Study Regulations

Faculty of Agriculture and Horticulture

Study Regulations

for the advanced Masters Course "Biodiversity Management and Research"

Contact person: Prof. Dr. U. Zeller

Study regulations

for the advanced Masters Course

Biodiversity Management and Research

According to § 17 par. 1, No.1 of the constitution of the Humboldt-Universität zu Berlin (Amtliches Mitteilungsblatt of the Humboldt-Universität zu Berlin No. 28/2006) the Board of the Faculty of Agriculture and Horticulture has decreed the following study regulations for the International Master programme „Biodiversity and Research" on July 14th 2010 [*]

§ 1   Bounds of validity

(1) These study regulations regulate objectives, extent and content of the advanced Masters Course *Biodiversity Management and Research* at the Humboldt-Universität zu Berlin. They are valid in conjunction with the examination regulations for the advanced Masters Course *Biodiversity Management and Research* and the General Articles for study and examination affairs (ASSP) according to the currently valid versions.

(2) The advanced Masters Course *Biodiversity Management and Research* is jointly offered by the Humboldt-Universität zu Berlin (HU) and the University of Namibia (UNAM) in Windhoek within the "Quality network Biodiversity in Sub-Sahara Africa" funded by the DAAD.

§ 2   Beginning of studies, full-time programme, part-time programme

(1) Studies of the advanced Masters Course *Biodiversity Management and Research* are exclusively to begin by the winter term.

(2) The degree programme *Biodiversity and Research* is a full-time Master programme. As the course work takes place in a 2-years-rhythm in Namibia, the programme can not be regarded as a part-time-programme.

§ 3   Aims of the Master programme, internationality

(1) The programme aims at research-related, advanced and specialised knowledge transfer in the field of biodiversity research and in terms of methodological competences. A crucial component of this programme is the increasing development towards independent scientific working to achieve the competence of methodological assessment of new problems.

(2) The advanced Masters Course *Biodiversity Management and Research* enables the students to deal especially with interdisciplinary questions and to contribute to research projects and development projects.

(3) The successful completion of the advanced Masters Course *Biodiversity Management and Research* generates competences for research and teaching at universities, public and private research institutes, planning projects of governmental, national and international agencies and organisations, which deal with environmental law and land use and assessing Biodiversity within ongoing national and international conservation programmes.

§ 4   Learning and teaching

Acquired skills of students within the advanced master programme *Biodiversity Management and Research* will be imparted using different forms of learning and teaching. Forms of learning and teaching are in particular:

– Lectures (LE): Lectures are course offerings to mediate far-ranging knowledge to students at a glance.

– Seminar (SE); as a main seminar or a research seminar: seminars are course offerings in which students should acquire in depth-knowledge and

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[*] The Senatsverwaltung für Bildung, Wissenschaft und Forschung has confirmed the study regulations on ____ .

develop competences to independently apply this knowledge or to analyse and evaluate upcoming challenging issues.

– Excursion (EX): Excursions are course offerings which usually take place as a block of several days at another locality and which should help students to familiarize with topics of their studies from their own experience.

– Colloquia (CO): Colloquia aim at an active reflection of advanced research-related questions and may complement the stage of writing the Master thesis and completing the programme.

– Internship (INT): Internships and related course offerings enable students to get insights into various professional fields and to practically apply the skills learned on a trial basis.

§ 5   Modules and Credit Systems

(1) The advanced Masters Course *Biodiversity Management and Research* is built up on modules that include course offerings, which are tightly linked in content and timing. The modules are listed in § 7 and are described in appendix 1. Modules are generally completed by study attending exams according to the examination regulations. Adhering to the requirements of the study and examination regulations the Board of Faculty can refine modules in order to account for the scientific development of the programme and the career opportunities of the students. This refinement is announced at the web pages of the Faculty.

(2) Based on the workload associated with the modules, Credit Points ("Studienpunkte"= SP) are designated. One Credit Point (SP) is equivalent to an averaged workload of 30 working hours. The workload is calculated from teaching, virtual teaching and independent studies, including the preparation for specific performances according to par.3 and other preparation and revision of the courses (course achievements) as well as the expenditure of work for the preparation and the passing of an exam. The designated Credit Points for each module (SP) are assigned if the course performances are achieved resp. the exam is passed.

(3) Specific performances may be required within the course achievements insofar this is regulated in appendix 1. If there are alternative forms provided in appendix 1, this is announced by the teacher at the beginning of the term. If the course achievements are sufficient to the requirements, the teacher certifies the performances. Grading will only take place if this is specified in appendix 1; the grades are not considered regarding the final grade.

§ 6   Amount of course offerings

Within the advanced Masters Course *Biodiversity Management and Research* 120 Credit Points (SP) have to be acquired by the students. 100 Credit Points (SP) are allocated for professional studies and 20 Credit Points (SP) are allocated to the Master thesis.

§ 7   Curriculum

(1) The advanced Masters Course *Biodiversity Management and Research* comprises the following modules:

Compulsary subjects (P-modules)

1. Biostatistics, Scientific Communication & Presentation	10 SP
2. Assessing Biodiversity	10 SP
3. Evolution of Biodiversity	10 SP
4. Applied Biogeography	10 SP
5. Integrated Land use and Water Resource Management	10 SP
6. Natural Resource Economics and Management	10 SP
7. Environmental Law	5 SP

Elective subjects (WP-modules)

8.   a) GIS and Remote Sensing   5 SP

OR

b) Management of Natural History Collections   5 SP

9.   a) Functional Biodiversity of arid and semi-Arid ecosystems   10 SP
and

10   a) Functional Biodiversity of woodland and Forest ecosystems   10SP

OR

9   b) Functional Biodiversity of marine ecosystems   10 SP
and

10   b) Functional Biodiversity of freshwater Ecosystems   10 SP

(2) The advanced Masters Course *Biodiversity Management and Research* is successfully completed if all study performances are completed, if all examinations are passed and if all Credit Points are yielded.

§ 8   Further regulations

The quality assurance of teaching, the course guidance, deadlines and their appointment, the approval of study performances, the equation of disadvantages in the provision of performances and the compatibility of family and studies conform with the ASSP.
Within the provision of performances the rules of deceit in examinations of the ASSP apply accordingly.

§ 9   Coming into force

(1) These regulations come into force the day after their publication in the paper of curatorial disclosure (Amtliches Mitteilungsblatt) of the HU.

(2) These regulations apply to students who begin their studies after coming into force of these examination

regulations or to students transferring from other universities or other degree programmes.

(3) For students who began their studies before coming into force of these regulations, the regulations from April 1st 2004 (Amtliches Mitteilungsblatt of the Humboldt-Universität zu Berlin No. 08/09) apply until the end of the summer term 2013. The examination regulations from April 1st 2004 expire with the end of the summer term 2013.

P- Module 1 **Biostatistics, Scientific Presentation and Publication**				Credit Points: *10*

Learning objectives:

Based upon the introduction to statistics and different handling of databases, participants learn to independently apply methods of scientific working and thereby to find interesting solutions.

The participants acquire the following knowledge and skills:

- skills to analyze and interpret biological and agricultural experimental data and results
- knowledge to design and manage monitoring data bases, they acquire practical skills in visualization and presentation of data bases
- key modelling approaches for conservation ecology
- working knowledge of using a modern statistical programming language (e.g. R)
- understanding the concept of Metadata
- knowledge about guidelines on various aspects of scientific writing and communication

preconditions: *none*

Learning and teaching	Contact hours per week	Workload (hours)	Credit Points and requirements for assignation	Topics and contents

LE	*2*	*180 hours*
		60 contact hours,
		120 hours Self-study according to § 5Par. 2
			6 SP, written examination	- Scientific experimentation:
				  - Analysis and visualization of data
				  - Data management
				  - Spatial statistics
				  - Generation of research questions and hypotheses
				  - Use of modelling and simulation for answering research questions
				- Various aspects of scientific communication

SE	*2*	*120 hours* *40 contact hours,* *80 hours Self-study according to § 5Par.2*	*4 SP, Homework with oral presentation*	- Applications of basic designs to farm experiments and trails - Modelling land-use patterns and species distributions - Date bases (Searching, Citation and Management) - writing reports, journal papers, presentations, poster and project proposals
Module final examination			*Passing*	Written examination (180 Min) = 60 % Homework (5 pages) = 20% Oral presentation = 20 %
Duration of module	☒ 1 Semester ☐ 2 Semester			
Beginning of module	☒ WS ☐ SS			
lecturers	Dr. J.K. Mfune, Dr. M. Müller			

P - Module 2 **Assessing Biodiversity**	Credit Points: 10

Learning objectives:

Based on the acquired scientific methodological competences, participants learn to independently deal with, evaluate and present scientific problems with regard to assessment of biodiversity.
The participants acquire the following knowledge and skills:
- skills to apply different methodological approaches for assessing biodiversity
- skills to identify problems, to formulate scientific research questions as well as to develop hypotheses
- skills to design and assess monitoring programmes as well as to test hypotheses rigorously and cost-effectively
- basic knowledge on cell- and molecular biology
- Insights into modern taxonomy and comparative morphology
- Knowledge on the ecological and biological significance of organisms and their relation to physiological and ethological aspects
- In depth-knowledge on the significance and vulnerability of biodiversity

preconditions: *none*

Learning and teaching	Contact hours per week	Workload (hours)	Credit Points and requirements for as-signation	Topics and contents
LE	*2*	*180 hours* *60 contact hours,* *120 hours* *Self-study according to § 5Par. 2*	*6 SP, written examination*	- generation of hypotheses - designing and need for adaptation of monitoring programs - Methods in taxonomy and comparative morphology
SE	*2*	*90 hours* *30 contact hours,* *60 hours Self-study according to § 5Par.2*	*3 SP, Homework with oral presentation*	- Questions and problems relating to experimental set-up - Sampling methods for different kinds of data - Dissection of animals and analysis of diagnostic characters of important terrestrial groups
EX		*30 hours* *10 contact hours,* *20 hours Self-study according to § 5Par.2*	*1 SP,* *Attendance,* *written report*	- Neudamm Agricultural College or Avisdam
Module final examination			*Passing*	Written examination (180 Min) = 60 % Homework (5 pages) = 20% Oral presentation = 10 % Written report of excursion (2 pages) = 10%
Duration of module	☒ 1 Semester ☐ 2 Semester			
Beginning of module	☒ WS ☐ SS			
lecturers	Prof. Dr. U. Zeller, Dr. J.K. Mfune, T. Göttert			

P - Module 3	Credit Points: 10
Evolution of Biodiversity	

Learning objectives:

Based on the introduction of various aspects to research on biodiversity, the participants learn to understand the evolutionary concept und its significance for biological processes worldwide.
The participants acquire the following knowledge and skills:

- background knowledge on biodiversity research
- in depth-knowledge of the evolutionary concept
- understanding of the modern synthetic theory of evolution (driving factors of evolution)
- knowledge on species concept, specification and the design of phylogenetic trees
- understanding of evolutive scenarios and associations among and between taxa
- background information on the evolutionary aspects of agriculture to have a better understanding of biodiversity and how best to conserve it

preconditions: *none*

Learning and teaching	Contact hours per week	Workload (hours)	Credit Points and requirements for as-signation	Topics and contents
LE	*2*	<u>*150 hours*</u> *50 contact hours, 100 hours Self-study according to § 5Par. 2*	*5 SP, written examination*	- History of Biodiversity - Modern concepts and theories in evolution-ary biology; Mechanisms of evolution - Introduction to mammalian phylogeny - Methods in taxonomy and comparative morphology, introduction to the ecological and biological significance of organismic structures
SE	*2*	<u>*150 hours*</u> *50 contact hours, 100 hours Self-study according to § 5Par.2*	*5 SP, Homework with oral presenta-tion*	- Species concept; phylogenetic concept
Module final examination			*Passing*	Written examination (180 Min) = 60 % Homework (5 pages) = 20% Oral presentation = 20 %
Duration of module	☒ 1 Semester		☐ 2 Semester	
Beginning of module	☒ WS		☐ SS	
lecturers	Prof. Dr. U. Zeller, Dr. Gwanama, Dr. Oellermann, Dr. E. Maass, T. Göttert			

P - Module 4 Applied Biogeography				Credit Points: 10

Learning objectives:

The participants learn to interpret the interaction of various bio-geographic processes and of distribution patterns of species and thereby are able to apply bio-geographical aspects in association with nature and resource conservation.
The participants acquire the following knowledge and skills:

- Understanding for the distribution patterns of species
- Competences to discuss different gradients of species diversity
- in-depth understanding of various bio-geographic aspects as specification, dispersal and extinction
- understanding for the influence of human activities on the distribution patterns of organisms
- basic knowledge and understanding for the application of biogeography for the conservation of natural resources and for the nature conservation
- goof knowledge of plate tectonics and ist influence on the distribution patterns of organisms

preconditions: *none*

Learning and teaching	Contact hours per week	Workload (hours)	Credit Points and requirements for as-signation	Topics and contents
LE	*2*	*180 hours 60 contact hours, 120 hours Self-study according to § 5Par. 2*	*6 SP, written examination*	- Biogeography: Distribution patterns of plants, animals and communities - Climate zones, Eco-regions, geographical barriers - Plate tectonics - Dispersal, endemism, isolation, cosmopolitism - Habitat fragmentation and global change, invasion and extinction - Nature conservation, bioindication - Climate change – causes and effects
SE	*2*	*90 hours 30 contact hours, 60 hours Self-study according to § 5Par.2*	*3 SP, Homework with oral presenta-tion*	• Application of biogeography in different re-search fields including the sustainable use of resources and the global biodiversity • Diskussions regarding global distribution pattersn, regarding plate tectonics and ist influence on the distribution of species, re-garding bio-geographical processes, appli-cation of biogeography and climate change
EX		*30 hours 10 contact hours, 20 hours Self-study according to § 5Par.2*	*1 SP, Attendance, written report*	- Neudamm Agricultural College oder Avis-dam
Module final examination			*Passing*	Written examination (180 Min) = 60 % Homework (5 pages) = 20% Oral presentation = 10 % Written report of excursion (2 pages) = 10%
Duration of module	⊠ 1 Semester		☐ 2 Semester	
Beginning of module	⊠ WS		☐ SS	
lecturers	Dr. J.K. Mfune, M. Angula			

P - Module 5	Credit Points: 10
Integrated Land Use and Water Resources Management	

Learning objectives:

Based upon the introduction into the concept of sustainable development and resource management, the participants learn to better understand correlations between agricultural economy and biodiversity and to develop, assess and discuss solutions with the attained knowledge.

The participants acquire the following knowledge and skills:

- Basic knowledge on the correlations between agricultural techniques and their effects on biodiversity, the biological/ecological constraints of agricultural production systems and the principles of biodiversity in agricultural ecosystems (as Organic Farming, forestry systems and urban agriculture)
- understanding of human exploitation of marine and freshwater resources and the objectives and techniques of management to promote sustainable harvesting of aquatic resources
- understanding of the environmental impacts of capture fisheries, aquaculture and construction of dams on aquatic systems and the conflicts between different users of aquatic resources

preconditions: *none*

Learning and teaching	Contact hours per week	Workload (hours)	Credit Points and requirements for assignation	Topics and contents
LE	*2*	*150 hours* *50 contact hours,* *100 hours Self-study according to §5Par. 2*	*5 SP, written examination*	- Evolution of land use and agricultural production systems (Landscape ecology and agriculture, production systems) - Introduction to eco-geography of agricultural land use systems (Classification of global ecozones) - Introduction to land use planning - Objectives of resource management, The fisheries management process, The precautionary approach, Aquatic resource population modelling, Population dynamics of crop species, Conflicts between different user groups - Biodiversity, Sustainable development concept, Human dimension in resource management - Sustainable land use systems
SE	*2*	*150 hours* *50 contact hours,* *100 hours Self-study according to § 5Par.2*	*5 SP, Homework with oral presentation*	- Discussion of several aspects of sustainability in agriculture, positive and negative influences trough land using on biodiversity, several land use systems - Practical approaches to problem solving
Module final examination			*Passing*	Written examination (180 Min) = 60 % Homework (5 pages) = 20% Oral presentation = 20 %
Duration of module	☒ 1 Semester		☐ 2 Semester	
Beginning of module	☒ WS		☐ SS	
lecturers	Dr. J. Elsabie, Dr. Zeidler, PD Dr. H. Hoffmann, Mr. S. Shikongo			

P - Module 6 Natural Resource Economics and Management				Credit Points: 10

Learning objectives:

Based upon the attained, comprehensive understanding of resource economics and management, the participants learn to apply the paradigms and economics of management principles on the local, regional and global level.

The participants acquire the following knowledge and skills:

- knowledge on the paradigms and economics of management principles on the local, regional and global level
- knowledge of factors and principles of population and economic growth
- ability to describe different forms of land use
- understanding of basic interactions between the natural resources as an agricultural production system with particular reference to natural and agricultural biodiversity
- knowledge of various approaches that are being used in resource management (ecosystem approach, adaptive management, community based resource management systems)
- ability to describe commodity chains and regional multiplier effects, to identify global disparities and to discuss spatial effects of globalization

Preconditions: *none*

Learning and teaching	Contact hours per week	Workload (hours)	Credit Points and requirements for assignation	Topics and contents
LE	*2*	*150 hours* *50 contact hours,* *100 hours Self-study according to § 5Par. 2*	*5 SP, written examination*	- factors and principles of population and economic growth - economic change and development processes, spatial patterns - land use forms - commodity chains and regional multiplier effects - global disparities - rural development with regard to globalization
SE	*2*	*150 hours* *50 contact hours,* *100 hours Self-study according to § 5Par.2*	*5 SP, Homework with oral presentation*	• Description of various ecozones, abiotic, biotic and economic factors for agriculture, steps in agricultural land use planning • several aspects of sustainability in agriculture • land use planning methods, analysis and presentation, example planning of a biodiversity based agricultural ec system • data processing of different stata for resource management
Module final examination			*Passing*	Written examination (180 Min) = 60 % Homework (5 pages) = 20% Oral presentation = 20 %
Duration of module	☒ 1 Semester		☐ 2 Semester	
Beginning of module	☒ WS		☐ SS	
lecturers	Dr. P. Dannenberg, Prof. S. Kinder			

P - Module 7 Environmental Law				Credit Points: 5

Learning objectives:

Based on an overview of international law, the participants learn to establish correlations to biodiversity and acquire knowledge of principles and problems of nature and environmental conservation.

Preconditions: *none*

Learning and teaching	Contact hours per week	Workload (hours)	Credit Points and requirements for assignation	Topics and contents
LE	*2*	*90 hours* *30 contact hours,* *60 hours Self-study according to § 5Par. 2*	*3 SP, written examination*	- Introduction to International Law: History, sources, relation to national law, relevance in international relations - International environmental law: History and concepts of international environmental law: Stockholm, Rio and Johannesburg Conferences, key principles, common goods, role of developing countries - Environmental treaties: drafting, negotiations, conclusion, regimes - Principles and problems of Biodiversity Protection through law - Conservation of land resources: Conservation treaties (land); species protection; The Convention on International Trade in Endangered Species (CITES), implementation, trade related problems; Biodiversity Convention (CBD); Desertification; Wetlands - Conservation of marine resources: fishing, oil pollution, UNCLOS, regional treaties, liability approach - Biodiversity and intellectual property: genetic resources and conflicts with TRIPS - Genetically Modified Organisms: biotechnical engineering; Cartagena Protocol on Biosafety; PICC Convention - Climate Change: Effects of climate change on biodiversity; Climate Change Convention; Kyoto Protocol and process - Implementation: comparison of environmental legislation in Namibia, SADC countries and Germany
SE	*2*	*60 hours* *20 contact hours,* *40 hours Self-study according to § 5Par.2*	*2 SP, Homework with oral presentation*	- Students prepare by reading on a reference list
Module final examination			*Passing*	Written examination (180 Min) = 60 % Homework (5 pages) = 20% Oral presentation = 20 %
Duration of module	☒ 1 Semester		☐ 2 Semester	
Beginning of module	☐ WS		☒ SS	
lecturers	Dr. O. Ruppel, Dr. S. Forster			

WP - Module 8a GIS and Remote Sensing				Credit points: 5

Learning objectives:

Students gain knowledge and skills required for the analytical evaluation of terrain ecological structures and functions at the landscape level and the management requirements posed by change

preconditions: *none*

Learning and teaching	Contact hours per week	Workload (hours)	Credit Points and requirements for assignation	Topics and contents
LE	*2*	*90 hours* *30 contact hours,* *60 hours Self-study according to § 5Par. 2*	*3 SP, written examination*	- Topological, chorological and chronological features and dynamics of ecology at the landscape level - Analysis of abiotical and biotical landscape features retrieved from aerial photos and satellite images - Analytical techniques of observation and ground truth verifications from on site visits - Principle concepts in zonation, classification and mapping of landscape features - Processing and integration of landscape information into spatial data bases - Applications and representation of landscape ecological data
SE	*2*	*60 hours* *20 contact hours,* *40 hours Self-study according to § 5Par.2*	*2 SP, Homework with oral presentation*	- practical sessions in the Laboratory for Spatial Analysis of the DGES (Department of Geography and Environmental Studies)
Module final examination			*Passing*	Written examination (180 Min) = 60 % Homework (5 pages) = 20% Oral presentation = 20 %
Duration of module	☒ 1 Semester		☐ 2 Semester	
Beginning of module	☐ WS		☒ SS	
Lecturers	Dr. M. Hipondoka			

WP - Module 8b **Management of Natural History Collections**				Credit Points: 5

Learning objectives:

Students will be trained in the principles of establishing, developing, maintaining, and information redistribution in biological reference and research collections and thereby are able to apply these principles fort he conservation and the management of natural history collections

preconditions: *none*

Learning and teaching	Contact hours per week	Workload (hours)	Credit Points and requirements for assignation	Topics and contents
LE	*2*	<u>*90 hours*</u> *30 contact hours,* *60 hours Self-study according to § 5Par. 2*	*3 SP, written examination*	- Purpose of collections: Introduction, Definition of collections, Ethics, Operational planning - Specimen acquisition: Field preservation, Preservation fluids and fixatives, Specimen labelling, Microscope preparation, Vertebrate preparation, Botanical preparation, Skeletal reconstruction, Gene and tissue banks - Collection management: Infrastructure management, Record keeping, Specimen management, Information extraction, Information management, Digital information capture, Electronic information processing, Collection development planning - Information dissemination: Exhibitions and Education, Practical display techniques, Practical education techniques - Specimen identification: Character sets, Paper based identification media, morphometric identification media, Electronic identification media, Building character sets for identification keys, Constructing keys
SE	*2*	<u>*60 hours*</u> *20 contact hours,* *40 hours Self-study according to § 5Par.2*	*2 SP, Homework with oral presentation*	- practical work based on selected topics to prepare students for collection management in specific disciplines - preparation of job descriptions and operational procedures for a particular collection - preparation of a whole skeleton mount of a particular vertebrate in own time - preparation and presentation of an electronic html report for developing a specific collection - Practical display techniques (create display based on previous work (skeletal material, prepared specimens, information on page layouts)) - Practical education techniques (plan and market an educational event as a group) - Verification of keys : Verifying electronic key by presentation to other students
Module final examination			*Passing*	Written examination (180 Min) = 60 % Homework (5 pages) = 20% Oral presentation = 20 %
Duration of module	☒ 1 Semester		☐ 2 Semester	
Beginning of module	☐ WS		☒ SS	
lecturers	Prof. Dr. U. Zeller, Prof. Dr. I Mapaure, Mr. S. Eiseb			

WP- Module 9a **Functional Biodiversity of arid and semiarid ecoosystems**				Credit Points: 10

Learning objectives:
In this module the participants gain in-depth knowledge with regard to desertification and management of natural resources with reference to the conservation of biodiversity.
The participants acquire the following knowledge and skills:

- understanding of the dynamics of natural resources for organisms in arid regions
- in-depth knowledge of eco-physiological conditions and processes
- spezial knowledge in ecology of arid ecosystems
- ability to explain natural processes effecting patterns of biodiversity
- background knowledge of the particularities for the management of natural resources by humans
- ability to discuss the possibilities for the sustainable development in arid regions

preconditions: *none*

Learning and teaching	Contact hours per week	Workload (hours)	Credit Points and requirements for as-signation	Topics and contents
LE	*2*	*180 hours* *60 contact hours,* *120 hours Self-study ac-cording to § 5Par. 2*	*6 SP, written examination*	- Introduction to Hot Arid Lands of the World and Namibia, geographic & climatological background, with emphasis on Namib - Ecophysiology in conditions of water limitation, food limitation, and heat: sources, limitations, time-space windows - Desert ecology and biodiversity in deserts - Management of natural resources in desert habitats - Desertification
SE	*2*	*90 hours* *30 contact hours,* *60 hours Self-study according to § 5Par.2*	*3 SP, Homework with oral presenta-tion*	Optional integration of a 2-days-seminar with empha-sis on the specific problems of another arid region (e.g. Land Degradation and Desertification in the Sa-hel)
EX		*30 hours* *10 contact hours,* *20 hours Self-study according to § 5Par.2*	*1 SP,* *Attendance,* *written report*	- Visit the Gobabeb Research Station
Module final examination			*Passing*	Written examination (180 Min) = 50 % Homework with oral presentation = 30 % Report excursion = 10% *Requirement: Attendance of all lectures and seminars as well as the excursion*
Duration of module	⊠ 1 Semester		☐ 2 Semester	
Beginning of module	☐ WS		⊠ SS	
lecturers	Dr. J. Henschel			

WP - Module 9b **Functional Biodiversity of woodland and forest ecosystems**	Credit Points: 10

Learning objectives:

The participants gain basis knowledge to recognize & analyse woodland biodiversity issues, and to identify possible management issues.

The participants acquire the following knowledge and skills:

- Ability to evaluate the importance of the savannah woodland system for Namibia, for the south African region and on the global level
- ability to name and identify the most important woody species and their characteristics
- ability to discuss the importance of soil moisture balance on the development of the ecosystem
- ability to discuss the importance of light in the savannah woodland system
- ability to explain the effects of fire in the woodland system
- ability to discuss the effects of herbivory on grass plants
- ability to discuss the effects of human influences on the development of the savannah ecosystem
- ability to discuss the importance of insects in the savannah ecosystem
- ability to discuss nutrient cycling

preconditions: *none*

Learning and teaching	Contact hours per week	Workload (hours)	Credit Points and requirements for assignation	Topics and contents
LE	*2*	*180 hours* *60 contact hours,* *120 hours Self-study according to § 5Par. 2*	*6 SP, written examination*	- Introduction to woodland ecosystems and importance of these ecosystems - Grazing: herbivory and anthropogenic effects - Woody plant species and their adaptations - Effects of fire in savannahs - Effects of insects in savannahs - Nutrient cycle and problems - Management of woodland ecosystems
SE	*2*	*90 hours* *30 contact hours,* *60 hours Self-study according to § 5Par.2*	*3 SP, Homework with oral presentation*	• Consequences of changing biodiversity and effects on the functionality of ecosystems • Discussion of different models of management practices • Gradient analysis in vegetation ecology: analysis of data with help of classification and ordination techniques
EX		*30 hours* *10 contact hours,* *20 hours Self-study according to § 5Par.2*	*1 SP, Attendance, written report*	- Field visits
Module final examination			*Passing*	Written examination (180 Min) = 60 % Homework (5 pages) = 20% Oral presentation = 10 % Written report of excursion (2 pages) = 10%
Duration of module	⊠ 1 Semester		☐ 2 Semester	
Beginning of module	☐ WS		⊠ SS	
Lecturers	Prof. Dr. I. Mapaure			

WP - Module 10a **Functional Biodiversity of Marine Ecosystems**				Credit Points: 10

Learning objectives:

The participants develop a basic understanding for patterns, factors and importance of marine biodiversity.
The participants acquire the following knowledge and skills:

- Knowledge of the systematics of marine ecosystems
- ability to explain differences between marine and terrestrial ecosystems
- ability to name the most important groups of organisms in the marine environment
- ability to describe the processes controlling diversity in marine systems
- ability to explain basic concepts in biodiversity research
- ability to name the major components of rocky shore communities and explain their ecology

preconditions: *none*

Learning and teaching	Contact hours per week	Workload (hours)	Credit Points and requirements for as-signation	Topics and contents
LE	2	*180 hours* *60 contact hours,* *120 hours Self-study according to § 5Par. 2*	6 SP, written examination	- Techniques of observation, measurement of abiotic parameters, and fisheries - Marine Diversity Patterns - fisheries, protection measures, engineering, aqua-culture - Assessing marine biodiversity - Experimental Design - Biostatistics
SE	2	*90 hours* *30 contact hours,* *60 hours Self-study according to § 5Par.2*	3 SP, Homework with oral presenta-tion	- Design of an own scientific approach at a faunistic inventory, a study in fisheries biology and an as-sessment of the potential human impact/ basic strategies for protection measures
EX		*30 hours* *10 contact hours,* *20 hours Self-study according to § 5Par.2*	1 SP, Attendance, written report	- Swakopmund
Module final examination			*Passing*	Written examination (180 Min) = 60 % Homework (5 pages) = 20% Oral presentation = 10 % Written report of excursion (2 pages) = 10%
Duration of module	☒ 1 Semester		☐ 2 Semester	
Beginning of module	☐ WS		☒ SS	
Lecturers	Dr. M. Lenz, Dr. J. Elsabie			

WP - Module 10b **Functional Biodiversity of Freshwater Ecosystems**	Credit Points: 10

Learning objectives:

Based on the organismic inventory of different habitats, participants learn to describe functions and the biological role of specific characteristics of animals, the adaptive potential and the ecological role of indigenous invertebrates and vertebrates. They are able to find their own scientific approaches to design studies on fauna, freshwater and on fisheries biology. Furthermore they are able to form their own opinion of potential anthropogenic impacts and the strategies for the conservation and preservation of these ecosystems.

The participants acquire the following knowledge and skills:

- Knowledge on the systematics of types of freshwater systems from ephemeric ponds and subterranean Karst-waters to major river systems
- in-depth knowledge on adaptive potential and ecological role of native invertebrate and vertebrate species, applied scientific approaches
- ability to describe methods to measure diversity and diversity indices
- ability to plan an experimental or observational study
- ability to explain sampling methods for marine benthic communities
- knowledge and ability to analyze community data using uni- and multivariate statistical techniques
- improved skills in communicating scientific contents (reports, oral presentations)

preconditions: *none*

Learning and teaching	Contact hours per week	Workload (hours)	Credit Points and requirements for assignation	Topics and contents
LE	2	*180 hours 60 contact hours, 120 hours Self-study according to § 5Par. 2*	6 SP, written examination	- Typology of freshwater-bodies, water resources, climate, seasonality - Taxonomy, biogeography, systematics, and evolution of major limnic invertebrate and vertebrate groups - Public and economical outreaches: fisheries, protection measures, engineering, aquaculture -
SE	2	*90 hours 30 contact hours, 60 hours Self-study according to § 5Par.2*	3 SP, Homework with oral presentation	- Design of an own scientific approach at a faunistic inventory, a study in limnology and an assessment of the potential human impact/ basic strategies for protection measures - Exercises in determination, measurement, preparation, and conservation in freshwater ecosystems - Identification of collected species, data analysis
EX		*30 hours 10 contact hours, 20 hours Self-study according to § 5Par.2*	1 SP, Attendance, written report	• Collecting material and visiting a more or less natural water body of fresh water ecosystems
Module final examination		*Passing*	Written examination (180 Min) = 60 % Homework (5 pages) = 20% Oral presentation = 10 % Written report of excursion (2 pages) = 10%
Duration of module	☒ 1 Semester	☐ 2 Semester		
Beginning of module	☐ WS	☒ SS		
Lecturers	Dr. P. Casper			

<table>
<tr><td colspan="2">Module 11
Internship</td><td>Credit points: 10</td></tr>
</table>

Learning objectives:

The objective is to allow the participants a six-week internship at relevant institutions in Namibia (e.g. National Museum, planning agencies, Desert Research Institute), in other SADC countries or in Germany (e.g. Museum for Natural History, Berlin), where they can gain insights into possible fields of career, can establish contacts and prepare their Master thesis.

preconditions: none

Learning and teaching	Contact hours per week	Workload (hours)	Credit Points and requirements for assignation
Module final examination		Final written report (10 pages) = 100%	
Duration of module		☐ 1 Semester ☐ 2 Semester	
Beginning of module		☒ WS ☐ SS	

<table>
<tr><td colspan="2">Module 12
Master Thesis</td><td>Credit Points: 20</td></tr>
</table>

Learning objectives:

Within the Master thesis students prove that they can elaborate a topic scientifically and independently, establishing inter-disciplinary correlations and considering the current stage of research and practice.

preconditions: For admission to the master thesis students have to pass the study attending exams of all modules at least with the grade „sufficient (3,6-4,0).

Learning and teaching	Contact hours per week	Workload (hours)	Credit Points and requirements for assignation
Data collection and evaluation		20	• Topics from the fields of biology, geography and agro-ecology can be chosen • Can be conducted at relevant institutions in Namibia (e.g. National Museum, planning agencies, Desert Research Institute), in other SADC countries or in Germany (e.g. Museum for Natural History, Berlin)
Module final examination		Master thesis = 80 % viva-voce exam = 20 % according to §8, par 4 of examination regulations from 14.7.2010	
Duration of module		☐ 1 Semester ☒ 2 Semester	
Beginning of module		☒ WS ☐ SS	

Here you can find the offered courses for the respective modules and an overview of the Credit Points in the respective term for an ideal, but not obligating course of study.

	1. Semester*	2. Semester*	3. Semester**	4. Semester**
Module	**1. « Biostatistics, Scientific Presentation and Publication »** - compulsary - LE, SE - 10 SP	**6. « Natural resource Economics and Management»** - compulsary - LE, SE - 10 SP		
	2. « Assessing Biodiversity » - compulsary - LE, SE -10 SP	**7. « Environmental Law»** - compulsary - LE, SE - 5 SP **8a. « GIS and Remote Sensing»** - elective - LE, SE - 5 SP *OR* **8b. « Management of Natural History Collections»** - elective - LE, SE - 5 SE	**11. Internship** - 10 SP	
	3. « Evolution of Biodiversity » - compulsary - LE, SE - 10 SP **4. « Applied Geography »** - compulsary - LE, SE, EX - 10 SP **5. « Integrated Land use and Water Resources Management»** - compulsary - LE, SE - 10 SP	**9a. «Functional Biodiversity of arid and semiarid ecosystems»** - elective - LE, SE, EX - 10 SP AND **10a. « Functional Biodiversity of forest and woodland ecosystems»** - elective - LE, SE, EX - 10 SP *OR* **9b. « Functional Biodiversity of marine ecosystems»** - elective - LE, SE, EX - 10 SP *AND* **10b. « Functional Biodiversity of freshwater ecosystems»** - elective - LE, SE, EX - 10 SP	**12. Master Thesis**	**12. Master Thesis** - 20 SP
Hours per week and SP per term	50 SP	40 SP	10 SP	20 SP

*Courses at the University of Namibia, Windhoek

** can be chosen: in Namibia, Germany or other SADC-countries