
Compulsory module 2: Basics II	10 ECTS- Credits
Compulsory module 3: Basics III	10 ECTS- Credits
Compulsory module 4: General Education I	7.5 ECTS- Credits
Compulsory module 5A: General Education IIA - Fieldwork	7.5 ECTS- Credits
Compulsory module 5B: General Education IIB - Laboratory	7.5 ECTS- Credits
Compulsory module 6: Botany I	7.5 ECTS- Credits
Compulsory module 7: Botany II	7.5 ECTS- Credits

Compulsory module 8: Zoology I	7.5 ECTS- Credits
Compulsory module 9: Zoology II	7.5 ECTS- Credits
Compulsory module 10: Microbiology I	7.5 ECTS- Credits
Compulsory module 11: Microbiology II	7.5 ECTS- Credits
Compulsory module 12: Ecology I	7.5 ECTS- Credits
Compulsory module 13: Ecology II	7.5 ECTS- Credits
Compulsory module 14: Molecular Biology I	7.5 ECTS- Credits
Compulsory module 15: Molecular Biology II	7.5 ECTS- Credits
Required total	**120 ECTS-Credits**

(3) From the following elective modules, six modules are to be taken. From the alternating elective modules 19A/B/C/D and 20A/B/C/D, only one elective module each can be taken.

Elective module 1: Advanced Botany I	7.5 ECTS-Credits
Elective module 2: Advanced Botany II	7.5 ECTS- Credits
Elective module 3: Functional Plant Biology I	7.5 ECTS- Credits
Elective module 4: Functional Plant Biology II	7.5 ECTS- Credits
Elective module 5: Functional Body Plans of Selected Animal Groups	7.5 ECTS- Credits
Elective module 6: Developmental Biology of Evertebrates	7.5 ECTS- Credits
Elective module 7: Cell and Animal Physiology	7.5 ECTS- Credits
Elective module 8: Adaptation of Animals to Habitats	7.5 ECTS- Credits
Elective module 9: Methods in Microbiology	7.5 ECTS- Credits
Elective module 10: Medical Microbiology	7.5 ECTS- Credits
Elective module 11: Applied Microbiology	7.5 ECTS- Credits
Elective module 12: Microbial Ecology	7.5 ECTS- Credits
Elective module 13: Methods in Ecology	7.5 ECTS- Credits
Elective module 14: Applied Ecology	7.5 ECTS- Credits
Elective module 15: Functional Ecology	7.5 ECTS- Credits
Elective module 16: Ecological Field Project	7.5 ECTS- Credits
Elective module 17: Molecular Biology III	7.5 ECTS- Credits
Elective module 18: Molecular Biology IV	7.5 ECTS- Credits
Elective module 19A: Developmental Biology	7.5 ECTS- Credits
Elective module 19B: Genomics	7.5 ECTS- Credits
Elective module 19C: Genome Evolution	7.5 ECTS- Credits
Elective module 19D: Enzyme Biochemistry	7.5 ECTS- Credits
Elective module 20A: Biochemistry	7.5 ECTS- Credits
Elective module 20B: Proteomics	7.5 ECTS- Credits
Elective module 20C: Molecular Cellbiology	7.5 ECTS- Credits
Elective module 20D: Cellphysiology	7.5 ECTS- Credits
Elective module 21: History of Biology Including Gender Aspects	7.5 ECTS- Credits
Elective module 22: Skills from other Disciplines	7.5 ECTS- Credits
Required total	**45 ECTS-Credits**

§ 6 Courses of compulsory and elective modules, including ECTS-Credits

(1) The following compulsory modules are to be taken, whereas only one module from the compulsory modules 5A and 5B is to be taken.

1.	**Compulsory module: Basics I**	**h**	**ECTS-**

			Credits
a.	**VO General and Inorganic Chemistry** Fundamental principles of atoms, molecules and ions; electronic structure of atoms; basic concepts of chemical bonds; characteristics of solutions; acid-base balance.	2	3
b.	**VO Organic Chemistry** Introduction to organic chemistry, with special attention to biologically relevant compounds and reactivities	2	3
c.	**VO Physics** Physical principles from fields that are particularly relevant for biology such as physical aspects of life processes, physical basis of work methods and techniques, and bionics.	2	3
d.	**VO Skills I** Introduction to the studies of biology: job perspectives of biologists, time management, preparations for exams and learning techniques	1	1
	Total	**7**	**10**
	Objective: Students are able to understand the scientific fundamentals of botany.		
	Prerequisites: none		

2.	**Compulsory module: Basics II**	**h**	**ECTS-Credits**
a.	**VO Basic Botany: Functional Anatomy of Plants** Basic knowledge of plant structures and their functions from cellular to organ level (leaf, wood, stem, root, flower)	2	3
b.	**VO Basic Microbiology: Significance of Microorganisms** Overview of prions, viruses, bacteria and fungi; basic aspects of microbial growth and ecological significance of microorganisms	2	3
c.	**VO Basic Zoology: Organisation and Diversity of Animals I** Introduction to phylogenetic systematics, protozoa, basal patterns of metazoa (porifera, coelenterata, general patterns of bilateria, plathelminthes, mollusca, annelida, arthropoda)	2	3
d.	**VO Skills II** Interdisciplinary skills, basics in literature and information research, creativity techniques	1	1
	Total	**7**	**10**
	Objective: Students are able to understand the fundamentals of botany, microbiology and zoology.		
	Prerequisites: none		

3.	Compulsory module: Basics III	h	ECTS-Credits
a.	**VO Cell Biology** The lecture provides an introduction to the structures and function of prokaryotic and eukaryotic cells.	2	3
b.	**VO Development and Evolution I** The lecture offers an interdisciplinary approach to the fundamental principles of embryonic development. Classical model systems of developmental biology are presented and general mechanisms of early development are discussed. Moreover, the history of the theory of evolution and the mechanisms of evolution are covered.	2	3
c.	**VO Introduction to Ecology** Introductory overview of ecology: ecological concepts at the level of individuals, populations, ecosystems and landscapes.	2	3
d.	**VO Skills III** Basics in scientific work: scientific communication, oral presentations, posters and reports.	1	1
	Total	**7**	**10**
	Objective: Students are able to understand the fundamentals of cell and developmental biology as well as the fundamentals of ecology.		
	Prerequisites: none		

4.	Compulsory module: General Education I	h	ECTS-Credits
a.	**UE Basic Laboratory Course - Practical Course** The course conveys theoretical fundamentals and practical skills for working in a chemical-biological laboratory.	3	4.5
b.	**VU Quantitative Techniques in Ecology** Principles of planning and interpreting scientific examinations. Graduates of this course are able to deal with statistical datasets and to interpret results of statistical analyses.	2	3
	Total	**5**	**7.5**
	Objective: Students are able to work in the chemical-biological laboratory; they possess basic knowledge of the statistical principles of planning and interpreting scientific examinations.		
	Prerequisites: successful completion of compulsory modules 1 and 2		

5A.	Compulsory module: General Education IIA - Fieldwork	h	ECTS-Credits
a.	**VO Soil Science** Basic knowledge related to soil science: composition and functions of soil, physical and chemical characteristics of soil, political and legal aspects of soil protection.	1	1.5
b.	**VO Methods in Field Work** Overview of current ecological methods in field work to describe aquatic	1	1.5

	and terrestrial habitats (incl. soil) and to adequately measure abiotic location factors, and to determine occurrence, spread and population density of organisms.		
c.	**UE Methods in Field Work – Practical Course** The practical course completes the lecture "Methods in Field Work" and "Soil Science" with practical field work methods in ecology.	2	3
d.	**SE Biological Seminar (optionally Botany, Microbiology, Molecular Biology, Ecology or Zoology)** Students give presentations of different fields of biology.	1	1.5
	Total	**5**	**7.5**
	Objective: Students acquire basic knowledge of soil as a basis of terrestrial life and current ecological methods in field work; they are able to present scientific work.		
	Prerequisites: successful completion of compulsory modules 2 and 4		

5B.	**Compulsory module: General Education IIB - Laboratory**	**h**	**ECTS-Credits**
a.	**VU Biochemical Lab** The course conveys advanced skills for working in a chemical-biological laboratory.	4	6
b.	**SE Biological Seminar (optionally Botany, Microbiology, Molecular Biology, Ecology or Zoology)** Students give presentations of different fields of biology.	1	1.5
	Total	**5**	**7.5**
	Objective: Students acquire basic knowledge of current biochemical working methods; they are able to present scientific work.		
	Prerequisites: successful completion of compulsory modules 2 and 4		

6.	**Compulsory module: Botany I**	**h**	**ECTS-Credits**
a.	**VU Plant Anatomy** The course introduces the most important bauplans of seed plants which are investigated by microscopic preparation in the practical part of the course. Plant cell and tissue structures and taxon-specific structures of tissues in organs are analysed.	2	3
b.	**VO Diversity and Systematics of Plants** Fundamentals of the systematics of plants: evolution, structures, development.	1	1.5

c.	**UE Diversity and Systematics of Plants – Practical Course** Advanced course completing the lecture (VO) "Diversity and Systematics of Plants" drawing on selected examples of plants.	2	3
	Total	**5**	**7.5**
	Objective: Students acquire basic knowledge of structures, diversity and systematics of plants.		
	Prerequisites: successful completion of compulsory module 2		

7.	**Compulsory module: Botany II**	**h**	**ECTS-Credits**
a.	**VO Plant Physiology** Plant physiology based on the fundamentals of biochemistry and cytology. The lecture presents cell and developmental physiology, effects of light and temperature, hormone and energy balance, biosynthetic routes of important compounds, stimulus physiology as well as water relations and mineral nutrition.	3	4.5
b.	**VO Plant and Population Ecology** The lecture provides basic principles, methods and current research of the two scientific fields.	1	1.5
c.	**EU Botanical Excursion** Introductory excursions based on the phytodiversity and ecology of the Tyrol and adjacent areas.	1	1.5
	Total	**5**	**7.5**
	Objective: Students acquire basic knowledge of plant physiology and vegetation and population ecology; they learn about the phytodiversity of local areas.		
	Prerequisites: successful completion of compulsory modules 2 and 6		

8.	**Compulsory module: Zoology I**	**h**	**ECTS-Credits**
a.	**VO Organisation and Diversity of Animals II** Advanced course completing the first part of the lecture which examines taxa, in particular arthropod, basal patterns of nemathelminthes, deuterostomia, general structure of tentaculata, cchinodermata, tunicata, acrania, craniota.	2	3
b.	**UE Bauplan of Unicellular and Metazoan Eukaryotes – Practical Course** Macroscopic and microscopic studies of bauplans of the most important animal taxa based on compounds and whole objects.	3	4.5
	Total	**5**	**7.5**
	Objective: Students acquire basic knowledge of the structure and organisation of animals and are able to apply this knowledge in practice.		
	Prerequisites: successful completion of compulsory module 2		

9.	**Compulsory module: Zoology II**	**h**	**ECTS-**

			Credits
a.	**VO Animal Physiology** Fundamentals of vegetative physiology and neurophysiology, with special attention to mammalians and humans.	3	4.5
b.	**VO Basic Histology** The lecture conveys fundamentals of the structure of tissues and treats selected chapters in detail to understand the connections between structure and functions of tissues.	1	1.5
c.	**VO Ethology** Overview on methods and basic concepts of ethology, from ethogram to learning processes. Based on individual behaviour, the focus is on interactions between individual animals, such as social, fighting, and mating behaviour, etc.	1	1.5
	Total	**5**	**7.5**
	Objective: Students acquire basic knowledge of physiology, histology and ethology.		
	Prerequisites: none		

10.	**Compulsory module: Microbiology I**	**h**	**ECTS-Credits**
a.	**VO Introduction into the Systematics of Microorganisms** Basic bauplans and life styles of prokaryotic and eukaryotic microorganisms (bacteria, archaea, and fungi) and their systematic position within the tree of life.	1	1.5
b.	**VO Basic Techniques in Microbiology** The lecture first introduces the basics of obtaining pure cultures, such as the composition of culture media and different sterilisation techniques, and then treats basic isolation and cultivation techniques.	1	1.5
c.	**VO Biotechnology** The lecture offers an introduction to biotechnology (thematic overview, principles of sustainable production, basics of bioprocess technology) and presents selected examples from the fields of food technology, environmental technology and biotechnology.	3	4.5
	Total	**5**	**7.5**
	Objective: Students acquire basic knowledge of microbiological techniques and the systematic classification of microorganisms and their use.		
	Prerequisites: none		

11.	**Compulsory module: Microbiology II**	**h**	**ECTS-Credits**
a.	**VO Basic Microbial Physiology** The lecture treats the structure and replication of viruses as well as the structure and growth of bacteria and fungi and discusses the biosynthesis of important cell organelles and different means of energy production of microorganisms.	2	3
b.	**UE Basic Microbiology Laboratory Course**	3	4.5

	The course introduces the use of the basic microbiological tools and techniques as well as isolation and microscopic examination.		
	Total	**5**	**7.5**
	Objective: Students acquire basic knowledge of microbial physiology, and they are able to apply the methodical fundamentals of microbiology.		
	Prerequisites: successful completion of compulsory modules 2, 4 and 10		

12.	**Compulsory module: Ecology I**	**h**	**ECTS-Credits**
a.	**VO Structure and Function of Aquatic Ecosystems** The lecture deals with structures of food webs and community structures including their metabolic activities (production, respiration etc.). A variety of ecosystems is described such as lakes, running waters to systems of the cryosphere (ice covers, ground water).	2	3
b.	**VO Structure and Function of Terrestrial Ecosystems** The lecture treats the structure and function of terrestrial ecosystems.	2	3
c.	**VO Landscape Ecology** The lecture gives an introductory overview of landscape ecology.	1	1.5
	Total	**5**	**7.5**
	Objective: Students acquire basic knowledge of the structure and function of ecosystems and landscape.		
	Prerequisites: none		

13.	**Compulsory module: Ecology II**	**h**	**ECTS-Credits**
a.	**VO Elements of Applied Ecology** Introduction to applied ecology (lecture series in e.g. agroecology, forest ecology, applied ecotoxicology, nature conservation, environmental assessment of terrestrial and aquatic systems).	2	3
b.	**EU Interdisciplinary Excursion to a Habitat** Analysing a habitat or an ecological issue with an interdisciplinary approach.	3	3
c.	**VO Introduction to Molecular Ecology** Overview of the use of molecular markers in ecology.	1	1.5
	Total	**6**	**7.5**
	Objective: Students acquire basic knowledge of molecular and applied ecology, and they are able to understand interdisciplinary approaches in ecology.		
	Prerequisites: successful completion of compulsory modules 2 and 12		

14.	Compulsory module: Molecular Biology I	h	ECTS-Credits
a.	**VO Biochemistry for Biologists** The lecture discusses molecular components of the cell and fundamentals of metabolism, in particular catabolism.	3	4.5
b.	**VO Introduction to Molecular Biology** The lecture introduces basic concepts and techniques of molecular biology.	2	3
	Total	**5**	**7.5**
	Objective: Students acquire basic knowledge in the fields of biochemistry and molecular biology.		
	Prerequisites: none		

15.	Compulsory module: Molecular Biology II	h	ECTS-Credits
a.	**VO Classical and Molecular Genetics** Classical genetics, genetic diseases in humans, molecular genetic aspects.	3	4.5
b.	**VO Molecular Developmental Biology** Introduction to molecular developmental biology, concepts, signaling mechanisms and methodology.	2	3
	Total	**5**	**7.5**
	Objective: Students acquire basic knowledge in the fields of genetics and molecular developmental biology.		
	Prerequisites: none		

(2) From the following elective modules, six modules are to be taken. From the alternating elective modules 19A/B/C/D and 20A/B/C/D, only one elective module each can be taken.

1.	Elective module: Advanced Botany I	h	ECTS-Credits
a.	**VO Palaeoecology** Palaeoecology discloses the dimension of time in order to evaluate the response of populations, communities and ecosystems in terms of climate and environmental changes and to predict future global changes.	1	1.5
b.	**VU Diversity and Systematics of "Lower Plants"** Overview of diversity and systematics of algae, mosses and lichens.	1	1.5
c.	**VO Alien Plants in Central Europe** Emergence and spread of cultural plants and its ecological implications in the Alps and in Central Europe.	1	1.5
d.	**VO Plant Ecology of Central Europe** The lecture conveys knowledge of the most important plant communities in Central Europe as well as aspects of land evaluation and land use history.	1	1.5
e	**VO Ecology of Treeline** The focus of the lecture is on the influence of environmental factors on tree growth at alpine and inner-alpine treeline sites.	1	1.5

	Total	**5**	**7.5**
	Objective: Students acquire basic knowledge in the fields of palaeoecology, the diversity of „lower plants“, cultural and adventive plants, the plant ecology of Central Europe and the ecology of treeline.		
	Prerequisites: successful completion of compulsory module 2		

2.	**Elective module: Advanced Botany II**	**h**	**ECTS-Credits**
a.	**VU Introduction into Hydrobotany** The course focuses on the plant in and around aquatic ecosystems, algae in open water and lowland forest; knowledge of key species and their environmental requirements and application to biomonitoring are acquired, in theory and in practice.	2	3
b.	**VU Diversity and Systematics of "Higher Plants"** Overview of the diversity and systematic selection principles of vascular plants.	2	3
c.	**EU Botanical Excursion** The excursion focuses on different topics (phanerogams/cryptogams/plant communities) depending on the selected sites and their diacritical features as well as biology and ecology.	1	1.5
	Total	**5**	**7.5**
	Objective: Students acquire basic knowledge in the field of hydrobotany and advanced theoretical and practical skills in the field of diversity and systematics of „higher plants“. Within the context of excursions, a deeper understanding of botanical aspects of a habitat is achieved.		
	Prerequisites: successful completion of compulsory module 2		

3.	**Elective module: Functional Plant Biology I**	**h**	**ECTS-Credits**
a.	**VO Physiological Plant Ecology** Ecophysiology is the science of life processes and manifestations of plants in interaction with environmental factors. Apart from molecular mechanisms of perception, the lecture discusses exemplary direct and inductive effects of environmental factors on plants and demonstrates their specific limit of resistance.	2	3

b.	**VU Plant Physiology** The course focuses on the practical use of modern measuring instruments and experimental techniques from the research of current plant physiology.	3	4.5
	Total	**5**	**7.5**
	Objective: Students acquire theoretical basic knowledge and practical skills in the fields of plant physiology and physiological plant ecology.		
	Prerequisites: successful completion of compulsory modules 2, 4 and 7		

4.	**Elective module: Functional Plant Biology II**	**h**	**ECTS-Credits**
a.	**VO Structure and Function of Plants** The lecture promotes a deeper understanding of the diversity of the structure of plants and their functions and focuses on adaptations to different habitats.	1	1.5
b.	**UE Structure and Function of Plants – Practical Course** The function of plants related to its structure is experimentally elaborated. Special focus is laid on the structural and functional variability in terms of adapting to different environmental conditions. The results are statistically analysed and presented as posters or publications.	2	3
c.	**UE Laboratory Course in Experimental Botany** The practical course gives insight into current scientific topics and methods by participation in the research activities of a working group in the laboratory.	2	3
	Total	**5**	**7.5**
	Objective: Students are able to plan and implement experiments in the field of physiology and ecophysiology of plants.		
	Prerequisites: successful completion of compulsory modules 2, 4 and 7		

5.	**Elective module: Functional Body Plans of Selected Animal Groups**	**h**	**ECTS-Credits**
a.	**UE Arthropod Zoology – Practical Course** In-depth studies of the morphology of selected animal groups.	5	7.5
	Total	**5**	**7.5**
	Objective: Students are able to apply advanced knowledge of the functional body plans of selected animal groups.		
	Prerequisites: successful completion of compulsory modules 2 and 8		

6.	Elective module: Developmental Biology of Evertebrates	h	ECTS-Credits
a.	**VO Development and Evolution II** The lecture offers in-depth knowledge of the mechanisms of early development and the evolution of animals. The focus is on the relationship of developmental biological processes and the phylogeny of animals.	2	3
b.	**VO Methods of Histology** The lecture conveys theoretical principles of preparing biologics and discusses a number of methods to present structures in tissue preparations.	1	1.5
c.	**UE Developmental Biology - Practical Course** This course conveys the fundamentals of development processes by embryological and developmental biology experiments.	2	3
	Total	**5**	**7.5**
	Objective: Students acquire knowledge of the theoretical and experimental principles of development and evolution.		
	Prerequisites: successful completion of compulsory modules 2, 3 and 4		

7.	Elective module: Cell and Animal Physiology	h	ECTS-Credits
a.	**VO Special Animal Physiology** The lecture treats special subjects of animal physiology (e.g. respiration, energy metabolism, digestion) for all relevant functional levels.	2	3
c.	**UE Animal Physiology – Practical Course** Numerous physiological methods are used to examine issues at the organismic, organic and cellular level.	3	4.5
	Total	**5**	**7.5**
	Objective: Students are able to plan, implement and analyse experiments in the field of animal physiology.		
	Prerequisites: successful completion of compulsory modules 2, 4 and 9		

8.	Elective module: Adaptation of Animals to Habitats	h	ECTS-Credits
a.	**VO Ecophysiology** The lecture conveys the knowledge of physiological relationships, recognition of physiological adaptations which enable the establishment of special habitats.	2	3
b.	**PS Marine Biology** The seminar conveys the fundamental principles of marine biology and treats the physicochemical characteristics of water, ocean currents, waves and tides as well as the characteristics of different habitats.	2	3
c.	**EX Zoological Field Trips** Excursions to different habitats examine the annidation of animals to specific environments.	2	1.5
	Total	**6**	**7.5**

	Objective: Students possess knowledge of the adaptation strategies of animals to the environment.
	Prerequisites: successful completion of compulsory module 2

9.	**Elective module: Methods in Microbiology**	**h**	**ECTS-Credits**
a.	**VO Techniques in Microbiology** The lecture gives an introductory overview of different methods to determine bacterial count and mass as well as to quantify fungal growth. Moreover, methods of strain improvement and disintegration of microorganisms are discussed.	1	1.5
b.	**UE Laboratory Course in General Microbiology** The course treats microbiological culture techniques and basic analytical methods. Additionally, students learn how to perform and plan experiments on their own.	4	6
	Total	**5**	**7.5**
	Objective: Students acquire knowledge of methodological principles of microbiology and are able to apply them within the context of planned experiments. This module is strongly recommended to students who want to study the Master's Programme in Microbiology at the University of Innsbruck.		
	Prerequisites: successful completion of compulsory modules 2 and 11		

10.	**Elective module: Medical Microbiology**	**h**	**ECTS-Credits**
a.	**VO Medical Microbiology** Relationship between microbes and humans, local and systemic infections, infectious disease control (antimicrobial therapy, vaccinations, hygiene measures), selected infectious diseases, diagnostics of infectious diseases, nosocomial infections.	2	3
b.	**VO Infectious Disease: Diagnostics** Detection of viruses, bacteria, fungi with microbiological (e.g. cultivation), immunological (e.g. ELISA) or molecular biological (e.g. PCR) tools.	1	1.5
c.	**VO Immunobiology I** The lecture treats molecules, cells and organs of mammals; molecular and cellular mechanisms of self/nonself recognition are explained and the main elements of their interactions within immune responses are examined.	1	1.5

d.	**VO Toxicology I** The lecture defines toxicological terms, selected microbiological toxins and their mechanisms of toxicity including scientific and/or therapeutic use.	1	1.5
	Total	**5**	**7.5**
	Objective: Students acquire knowledge of the medical aspects of microbiology.		
	Prerequisites: none		

11.	**Elective module: Applied Microbiology**	**h**	**ECTS-Credits**
a.	**SE Biotechnology** The seminar focuses on the development of alternating fields of applied microbiology in the form of seminar papers.	1	1.5
b.	**UE Biotechnology - Laboratory Courses** The course conveys practical aspects of microbiology in terms of different subject matters.	4	6
	Total	**5**	**7.5**
	Objective: Students acquire knowledge of the different aspects of applied microbiology.		
	Prerequisites: successful completion of compulsory module 2 and elective module 9		

12.	**Elective module: Microbial Ecology**	**h**	**ECTS-Credits**
a.	**VO Microbial Ecology** The lecture introduces the principles of microbial ecology and discusses the interactions between microorganisms on the one hand and between microorganisms, plants and animals on the other hand.	1	1.5
b.	**VO Symbiosis** The lecture treats the principle of symbiosis, widely used in biological systems, and, drawing on selected examples from all groups of organisms, it discusses the contribution of microorganisms to this phenomenon.	2	3
c.	**VO Soil Microbiology** Based on the presentation of soil as a habitat of microbial populations, the lecture illustrates selected processes essential to microorganisms.	2	3
	Total	**5**	**7.5**
	Objective: Students understand ecological principles and interactions of microorganisms.		
	Prerequisites: none		

13.	**Elective module: Methods in Ecology**	**h**	**ECTS-Credits**
a.	**VU Informatics for Ecology** The course treats the use of information and communication technology in ecology and shows ecological systems in models and systems based on	3	4.5

	practical issues.		
b.	**VU Methods in Ecology** Theoretical contents and practical use of modern ecological methods.	2	3
	Total	**5**	**7.5**
	Objective: Students develop a basic understanding of modern measurement methods and informatics for ecology. This module is strongly recommended to students who want to study the Master's Programme in Ecology and Biodiversity at the University of Innsbruck.		
	Prerequisites: successful completion of compulsory modules 2 and 5A		

14.	**Elective module: Applied Ecology**	**h**	**ECTS-Credits**
a.	**VO Applied Ecology - Aquatic Systems** Investigation, assessment and management of standing and running water (organisms and physiochemical environmental parameters).	2	3
b.	**VO Applied Ecology - Terrestrial Systems** Selected chapters of applied ecology (agroecology, forest ecology, environmental assessment, ecotoxicology etc.).	2	3
c.	**EU Applied Ecology - Excursion** The excursion offers more in-depth treatment of the lectures "Applied Ecology" integrating examples and case studies.	1	1.5
	Total	**5**	**7.5**
	Objective: Students acquire theoretical knowledge and practical skills in terms of occupational issues and applied ecology.		
	Prerequisites: successful completion of compulsory module 2		

15.	**Elective module: Functional Ecology**	**h**	**ECTS-Credits**
a.	**VU Ecotoxicology** Overview of the properties of ecotoxicological substances.	1	1.5
b.	**VO Functional Ecology** Individuals, populations, communities and ecosystems and the interactions with their abiotic and biotic environment.	2	3
c.	**UE Functional Ecology – Practical Course** The practical course offers more in-depth treatment of the lecture "Functional Ecology" integrating the use of appropriate methods and interpretations of measurement results.	2	3
	Total	**5**	**7.5**

	Objective: Students acquire theoretical knowledge and practical skills of functional aspects of ecology.
	Prerequisites: successful completion of compulsory module 2 and elective module 13

16.	**Elective module: Ecological Field Project**	**h**	**ECTS-Credits**
a.	**PJ Ecological Project Study** Implementation of advanced ecological methods within the context of an ecological project study.	3	4.5
b.	**PS Case Studies in Ecology** Development of case studies on applied or research-related ecological issues (e.g. EIA, SEA, management plans).	2	3
	Total	**5**	**7.5**
	Objective: Students are able to deal with specific ecological issues, in theory and in practice.		
	Prerequisites: successful completion of compulsory modules 2 and 12 and elective module 13		

17.	**Elective module: Molecular Biology III**	**h**	**ECTS-Credits**
a.	**VU Molecular Biology III: Basics** Implementation of basic biomolecular methods to isolate and analyse DNA, RNA and proteins.	5	7.5
	Total	**5**	**7.5**
	Objective: Students are able to implement molecular biological methods. This module is strongly recommended to students who want to study the Master's Programme in Molecular Cellular and Developmental Biology at the University of Innsbruck.		
	Prerequisites: successful completion of compulsory modules 2, 4, 14 and 15		

18.	**Elective module: Molecular Biology IV**	**h**	**ECTS-Credits**
a.	**VO DNA, Chromatin, Chromosomes** Molecular components of chromatin (DNA, histones, non-histone proteins), DNA-replication; chromatin structure; core architecture; regulation of chromatin.	1	1.5
b.	**VO Structure and Function of Proteins** Chemistry of amino acids, structure predictions, methods of protein purification and analysis, peptide synthesis, protein sequencing, X-ray structure analysis, selected proteins.	1	1.5
c.	**VO Mechanisms of Gene Regulation** Regulatory DNA sequences, regulatory protein machinery, role of the chromatin, cooperative control (enhanceosomes), regulation of elongation, locus control regions, transcription factories, silencing.	1	1.5
d.	**VO Regulation of the Cell Cycle** Cell cycle systems (S. cerevisiae and S. pombe, mammals, embryonic	1	1.5

	cells), methods of analysing the cell cycle, regulation of mitosis and meiosis, viruses and cell cycle, cell cycle and cancer.		
e.	**VO Production of Recombinant Proteins for Research and Medical Applications** Expression and purification of recombinant proteins of prokaryotic, eukaryotic and in vitro- expression systems; overview of current host systems and their advantages and disadvantages; selected examples of industrial, medical or scientific applications.	1	1.5
	Total	**5**	**7.5**
	Objective: Students acquire knowledge of cellular and molecular biological regulation mechanisms.		
	Prerequisites: none		

19. A	**Elective module: Developmental Biology**	**h**	**ECTS-Credits**
a.	**VO Developmental Biology** Introduction to the subject matter and methodology of developmental biology and developmental genetics.	1	1.5
b.	**VU Developmental Biology** Analyses of genes regulating embryonic development; cloning, expression analysis, methodology for manipulating gene function and analysing induced phenotypes.	4	6
	Total	**5**	**7.5**
	Objective: Students are able to implement the methodology of developmental biology based on specific issues.		
	Prerequisites: successful completion of compulsory module 2 and elective module 17		

19. B	**Elective module: Genomics**	**h**	**ECTS-Credits**
a.	**VO Genomics** Introduction to the subject matter and methodology covered in the practical course “Genomics”.	2	3
b.	**UE Genomics – Practical Course** Within the context of this module, the human genome and its organisation are treated and other eukaryotic and prokaryotic genomes are compared. Moreover, the course gives experimental insights into different modern genomic techniques (genome sequencing, DNA fingerprinting, sequence polymorphisms.	3	4.5
	Total	**5**	**7.5**
	Objective: Students are able to implement genetic methods based on specific issues.		
	Prerequisites: successful completion of compulsory modules 2 and elective module 17		

19. C	**Elective module: Genome Evolution**	**h**	**ECTS-Credits**

a.	**VO Genome Evolution** Introduction to the subject matter and methodology covered in the practical course “Genome Evolution”.	2	3
b.	**UE Genome Evolution – Practical Course** The course implements current methods of intraspecific and interspecific genetic and transcriptome analysis and discusses key works and recent pioneering works of evolutionary genomics.	3	4.5
	Total	**5**	**7.5**
	Objective: Students are able to implement genome evolution methods based on specific issues.		
	Prerequisites: successful completion of compulsory module 2		

19. D	**Elective module: Enzyme Biochemistry**	**h**	**ECTS-Credits**
a.	**VO Enzymatic Biochemistry** Introduction to the subject matter and methodology covered in the practical course “Enzymatic Biochemistry”.	2	3
b.	**UE Enzymatic Biochemistry– Practical Course** Fundamental principles of enzyme biochemistry: expression of a recombinant enzyme in *E. coli* and the following purification; determination of the optimum temperature and pH; Michaelis-Menten and Lineweaver-Burk diagram to determine the Km value of medical diagnostic related lactate dehydrogenase.	3	4.5
	Total	**5**	**7.5**
	Objective: Students are able to implement methods of enzymatic biochemistry based on specific issues.		
	Prerequisites: successful completion of compulsory module 2		

20. A	**Elective module: Biochemistry**	**h**	**ECTS-Credits**
a.	**VO Introduction to Laboratory Course in Basic Biochemistry** Introduction to the subject matter and methodology covered in the practical course “Laboratory Course in Basic Biochemistry”.	2	3
b.	**UE Laboratory Course in Basic Biochemistry** Molecular basics of cellular proliferation control and cancerogenesis.	3	4.5
	Total	**5**	**7.5**
	Objective: Students are able to implement biochemical methods based on specific issues.		
	Prerequisites: successful completion of compulsory module 2 and elective module 17		

20. B	**Elective module: Proteomics**	**h**	**ECTS-Credits**
a.	**VO Proteomics** Introduction to the subject matter and methodology covered in the practical course “Proteomics“.	1	1.5

b.	**VU Proteomics - Course** Isolation of histone-modifying enzymes (e.g. ionexchange, gelfiltration, and affinity chromatography); separation of complex protein mixtures with 2-D gelelectrophoresis, DIGE.	4	6
	Total	**5**	**7.5**
	Objective: Students are able to implement proteomic methods based on specific issues.		
	Prerequisites: successful completion of compulsory module 2		

20. C	**Elective module: Molecular Cellbiology**	**h**	**ECTS-Credits**
a.	**VO Molecular Cell Biology** Introduction to the subject matter and methodology covered in the practical course "Molecular Cell Biology".	2	3
b.	**UE Molecular Cell Biology– Practical Course** Vesicular transport and protein sorting; mammalian cells are fractionated, and the isolated organelles are analysed with biochemical methods.	3	4.5
	Total	**5**	**7.5**
	Objective: Students are able to implement methods of molecular cell biology based on specific issues.		
	Prerequisites: successful completion of compulsory module 2 and elective module 17		

20. D	**Elective module: Cellphysiology**	**h**	**ECTS-Credits**
a.	**VO Cell Physiology** Introduction to the subject matter and methodology covered in the practical course "Cell Physiology".	2	3
b.	**UE Cell Physiology - Lab Course** Analysis and discussion of cell activity; preparation of cells; cell culture techniques; examples to measure the cell activity depending on different experimental conditions.	3	4.5
	Total	**5**	**7.5**
	Objective: Students are able to implement cell physiological methods based on specific issues.		
	Prerequisites: successful completion of compulsory module 2		

21.	**Elective module: History of Biology Including Gender Aspects**	**h**	**ECTS-Credits**
a.	**VO History of Biology** The lecture introduces and discusses the history of biology with special focus on gender studies in view of botany, microbiology, molecular biology, ecology and zoology.	2	3

b.	**VO Gender Studies in Biology** The lecture introduces and interrelates theoretical and methodical approaches of gender studies along the three dimensions of "Women in Science", "Science of Gender" and "Gender in Science" based on the subject matters of biology (genetics, evolutionary research, socio-biology, ethology, neurobiology, ecology etc.).	2	3
c.	**SE Women in Biology** Research in terms of historical bibliography does not only demonstrate the proportion of women in the history of scientific research, which is often being denied, but it also shows traditional and current, structural as well as symbolic barriers for women in these disciplines.	1	1.5
	Total	**5**	**7.5**
	Objective: Students acquire basic knowledge of biology in terms of scientific theory, the relationship between biology and other disciplines – including gender aspects.		
	Prerequisites: none		

22.	**Elective module: Skills from other Disciplines**	**h**	**ECTS-Credits**
	The module allows to choose courses with a total of 7.5 ECTS-Credits from other bachelor's programmes at the University of Innsbruck.		7.5
	Total		**7.5**
	Objective: The module promotes students of the bachelor's programme in Biology to look beyond the boundaries of their own discipline and to acquire additional qualifications. In this context, the fields of foreign languages, IT, management as well as scientific and ethical reflection are recommended.		
	Prerequisites: The prerequisites of the respective curricula do apply.		

§ 7 Studies Induction and Orientation Stage

(1) The Studies Induction and Orientation Stage covers one semester (30 ECTS-Credits) and offers students an overview of the main contents of the degree programme and its structure in order to provide a factual basis to assess the decision to pursue the chosen field.

(2) The Studies Induction and Orientation Stage requires the following course examinations, which may be repeated twice, to be completed successfully:

1. VO Basic Botany: Functional Anatomy of Plants (Compulsory Module 2 lit a/2 h/3 ECTS-Credits);
2. VO Basic Microbiology: Significance of Microorganisms (Compulsory Module 2 lit b/2 h/3 ECTS-Credits);
3. VO Basic Zoology: Organisation and Diversity of Animals I (Compulsory Module 2 lit c/2 h/3 ECTS- Credits).

(3) Passing the examinations specified in paragraph 2 permits students to attend all further courses and take all examinations following the Studies Induction and Orientation Stage and to write a bachelor's thesis as described in the curriculum. Registration requirements specified by the curriculum are to be followed.

§ 8 Bachelor's Thesis

(1) The bachelor's thesis is to be completed within the context of a course using continuous assessment from the compulsory modules 5A, 5B, 7, 11 and 13 and all elective modules (with the exception of elective module 22). The choice of the course may be made by students with permission of the instructor of the course.

(2) A topic may be addressed jointly by several students with permission of the Director of Studies and the instructor of the course provided that the work of each student can be assessed individually.

(3) The bachelor's thesis is to be submitted in written form and in electronic form as determined by the Director of Studies.

(4) The bachelor's thesis is equivalent to a workload of 15 ECTS-Credits. These ECTS-Credits are in addition to those of the course in which context the bachelor's thesis is to be completed.

§ 9 Examination Regulations

(1) A module is completed when all of its courses have been successfully completed.

(2) For lectures, evaluation is based on an oral and/or written examination. The method of testing is to be defined and announced by the instructor before the start of the course

(3) Evaluation in continuous assessment courses (‚immanent examination') (VU, UE, PS, SE, EX, EU, PJ), is based on written, oral and/or practical contributions within the context of the course. The methods of evaluation are to be defined by the instructor before the start of the course.

§ 10 Academic Degree

Graduates of the Bachelor's Programme in Biology are awarded the academic degree „Bachelor of Science", abbreviated „BSc".

§ 11 Validity and Effect

(1) The curriculum is effective as of 1 October 2008.

(2) The modification of the curriculum in the version published in the University of Innsbruck Bulletin of 23 June 2010, Issue 42, No 327 is effective as of 1 October 2010 and applies to all students.

(3) § 7 in the version published in the University of Innsbruck Bulletin of June 8 2011, Issue 26, No 457 is effective as of 1 October 2011 and applies to all students beginning their degree programme as of winter semester 2011/2012.

(4) § 7 in the version published in the University of Innsbruck Bulletin of 8 June 2011, Issue 26, No 457 ceases to be effective at the end of 30 September 2014.

§ 12 Transitional Provisions

(1) Regular degree students who began the bachelor's programme in Biology (curriculum of 7 July 2003) at the University of Innsbruck before 1 October 2008 are entitled to complete the study programme within a maximum of eight semesters from the date when the curriculum described in this document came into effect.

(2) If the bachelor's programme in Biology (curriculum of 7 July 2003) is not completed within the prescribed period, students are required to follow the new curriculum of the Bachelor's Programme in Biology.

(3) Students may voluntarily choose to switch to the new curriculum of the Bachelor's Programme in Biology at any time.

(4) Course examinations required by the curriculum for the Bachelor's Programme in Biology in the version published in the University of Innsbruck Bulletin of 29 April 2008, Issue 36, No 265 are considered equivalent to the course examinations for the curriculum version published in the University of Innsbruck Bulletin of 23 June 2010, Issue 42, No 327 as follows:

Course according to curriculum 2008	**Course according to curriculum 2010**
CM5a and CM5b: Quantitative Techniques in Ecology VO1 and UE1	CM4a: Quantitative Techniques in Ecology VU2
CM4b: Soil Science VO1	CM5Aa: Soil Science VO1
CM5c and CM5d: Methods in Field Work VO1 and UE2	CM5Ab and 5Ac: Methods in Field Work VO1 and UE2
CM4c: Biological Seminar SE1	CM5Ad or CM5Bb: Biological Seminar SE1
CM14: Biochemistry I VO3	CM14: Biochemistry for Biologists VO3
EM1b: Diversity and Systematics of "Lower Plants" VU2	EM1b EM1e: Diversity and Systematics of "Lower Plants" VO1 and Ecology of Treeline VO1
EM13a and 13b: Informatics for Ecology VO1 and UE2	EM13a: Informatics for Ecology VU3
EM13c and 13d: Methods in Ecology VO1 and UE1	EM13a: Methods in Ecology VU2
EM19Aa and EM19Ab: Developmental Biology VO2 and UE3	EM19Aa and EM19Ab: Developmental Biology VO1 and UE4
EM20Ba and EM20Bb: Proteomics VO2 and UE3	EM20Ba and EM20Bb: Proteomics VO1 and VU4

CM = Compulsory Module

EM = Elective Module