Technische Universität Dresden

International Institute (IHI) Zittau

###### Study Regulations for the consecutive Master’s degree programme Biodiversity and Collection Management

Dated

The Technische Universität Dresden issues the following examination regulations based upon Sec. 36 (1) of the Higher Education Freedom Act of Saxony as published on 15 January 2013 (SächsGVBl, P. 3).

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### § 1

**Scope**

These study regulations are based upon the Higher Education Autonomy Act in Saxony and regulate the objectives, content, structure and organisation of the degree programme for the consecutive Master’s degree programme Biodiversity and Collection Management at TU Dresden.

**§ 2**

**Objectives of the degree programme**

(1) Students will master the fundamentals of academic work and research with natural history collections, their organisation and management, and should gain an understanding of maintaining biodiversity. Students will learn about the biodiversity of selected groups of organisms (animals, plants, fungi) using special collections and techniques and under the guidance of scientists with taxonomic expertise and will familiarise themselves with the theory and practice of biological classification as well as specific criteria for differentiation. Students will gain an understanding of biocoenoses, be able to assess them from an ecological and conservation perspective and evaluate them in specialist reports. Students will also learn about collection management, including specimen acquisition, taxidermy, recording, maintaining, documenting and scientific evaluation. Students will become familiar with conservation law at both the national and international level, with environmental and natural ethics as well as with microbiological, biochemical and analytical aspects of biodiversity. Students will also learn about management strategies, particularly in the area of project management. Using these specialist skills are a basis, students will be able to encourage and lead intercultural communication in the field of biodiversity and thus play a role in guiding international discussions on issues relating to biodiversity.

(2) Graduates of the Master’s degree programme are able to work purposefully and independently on tasks in complex and abstract concepts with a high level of expertise to find practical solutions. They will be especially capable of integrating specific characteristics, specialist terms and opinions in the field of biodiversity and discussing these in an interdisciplinary manner. Through a combination of knowledge of collection-based research with aspects of management and project management, graduates of this globally unique programme will be able to tackle the complex and varied issues encountered in natural history museums, national and international institutions working in practical conservation and in consultancies.

**§ 3**

**Admission requirements**

(1) To be admitted onto the degree programme, candidates must have completed a first recognised vocational university degree acquired in Germany or qualification from an officially recognised vocational academy in the field of biology or a closely related programme of study such as forestry, agricultural ecology, nature conservation and landscape planning or geoecology.

(2) English language proficiency at a minimum level of B2 in the Common European Framework of Reference for Languages is required. Where the applicants native language is not English and the applicant’s school leaving certificate does not indicate their English language proficiency, this can be demonstrated by presenting a language test certificate such as the paper-based TOEFL test, computer-based TOEFL test, Internet-based TOEFL test or IELTS test.

**§ 4**

**Commencement and duration of studies**

(1) The degree programme may be started in the winter semester.

(2) The normal period of study is 4 semesters and includes contact hours with teaching staff, self-study, supervised practical work and the Master’s examination.

**§ 5**

**Teaching and learning formats**

(1) The programme content has a modular structure. Each modules delivers, consolidates and deepens learning content through lectures, practical sessions, seminars, placements, excursions and self-study. For modules that are evidently subject to several sets of study regulations, synonyms are permitted for examinations in which the content is the same.

(2) The teaching and learning formats according to Paragraph 1(2) are defined as follows:

1. Lectures introduce the material covered by the module. Lectures provide an overview of the subject area or key parts of it. They are used to present and go over the current state of research.

2. Practical sessions are intended to deepen and expand the acquired knowledge in specific areas.

3. Seminars are intended for developing students’ skills, informing students about specific issues using primarily literature, papers and other documentation, presenting complied work, holding group discussions and debates and/or written work.

4. Practical activities are intended allow students to put into practice what they have learned and gain practical skills. These use experiments and data from collections, laboratory work and in the field or interactive demonstrations to illustrate the theoretical content that has been taught, giving students their own experiences and skills working with natural history collections, recording and measurement equipment, biological samples and datasets acquired by third parties.

5. Excursions give students insight into natural history research objects and facilities as well as specialist and interdisciplinary applications/uses of nature and environmental conservation in various types of natural and unnatural ecosystems.

6. Self-study is intended as preparation and revision time for teaching sessions. Students work on, consolidate and deepen their knowledge of the taught content as they see fit.

**§ 6**

**Structure and organisation of the degree programme**

(1) The degree programme has a modular structure. The courses offered are spread over 3 semesters. The fourth semester is reserved for completing the Master’s dissertation and holding the colloquium. Part-time study is permitted in accordance with the Part-Time Study Regulations of the Technische Universität Dresden.

(2) The degree programme consists of eight core modules and six electives. These electives allow the student focus on a particular area of interest. The selection is binding. Students must register for electives; the format and deadline for doing so will be determined by the Examination Board and announced via the normal channels at the International Institute (IHI) Zittau. It is possible to change the selection of modules; this requires the student to submit a written application to the Examinations Office stating the module they wish to drop and the new module they wish to join.

(3) Qualification objectives, content, teaching and learning formats used, requirements, applicability, frequency, amount of work and duration of individual modules are indicated in the module descriptions (Annex 1).

(4) Lectures are held in English.

(5) The optimum distribution of modules across individual semesters such as to allow the degree programme to be completed within the standard period of study, along with the type and scope of lectures contained therein and the required study and examination activities, can be found in the included study plan (Annex 2) or in a personalised study plan for part-time students that has been approved by the International Institute (IHI) Zittau.

**§ 7**

**Content of the degree programme**

(1) The Master’s degree programme in Biodiversity and Collection Management is a research-focussed programme.

(2) The Biodiversity and Collection Management programme comprises the following areas and topics

1. Taxonomy, Classification and Phylogeny of Organisms

2. Geology and Palaeontology

3. Ecology (with a focus on ecosystems and interactions between organisms)

4. Molecular Biology, Biochemistry and Environmental Chemistry (in relation to biodiversity research)

5. Nature Conservation and Law

6. Management (Principles, Project Management, Strategic Management)

7. Biological and Environmental Ethics

8. Museology (with a focus on natural history collections).

**§ 8**

**Credit points**

(1) ECTS credit points document the average workload on students and their progress through their studies. One credit point equates to a workload of 30 hours. In general, 60 credit points are awarded per academic year, i.e. 30 points per semester. The total workload for the degree programme is 120 credit points and comprises teaching and learning formats of the type and scope indicated in the module description as well as the Master’s dissertation and colloquium.

(2) The number of credit points earned by completing a module are indicated in the module description. Credit points are earned upon successful completion of the module. Sec. 26 of the examination regulations remains unaffected.

**§ 9**

**Student counselling services**

(1) General student counselling services are provided via the Student Office at the International Institute (IHI) Zittau and offer advice on issues relating to study options, ways of enrolment and other general matters affecting students. Course-specific advice is the responsibility of the degree programme coordinator and the academic adviser for the Biodiversity and Collection Management Master’s programme. Academic advisers provide supports to students with issues relating to the organisation of the studies.

(2) At the start of the third semester, each student who has not yet completed any part of their studies is required to attend an academic advice session.

**§ 10**

**Changes to module descriptions**

(1) A simplified procedure exists for making changes to module descriptions in order to optimise the organisation of studies where conditions have changed. Fields that are excluded from this procedure are “Module name”, “Objectives”, “Content”, “Teaching and learning formats”, “Requirements for awarding of credit points” as well as “Credit points and grades”.

(2) According to this simplified procedure, the Academic Council of the International Institute (IHI) Zittau enacts the change to the module description at the request of the Academic Affairs Committee. The changes are announced via the normal channels for the International Institute (IHI) Zittau.

## § 11

## Effective date, publication and transitional provisions

(1) These study regulations come into force on 1 April 2019 and are published in the official announcements of the Technische Universität Dresden.

(2) They apply for all students enrolling onto the Biodiversity and Collection Management Master’s degree programme for the winter semester 2019/2020 or later.

(3) The previous study regulations for the Biodiversity and Collection Management Master’s degree programme apply for Students who enrolled before the winter semester 2019/2020 if they do not submit a written declaration of their acceptance of the new regulations to the Examination Board. The form and deadline for this declaration will be determined by the Examination Board and announced via the normal channels at the International Institute (IHI) Zittau.

Issued upon the decision the Academic Council of the International Institute (IHI) Zittau on 9 April 2018 and the authorisation of the Central University Administration on 26 June 2018.

Dresden,

The Dean

of TU Dresden

Prof. Dr.-Ing. habil. DEng/Auckland Hans Müller-Steinhagen

**Annex 1**

**Module descriptions**

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| Module number | **Module name** | **Lecturer responsible** |
| M\_BCM 1.1 | Applied Ecology | Prof. Wesche  karsten.wesche@tu-dresden.de |
| **Objectives** | Based upon a general knowledge of ecology, students will have a deeper understanding of selected groups of individuals as well as applied ecology including nature conservation. This knowledge comprises a range of different ecosystem types. Students will gain a detailed understanding of ecological interrelations and will be able to categorise this based upon key environmental factors. The effects of human activity and suitable conservation strategies and species conservation programmes can be evaluated and conservation strategies thoroughly examined. Students will be able to analyse and evaluate impacts on the natural landscape and derive suitable strategies for taking action. | |
| **Content** | This module comprises the basic foundations of environmental history, biogeography and ecosystems (terrestrial and aquatic), implementation of applied ecology with a particular focus on nature conservation, the use of monitoring and evaluation. | |
| **Teaching and learning formats** | Lectures (2 hrs/wk), seminars (1 hr/wk), practical session (1 hr/wk) and self-study. | |
| **Participation requirements** | Foundational knowledge in general ecology and nature conservation.  Literature:  Pullin A.S. 2002: Conservation Biology. - Cambridge: Cambridge University Press; 345 pp.  or  Kareiva P. & Marvier M. 2010: Conservation Science: Balancing the needs of people and nature. -: Roberts & Co; 576 pp. | |
| **Applicability** | This module is a core module for the Biodiversity and Collection Management and Ecosystem Services Master’s degree programmes. For students on the Biodiversity and Collection Management Master’s degree programme, this module is a prerequisite for core module M\_BCM 1.6 and electives M\_BCM 2.1, M\_BCM 2.2, M\_BCM 2.3, M\_BCM 2.4 and M\_BCM 2.5. For students on the Ecosystem Services Master’s degree programme, this module is a prerequisite for module M\_ESS 2.13. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with one end-of-semester exam of 90 minutes. | |
| **Credit points and grades** | 5 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the**  **module** | This module runs once per year in the winter semester. | |
| **Workload** | The total workload for this module is 150 hours. Of these, 60 hours are allocated for lectures and teaching activities and 90 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| **Module number** | **Module name** | **Lecturer responsible** |
| M\_BCM 1.2 | Taxonomy and Systematics of Plants and Fungi | Prof. Wesche  karsten.wesche@tu-dresden.de |
| **Learning objectives** | Students will gain an overview of the classification and taxonomy of plants and fungi in consideration of evolutionary processes. They will look at the current understanding of the phylogeny of the main groups and learn the specialist biological properties including the ecology of selected taxa. Students will be able to identify collection materials and become practised in the taxonomy of challenging local and exotic species. Upon completion of the module, students will be able to organise species of plants and fungi systematically and taxonomically. They will have gained practice in the careful handling of conservation specimens and be able to use these scientifically. Students will be able to make use of foreign-language taxonomic literature and independently familiarise themselves with new groups. | |
| **Content** | The module comprises content on the large-scale classification of fungi and plants (including mosses), evolution of key properties, working with taxonomic literature / identification keys, practical identifiable of fungi and plant specimens. | |
| **Teaching and learning formats** | Lectures (2.5 hrs/wk), practical sessions (1.5 hrs/wk) and self-study. | |
| **Participation requirements** | Basic knowledge of botanical diversity.  Literature:  Simpson, M. 2010. Plant Systematics. Academic Press | |
| **Applicability** | This module is a core module for the Biodiversity and Collection Management Master’s degree programme. This module is a prerequisite for core modules M\_BCM 1.6, M\_BCM 1.7 and M\_BCM 1.8 as well as the electives M\_BCM 2.1, M\_BCM 2.4 and M\_BCM 2.5. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with one end-of-semester exam of 90 minutes. | |
| **Credit points and grades** | 5 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the**  **module** | This module runs once per year in the winter semester. | |
| **Workload** | The total workload for this module is 150 hours. Of these, 60 hours are allocated for lectures and teaching activities and 90 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| Module number | Module name | **Lecturer responsible** |
| M\_BCM 1.3 | Taxonomy and Systematics of Animals | Prof. Xylander  [willi.xylander@tu-dresden.de](mailto:willi.xylander@tu-dresden.de) |
| **Objectives** | Students will gain a comprehensive overview of the zoological classification, taxonomy and phylogeny of animals. They are familiar with selected examples of invertebrate and vertebrate animals, practice identifying their differences using the established keys and primary literature. They will become familiar with, and be able to apply, the basic methods of data collection for invertebrate and vertebrate animals as well as the principles of taxidermy for scientific collections. They will possess knowledge of aspects of biology and ecology that are relevant to nature conservation. Students will be able to systematically and taxonomically classify animal species from different large taxa. They will practice the use of relevant literature for identification as well as different taxon-specific techniques for preparing specimens for scientific collections. They will have knowledge of the distribution, occurrence and endangerment level of selected animals species relevant to nature conservation. Students will be able to assess the occurrence of certain animal species for the purposes of nature conservation. | |
| **Content** | This module covers large-scale classifications of the animal kingdom, evolution of structural design, specialist knowledge about important animal groups, particularly in terrestrial habitats, working with taxonomic literature / identification keys, taxidermy and preservation techniques. | |
| **Teaching and learning formats** | Lectures (3 hrs/wk), seminars (2 hrs/wk), practical sessions (4 hrs/wk) and self-study. | |
| **Participation requirements** | Basic knowledge of zoological classification and working with zoological identification literature at Bachelor level is required.  Literature:  Weistheide, W., Rieger, R.M.: Spezielle Zoologie Volumes 1 – 2  Ruppert, E.E. & Barnes: Invertebrate Zoology | |
| **Applicability** | This module is a core module for the Biodiversity and Collection Management Master’s degree programme. This module is a prerequisite for core modules M\_BCM 1.6, M\_BCM 1.7 and M\_BCM 1.8 as well as the electives M\_BCM 2.2, M\_BCM 2.3, M\_BCM 2.4 and M\_BCM 2.5. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with   1. an oral examination lasting 30 minutes and 2. an end-of-semester exam of 90 minutes. | |
| **Credit points and grades** | 10 credit points are awarded for this module. The module grade is calculated from the unweighted average of grades from the examinations. | |
| **Frequency of the**  **module** | This module runs once per year in the winter semester. | |
| **Workload** | The total workload for this module is 300 hours. Of these, 135 hours are allocated for lectures and teaching activities and 165 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| Module number | Module name | Lecturer responsible |
| M\_BCM 1.4 | Foundations of  Management | Prof. Eckert  stefan.eckert2@tu-dresden.de |
| **Objectives** | Students will gain fundamental knowledge of different management functions, understand the information-based principles of management decisions and be able to use these to weigh up different alternatives in the decision-making process. They will acquire knowledge, skills and methods that will qualify them for leadership, planning, analytical and advisory roles in institutions dedicated to the collection of natural history exhibits. | |
| **Content** | The module content comprises the management process, information basis of management decisions, decision-making processes, planning and controlling, organisation, human resources planning, leadership and control. | |
| **Teaching and**  **learning forms** | Seminars (2 hrs/wk) and self-study. | |
| **Participation requirements** | None. | |
| **Applicability** | This module is a core module for the Biodiversity and Collection Management Master’s degree programme. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with coursework requiring 70 hours of work. A presentation of 45 minutes. | |
| **Credit points and grades** | 5 credit points are awarded for this module.  The module grade is the grade achieved in the examination. | |
| **Frequency of the**  **module** | This module runs once per year in the winter semester. | |
| **Workload** | The total workload for this module is 150 hours. Of these, 30 hours are allocated for lectures and teaching activities and 120 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| **Module number** | **Module name** | **Lecturer responsible** |
| M\_BCM 1.5 | Ecosystem Services –  Foundations | Prof. Ring  [irene.ring@tu-dresden.de](mailto:irene.ring@tu-dresden.de) |
| **Objectives** | Upon completion of this module, students will have gained knowledge of key approaches for conceptualising ecosystem services and will be familiar with current scientific developments and socio-political strategies for the sustainable delivery of ecosystem services. They will gain an overview of different methods in economics and social sciences for evaluating ecosystem services and possess methodical, social and self-competencies. | |
| **Content** | This module provides an overview of the historical development and current forms of the concept of ecosystem services. The module highlights the relationships between biodiversity and ecosystem services and looks at different approaches to defining and categorising ecosystem services. Insights into global, regional and national ecosystem assessment processes such as the Millennium Ecosystem Assessment (MA), the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and the UK National Ecosystem Assessment (NEA) as well as the principles used in the approaches taken and methods used for understanding and evaluating ecosystem services. | |
| **Teaching and learning formats** | Lectures (1.5 hrs/wk), practical sessions (2 hrs/wk) and self-study. | |
| **Participation requirements** | None. | |
| **Applicability** | This module is a core module for the Biodiversity and Collection Management Master’s degree programme, it is a prerequisite for core module M\_BCM 1.6 and the electives M\_BCM 2.5, and M\_BCM 3.5.  This module is a core module for the International Management Master’s degree programme when choosing Environmental Management as a focus area; in accordance with Sec. 26(4)(2) of the examination regulations for the International Management Master’s degree programme, two of the six focus areas must be chosen.  Additionally, one of five electives to be chosen from the focus area of biodiversity and nature conservation in the Biotechnology and Applied Ecology Master’s degree programme whose modules are worth 15 credit points.  For the Business Ethics and Responsible Management Master’s degree programme, this is one of eleven electives, of which six must be chosen. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with one end-of-semester exam of 90 minutes. | |
| **Credit points and grades** | 5 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the module** | This module runs once per year in the winter semester. | |
| **Workload** | The total workload for this module is 150 hours. Of these, 52.5 hours are allocated for lectures and teaching activities and 97.5 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| Module number | Module name | **Lecturer responsible** |
| M\_BCM 1.6 | Field Ecology | Prof. Xylander  willi.xylander@tu-dresden.de |
| **Objectives** | Students will gain practical experience in recording the stocks of plants, fungi and animals in terrestrial and limnetic ecosystems. They will be able to determine the physio-chemical environmental parameters and assess their importance for the biocoenoses. Students will be able to practically apply methods of quantitative surveying for different groups of organisms and comparatively evaluate the results. They will be able to assess trophic interactions between different organisms and communities of organisms, the composition and dynamics of the communities, the importance of abiotic factors, as well as aspects of nature conservation and the relevance of anthropogenic interference. Upon completion of the module, students will possess systematic knowledge and practical experience in surveying species as well as describing and assessing ecological interactions and the range of methods used in ecology. They will also be able to tackle complex ecological problems and assess the causal relations between the occurrence of different biocoenoses, their agents, as well as dependencies on abiotic parameters. | |
| **Content** | This module focusses on the surveying, collection and documentation of important taxa using specific methods on open terrain and in collections as well as on the ecological relationships within habitats in consideration of climate and land use and the changes taking place in these. | |
| **Teaching and learning formats** | Lectures (2 hrs/wk), seminars (1 hr/wk), practical sessions (6 hrs/wk) and self-study. | |
| **Participation requirements** | The knowledge and skills acquired in core modules M\_BCM 1.1, M\_BCM 1.2, M\_BCM 1.3 and M\_BCM 1.5 are required for this module. | |
| **Applicability** | This module is a core module for the Biodiversity and Collection Management Master’s degree programme. This module is a prerequisite for core modules M\_BCM 1.7 and M\_BCM 1.8. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with coursework requiring 90 hours of work. | |
| **Credit points and grades** | 10 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the module** | This module runs once per year in the summer semester. | |
| **Workload** | The total workload for this module is 300 hours. Of these, 135 hours are allocated for lectures and teaching activities and 165 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| Module number | Module name | **Lecturer responsible** |
| M\_BCM 1.7 | Museum and Collections | Prof. Xylander  willi.xylander@tu-dresden.de |
| **Objectives** | Students will learn the methods for putting together natural history collections, taxon-specific methods of taxidermy, documentation using various methods including databases as well as georeferencing. They will become familiar with theoretical and practical issues of maintaining specimens. They will practice presenting for science, teaching, also to a wider audience and look at examples of the development of presentation concepts and a scenography. Upon completion of this module, students will be able to independently develop strategies and concepts for collecting, maintaining, documenting and undertaking scientific study. They will learn about databases and be able to use them. They will further gain fundamental knowledge about how to develop exhibits. | |
| **Content** | The modules covers topics such as: the tasks of museums, funding bodies, museum organisation, museum architecture, collection strategies, type material, lending, housing collections, combating pests, taxidermy methods for museums, documenting collections, procurements concepts, museum pedagogy and exhibitions. | |
| **Teaching and learning formats** | Lectures (2 hrs/wk), practical sessions (2 hrs/wk), excursions (1.5 days) and self-study. | |
| **Participation requirements** | For the Master’s degree programme in Biodiversity and Collection Management, the knowledge and skills acquired in core modules M\_BCM 1.2, M\_BCM 1.3 and M\_BCM 1.6 are required for this module. For the Master’s degree programme in Ecosystem Services, the knowledge and skills from modules M\_ESS 1.3 and M\_ESS 2.13 are required for this module. | |
| **Applicability** | This module is a core module for the Biodiversity and Collection Management Master’s degree programme. This module is also one of 29 electives from which students on the Ecosystem Services Master’s degree programme must select according to Sec. 27(3) of the examination regulations. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with coursework requiring 50 hours of work. | |
| **Credit points and grades** | 5 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the module** | This module runs once per year in the winter semester. | |
| **Workload** | The total workload for this module is 150 hours. Of these, 72 hours are allocated for lectures and teaching activities and 78 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| **Module number** | **Module name** | **Lecturer responsible** |
| M\_BCM 1.8 | Collection-based research | Prof. Wesche  karsten.wesche@tu-dresden.de |
| **Objectives** | Upon completion of this module, students will be able to prepare collection specimens as carefully as possible for genetic study. They will be able to work with the material using phylogenetic methods and methods of population genetics, while also gaining fundamental knowledge of morphometric methods. Students will become familiar with statistically minimum requirements for collecting usable data and will be able to evaluate morphometric and genetic data using current univariate and multivariate methods. Experience is also gained in the use of the relevant software packages. | |
| **Content** | The module covers morphometric and genetic analysis, the principles of quantitative working methods, descriptive and inferential statistics (univariate and multivariate) relevant to ecology / taxonomy. | |
| **Teaching and learning formats** | Seminars (1 hr/wk), practical sessions (1.5 hrs/wk), practical placement (1.5 hrs/wk) and self-study. | |
| **Participation requirements** | An understanding of biological issues and a basic knowledge of quantitative working methods and statistics from modules M\_BCM 1.2, M\_BCM 1.3 and M\_BCM 1.6 in the Biodiversity and Collection Management Master’s degree programme or in modules M\_ESS 1.3 and M\_ESS 2.13 of the Ecosystem Services Master’s degree programme are prerequisites. Literature to be acquired by the student:  McCune B. & Mefford M.J. 1997: PC-ORD. Multivariate Analysis of Ecological Data. Gleneden Beach, Oregon: MJM Software  Legendre P. & Legendre L. 2012: Numerical Ecology. - Amsterdam, NL: Elsevier;  Borcard D., Gillet F. & Legendre P. 2011: Numerical Ecology with R. - New York, Dordrecht, London, Heidelberg: Springer; 306 pp. | |
| **Applicability** | This module is a core module for the Biodiversity and Collection Management Master’s degree programme. This module is also one of 29 electives from which students on the Ecosystem Services Master’s degree programme must select according to Sec. 27(3) of the examination regulations. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with a report requiring 25 hours of work. | |
| **Credit points and grades** | 5 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the module** | This module runs once per year in the winter semester. | |
| **Workload** | The total workload for this module is 150 hours. Of these, 60 hours are allocated for lectures and teaching activities and 90 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| **Module number** | **Module name** | **Lecturer responsible** |
| M\_BCM 2.1 | Botany - special aspects  of collection management | Prof. Wesche  karsten.wesche@tu-dresden.de |
| **Objectives** | Students will gain an overview of biodiversity research for plants and fungi, with a particular focus on collection-based methods. Students are familiar with technical aspects such as acquiring collection materials, preservation, archiving and making data available (catalogues, databases). They will further deepen their knowledge of taxonomy for selected groups. Upon completion of this module, students will be able to document species of plants and fungi in collections and will know how to curate these collections. This includes the technical requirements for these tasks. They will have learned how to further familiarise themselves with a systematic group using collection material. | |
| **Content** | The modules covers approaches and techniques for researching and curating botanical collections as well as specialised knowledge of selected taxonomic groups. | |
| **Teaching and learning formats** | Seminars (1 hr/wk), practical sessions (8 hrs/wk) and self-study. | |
| **Participation requirements** | The knowledge and skills from modules M\_BCM 1.1 and M\_BCM 1.2 are required for this module. | |
| **Applicability** | This module is one of five electives for the Biodiversity and Collection Management Master’s degree programme, of which two must be selected. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with coursework requiring 90 hours of work. | |
| **Credit points and grades** | 10 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the module** | This module runs once per year in the summer semester. | |
| **Workload** | The total workload for this module is 300 hours. Of these, 135 hours are allocated for lectures and teaching activities and 165 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| **Module number** | **Module name** | **Lecturer responsible** |
| M\_BCM 2.2 | Terrestrial Zoology - special aspects of collection  management | Prof. Ansorge  hermann.ansorge@senckenberg.de |
| **Objectives** | Students will be able to work with difficult taxonomic groups within the animal kingdom of terrestrial ecosystems, make proper and strategic use of suitable collections, select appropriate methods for recording specimens in the field or in the lab (e.g. different methods of extraction depending on the organism group) and scientifically tackle problems of specialised terrestrial zoology. Upon completion of this module they will be able to define difficult groups of animals, selected themselves, and work on them taxonomically if necessary. | |
| **Content** | The module covers taxonomy and classification, biogeography and ecology for a selected terrestrial animal group and work on the collection as a reference for taxonomically critical questions. | |
| **Teaching and learning formats** | Seminars (1 hr/wk), practical sessions (8 hrs/wk) and self-study. | |
| **Participation requirements** | The knowledge and skills acquired in core modules M\_BCM 1.1, M and M\_BCM 1.3 are required for this module. | |
| **Applicability** | This module is one of five electives for the Biodiversity and Collection Management Master’s degree programme, of which two must be selected. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with coursework requiring 90 hours of work. | |
| **Credit points and grades** | 10 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the module** | This module runs once per year in the summer semester. | |
| **Workload** | The total workload for this module is 300 hours. Of these, 135 hours are allocated for lectures and teaching activities and 165 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| **Module number** | **Module name** | **Lecturer responsible** |
| M\_BCM 2.3 | Aquatic Zoology - special  aspects of collection  management | Prof. Xylander  willi.xylander@tu-dresden.de |
| **Objectives** | Students will conduct practical work on a scientific collection and under the guidance of an experience collection curator, or by working out in the field, to acquire comprehensive practical and theoretical knowledge about a taxon (e.g. through taxonomic work of a particular genus or family of animals), about ecology or about aspects of nature conservation. Students will be able to work systematically with a difficult taxonomic group within the animal kingdom, make an independent identification (including the necessary taxidermy), make proper and strategic use of suitable collections, select appropriate methods for recording specimens in the field or in the lab (e.g. different capture methods depending on the organism group) and scientifically tackle problems of specialised aquatic zoology. Upon completion of this module, students will be able to identify difficult groups of animals, selected themselves, and work on them taxonomically or ecologically as necessary. | |
| **Content** | The module covers taxonomy and classification, biogeography and ecology for a selected aquatic animal group and work on the collection as a reference for taxonomically critical questions. | |
| **Teaching and learning formats** | Seminars (1 hr/wk), practical sessions (8 hrs/wk) and self-study. | |
| **Participation requirements** | The knowledge and skills acquired in core modules M\_BCM 1.1, M and M\_BCM 1.3 are required for this module. | |
| **Applicability** | This module is one of five electives for the Biodiversity and Collection Management Master’s degree programme, of which two must be selected. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with coursework requiring 90 hours of work. | |
| **Credit points and grades** | 10 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the module** | This module runs once per year in the summer semester. | |
| **Workload** | The total workload for this module is 300 hours. Of these, 135 hours are allocated for lectures and teaching activities and 165 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| **Module number** | **Module name** | **Lecturer responsible** |
| M\_BCM 2.4 | Geology and Paleoecology - special aspects of collection management | Dr Tietz  olaf.tietz@senckenberg.de |
| **Objectives** | Students will gain a deeper understanding of aspects of geology and palaeontology. Students will gain a greater general knowledge of geology, such as how to work with geological information. They will learn procedures and methods for scientifically documenting and recovering geological and palaeontological specimens as well as specific taxidermy methods and gain experience with relevant collections and specific scientific questions. | |
| **Content** | This module covers petrography with a particular focus on the nomenclature and identification of rocks; basic geochemistry; regional geology in central Europe; chemistry and mineralogy of rock weathering as a basis for soil formation; principles of palaeontology. | |
| **Teaching and learning formats** | Seminars (1 hr/wk), practical sessions (8 hrs/wk) and self-study. | |
| **Participation requirements** | The knowledge and skills acquired in core modules M\_BCM 1.1, M\_BCM 1.2 and M\_BCM 1.3 are required for this module. | |
| **Applicability** | This module is one of five electives for the Biodiversity and Collection Management Master’s degree programme, of which two must be selected. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with coursework requiring 90 hours of work. | |
| **Credit points and grades** | 10 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the module** | This module runs once per year in the summer semester. | |
| **Workload** | The total workload for this module is 300 hours. Of these, 135 hours are allocated for lectures and teaching activities and 165 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| **Module number** | **Module name** | **Lecturer responsible** |
| M\_BCM 2.5 | Science and Society | Prof. Xylander  [willi.xylander@tu-dresden.de](mailto:willi.xylander@tu-dresden.de) |
| **Objectives** | Students will gain insights into the transfer of research and research findings in society, the use of interfaces between society and museum for generating new findings and for applying strategies and methods for including society in scientific work (citizen science). They will master the techniques and approaches for communicating information about biodiversity to a range of different target audiences. They can write texts that are adapted to specific target groups, media formats and linguistic levels. For example, students will be able to contribute to work in public relations, in developing exhibitions, arranging print and electronic media, designing webpages and educational activities relating to museums and the environment. | |
| **Content** | The module covers transfer and preparation of scientific findings for uses in areas such as exhibitions, public relations and citizen science. | |
| **Teaching and learning formats** | Seminars (1 hr/wk), practical sessions (8 hrs/wk) and self-study. | |
| **Participation requirements** | The knowledge and skills acquired in core modules M\_BCM 1.1, M\_BCM 1.2, M\_BCM 1.3 and M\_BCM 1.5 are required for this module. | |
| **Applicability** | This module is one of five electives for the Biodiversity and Collection Management Master’s degree programme, of which two must be selected. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with coursework requiring 90 hours of work. | |
| **Credit points and grades** | 10 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the module** | This module runs once per year in the summer semester. | |
| **Workload** | The total workload for this module is 300 hours. Of these, 135 hours are allocated for lectures and teaching activities and 165 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| **Module number** | **Module name** | **Lecturer responsible** |
| M\_BAÖ 1.10  (M\_BCM 3.1) | Microbial Ecology | Prof. Hofrichter  [martin.hofrichter@tu-dresden.de](mailto:martin.hofrichter@tu-dresden.de) |
| **Objectives** | Students will become familiar with the ecological position of micro-organisms (bacteria, fungi, protists) in the biosphere and their interrelationships with inanimate and animate elements in nature. They will understand the ecological backgrounds of the processes of microbial chemical reactions and gain knowledge of their central importance for the state of our environment. Students will gain in-depth knowledge and become familiar with things such as microbial autecology as well as with extremophiles. They will learn about the forms of the interactions between micro-organisms and plants, micro-organisms and animals as well as specialised interactions between fungi and insects. They will gain an overview of syntrophic bacterial communities and become familiar with the microbial corrosion of various materials. | |
| **Content** | This module covers  a) microbial autecology (the abiotic factors of temperature, water activity, pH value, radiation)  b) antagonistic and mutualistic interactions between micro-organisms, plants and animals  c) selected processes of biocorrosion and biodeterioration  d) types of rot, microbial attacks on concrete and steel. | |
| **Teaching and learning formats** | Lectures (3.5 hrs/wk), seminars (0.5 hrs/wk) and self-study. All teaching for this module is done in English. | |
| **Participation requirements** | Fundamental knowledge of microbiology and ecology from modules M\_BAÖ 1.3, M\_BAÖ 1.4 und M\_BAÖ 1.5 in the Biotechnology and Applied Ecology Master’s degree programme is required for this module.  Literature: Fritsche, W. (2001) Mikrobiologie. Spektrum Gustav Fischer; Madigan, M. T., Martinko, J.M. (2014) Brock Biology of Microorganisms, Global Edition, Addison-Wesley Longman, Amsterdam | |
| **Applicability** | This module is a core module for the focus area of biotechnology in the Biotechnology and Applied Ecology Master’s degree programme.  This module is one of nine electives for the Biodiversity and Collection Management Master’s degree programme, of which four must be selected.  This module is also one of 29 electives from which students on the Ecosystem Services Master’s degree programme must select according to Sec. 27(3) of the examination regulations. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with one oral examination held in English of 25 minutes. | |
| **Credit points and grades** | 5 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the module** | This module runs once per year in the winter semester. | |
| **Workload** | The total workload for this module is 150 hours. Of these, 60 hours are allocated for lectures and teaching activities and 90 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| **Module number** | **Module name** | **Lecturer responsible** |
| M\_BAÖ 1.6  (M\_BCM 3.2) | Molecular Ecology | Dr Kellner  [harald.kellner@tu-dresden.de](mailto:harald.kellner@tu-dresden.de) |
| **Objectives** | Students will learn about techniques, equipment and procedures for generating and evaluating sequential data. They will create phylogenetic genealogical trees and gain an overview of molecular methods in ecology and biotechnology. | |
| **Content** | This module covers  a) principles of modern sequential methods and their application in ecology and biotechnology  b) concepts in molecular ecology and functional biodiversity research  c) sequential data collection and evaluation. | |
| **Teaching and learning formats** | Lectures (1 hr/wk), practical sessions (2.5 hrs/wk), seminars (0.5 hrs/wk) and self-study. All teaching for this module is done in English. | |
| **Participation requirements** | Fundamental knowledge of molecular biology, microbiology and ecology at Bachelor level or gained from studying modules M\_BAÖ 1.3 und M\_BAÖ 1.5 from the biotechnology focus area of the Biotechnology and Applied Ecology Master’s degree programme and in module M\_BAÖ 1.5 of the biotechnology or biodiversity and nature conservation focus areas of the Biotechnology and Applied Ecology Master’s degree programme are required for this module.  Literature: Joanna R. Freeland (2005) Molecular Ecology, John Wiley & Sons Ltd. Chichester, UK. | |
| **Applicability** | This module is a core module for the focus area of biotechnology in the Biotechnology and Applied Ecology Master’s degree programme as well as being one of five electives to be chosen from the focus area of biodiversity and nature conservation in the Biotechnology and Applied Ecology Master’s degree programme whose modules are worth 15 credit points.  This module is one of nine electives for the Biodiversity and Collection Management Master’s degree programme, of which four must be selected.  This module is also one of 29 electives from which students on the Ecosystem Services Master’s degree programme must select according to Sec. 27(3) of the examination regulations. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with one end-of-semester exam in English of 90 minutes. | |
| **Credit points and grades** | 5 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the module** | This module runs once per year in the winter semester. | |
| **Workload** | The total workload for this module is 150 hours. Of these, 60 hours are allocated for lectures and teaching activities and 90 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| **Module number** | **Module name** | **Lecturer responsible** |
| M\_BAÖ 1.8 (M\_BCM 3.3) | Biomineralization andEnvironmental Analysis | Dr Liers[christiane.liers@tu-dresden.de](mailto:christiane.liers@tu-dresden.de) |
| **Objectives** | Students will learn about the fundamental biological and biochemical principles for the genesis of firm tissue structures and will possess knowledge of the properties and functions of the mineral products produced by organisms (biominerals, biomaterials). Students will further gain knowledge and skills in the various chemical and analytical aspects of retrieval, treatment and data interpretation of environmental and biomass samples. They will learn the requirements and limits of environmental and bioanalysis as a function of the available sample types and analysis methods. | |
| **Content** | This module covers  a) biogenesis of biominerals and biopolymers  b) functions and properties of biominerals, biomaterials, biopolymers  c) importance of biominerals and biomaterials for science and research  c) retrieval of polluted environmental samples  e) representative sample and their preparation  f) methods of measurement, data analysis and data evaluation  g) bioconcentration, biomagnification and biomonitoring. | |
| **Teaching and learning formats** | Lectures (3 hrs/wk), practical sessions (1 hr/wk), seminars (2 hrs/wk), placement work (1 hr/wk) and self-study. All teaching for this module is done in English. | |
| **Participation requirements** | Fundamental knowledge in ecology, ecotoxicology, biotechnology and chemical analysis from module M\_BAÖ 1.3 of the Biotechnology and Applied Ecology Master’s degree programme is required for this module.  Literature: Mann, S. (2001): Biomineralization – Principles & Concepts in Bioinorganic Materials Chemistry, Oxford Chemistry Masters; Bäuerlein, E. (2008): Handbook of Biomineralization: Biological Aspects and Structure Formation, Wiley-VCH; Sigel, A., Sigel, H., Sigel, R.K.O. (2008): Biomineralization: From Nature to Application, Wiley-VCH;  Fränzle, S., Markert, B., Wünschmann, S. (2009): Technische Umweltchemie, Wiley-VCH Verlag, Weinheim; Schwister, K. (2007): Taschenbuch der Verfahrenstechnik, Karl Hanser Verlag GmbH & Co.; Heintz, A., Reinhardt, G.A. (2000): Chemie & Umwelt, Springer. | |
| **Applicability** | This module is a core module for the focus area of biotechnology in the Biotechnology and Applied Ecology Master’s degree programme.  This module is one of nine electives for the Biodiversity and Collection Management Master’s degree programme, of which four must be selected.  This module is also one of 29 electives from which students on the Ecosystem Services Master’s degree programme must select according to Sec. 27(3) of the examination regulations. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with one oral examination held in English of 30 minutes. Coursework in preparation of the exam is a written paper in English requiring 15 hours of work. | |
| **Credit points and grades** | 5 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the module** | This module runs once per year in the winter semester. | |
| **Workload** | The total workload for this module is 150 hours. Of these, 105 hours are allocated for lectures and teaching activities and 45 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| Module number | Module name | Lecturer responsible |
| M\_BAÖ 4.1  (M\_BCM 3.4) | Environmental Law | Prof. Delakowitz[b.delakowitz@hszg.de](mailto:b.delakowitz@hszg.de) |
| **Objectives** | Students will learn the basics of civil law and will be able to apply the relevant legal regulations. They will understand the fundamental legal principles of environmental law (precautionary, polluter pays, cooperation, subsidiarity principles) and become familiar with legal sources and standardisation levels (international environmental law, EU law, environmental law at the federal, state and local levels). Students will be familiar with international agreements relating to biodiversity. They will be able to apply impact and compensatory regulations. They will also know about main activities required where plans are subject to approval or there is an obligation to perform an environmental impact assessment (EIA). They will be able to independently carry out or contribute to the approval and EIA procedure. Students will possess knowledge of the legally compliant handling of hazardous substances and the European chemical policy (REACh; students can use these as a basis for creating registers of hazardous substances and for carrying out workplace safety analyses (in accordance with German hazardous materials regulations). Students will be able to formulate and evaluate operational instructions, lead disposal concepts and document waste disposal as well as be capable of making decisions on environmental issues. | |
| **Content** | This module covers environmental and nature conservation law, environmental impact assessments, classes of hazardous materials and their management. | |
| **Teaching and**  **learning forms** | Lectures (4 hrs/wk), practical sessions (1 hr/wk) and self-study. All teaching for this module is done in English. | |
| **Participation requirements** | None. | |
| **Applicability** | This module is one of six electives for the focus area of biodiversity and nature conservation in the Biotechnology and Applied Ecology Master’s degree programme, of which students must choose five.  This module is one of nine electives for the Biodiversity and Collection Management Master’s degree programme, of which four must be selected.  This module is also one of 29 electives from which students on the Ecosystem Services Master’s degree programme must select according to Sec. 27(3) of the examination regulations.  This module is a core module for the focus area of environmental management in the International Management Master’s degree programme; in accordance with Sec. 26(4)(2) of the examination regulations for the International Management Master’s degree programme, two of the six focus areas must be chosen.  For the Business Ethics and Responsible Management Master’s degree programme, this is one of eleven electives, of which six must be chosen. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with one end-of-semester exam in English of 180 minutes. | |
| **Credit points and grades** | 5 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the**  **module** | This module runs once per year in the winter semester. | |
| **Workload** | The total workload for this module is 150 hours. Of these, 75 hours are allocated for lectures and teaching activities and 75 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |
| **Recommended literature** | Delakowitz, B. (2016): Lecture notes on principles of environmental law; Hochschule Zittau/Görlitz  Delakowitz, B. (2016): Lecture notes on principles of energy law Hochschule Zittau/Görlitz  Delakowitz, B. (2016): Lecture notes on principles of hazardous substances law; Hochschule Zittau/Görlitz  Kotulla, M. (2014): Umweltrecht - Grundstrukturen und Fälle. 6. Edition; Boorberg Verlag  Kluth, W., Smeddinck, U. (2013): Umweltrecht - Ein Lehrbuch. Springer Spektrum  Makuch, K., Pereira, R. (Eds.) (2012): Environmental and Energy Law. Wiley-Blackwell  Morgera, E. (2017): Corporate Accountability in International Environmental Law. 2nd edition; Oxford University Press  Morgera, E., Razzaque, J. (Eds.) (2017): Biodiversity and Nature Protection Law. Elgar Encyclopedia of Environmental Law; University of Strathclyde  Storm, P.-Chr.: Umweltrecht, Beck-Texte im dtv (current edition) | |

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| Module number | Module name | Lecturer responsible |
| M\_ESS 2.5  (M\_BCM 3.5) | Ökosystemleistungen –  Fallstudien | Prof. Ring  irene.ring@tu-dresden.de |
| **Objectives** | Upon completion of this module, students will be able to independently develop a practical research topic, plan the research process, carry it out and evaluate their findings. They will be able to gauge the possibilities and limits for the practical implementation of the ecosystem service concept and make use of empirical research methods. They will gain the required specialist and social expertise for interacting with stakeholders in society as well as critically discuss the process and finding with them. | |
| **Content** | The module covers the concept of ecosystem services, a personal research plan and the fundamentals of project management. It further comprises a (regional) case study from an economic, socio-political or ecological field with relevance to the implementation ecosystem services. | |
| **Teaching and**  **learning forms** | Seminars (4 hrs/wk) and self-study. | |
| **Participation requirements** | A basic knowledge of the concept of ecosystem services from module M\_ESS 1.1 of the Ecosystem Services Master’s degree programme or module M\_BCM 1.5 of the Biodiversity and Collection Management Master’s degree programme is required for this module. | |
| **Applicability** | This module is one of 29 electives from which students on the Ecosystem Services Master’s degree programme must select according to Sec. 27(3) of the examination regulations. This module is also one of nine electives for the Biodiversity and Collection Management Master’s degree programme, of which four must be selected. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined via a seminar paper requiring 50 hours of work. | |
| **Credit points and grades** | 5 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the**  **module** | This module runs once per year in the winter semester. | |
| **Workload** | The total workload for this module is 150 hours. Of these, 60 hours are allocated for lectures and teaching activities and 90 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| Module number | Module name | **Lecturer responsible** |
| M\_BE 1.1.0  (M\_BCM 3.6) | Responsible Management | Prof. Löhr  albert.loehr@tu-dresden.de |
| **Objectives** | Students will learn about the main trends in the development of strategic management including the latest concepts and their methodical instruments. They will gain an understanding that the central challenge in the transformation of traditional strategic concepts as a battle for market share and profits is giving way to holistic and responsible management strategies that give consideration to social, ecological and ethnic interests (orientation around the paradigm of sustainability), and that this transformation process is only just in its infancy. Students will be familiar with the necessity and possibilities for the holistic and responsible management of businesses (“responsible management” or “managerial responsibility”) using current theoretical discussions and relevant practical experiences from business. They will be familiar with the currently available methodical instruments required for developing holistic and responsible management strategies and be aware of the key challenges in global management on the road to a paradigm of sustainability. Students will therefore possess a good understanding of the possibilities and the limits of responsible management in theory and in practice. | |
| **Content** | The module comprises the key concepts of strategic management and its transformation into responsible management, in particular:   1. Basic concepts - management and responsibility 2. Business in competition 3. Historical development of the theory of business management (from long range planning, business policy and business strategy, to sustainable and responsible management) 4. The strategic management process: Battle versus balance 5. Shareholder management versus stakeholder management 6. Environmental and resource analysis 7. Value chain analysis  (Development of globally distributed value chain structures) 8. Strategic management in the transformation process 9. Strategic control 10. Business strategy and corporate strategy 11. Possibilities and limits of transforming strategic management into responsible management (UN PRME) 12. Case studies on individual topic areas. | |
| **Teaching and learning formats** | Lectures (3 hrs/wk), practical sessions (1 hr/wk) and self-study.  Lectures and practical sessions are held in English. | |
| **Participation requirements** | Basic knowledge of general management is required. Literature:  Ger.: Steinmann, H. / Schreyögg, G. / Koch, J.: Management. Grundlagen der Unternehmensführung. Konzepte – Funktionen – Fallstudien, 7th edition, Verlag Springer Gabler 2013.  Engl.: Drucker, P.: Management. Tasks, Responsibilities, Practices, Harper Business 1985 ff. | |
| **Applicability** | This module is a core module for the Business Ethics and Responsible Management and International Management Master’s degree programmes. This module is also one of nine electives for the Biodiversity and Collection Management Master’s degree programme, of which four must be selected. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with one end-of-semester exam in English of 120 minutes. | |
| **Credit points and grades** | 5 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the module** | This module runs once per year in the winter semester. | |
| **Workload** | The total workload for this module is 150 hours. Of these, 60 hours are allocated for lectures and teaching activities and 90 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |
| **Recommended literature** | Bea, F. X. / Haas, J.: Strategisches Management, UVK Lucius, Konstanz/München 2013.  Ennals, R.: Responsible Management: Corporate Responsibility and Working Life (CSR, Sustainability, Ethics & Governance). Berlin 2014.  Koontz, H. / O‘Donnell, C.: Principles of Management. An Analysis of Managerial Functions, McGraw-Hill, New York 1955  (11th edition: Weihrich / Koontz: Management, 2004)  Kreikebaum, H. / Gilbert, D. U. / Behnam, M.: Strategisches Management, Kohlhammer, Stuttgart 2011.  Laasch, O. / Conaway, R.N.: Principles of Responsible Management. Glocal Sustainability, Responsibility, and Ethics, Cengage Learning 2014  Mintzberg, H. / Ahlstrand, B. / Lampel, J.: Strategy Safari. A Guided Tour Through the Wilds of Strategic Management, The Free Press, New York 1998.  Porter, M. E.: Competitive Strategy, various versions EN/DE, 1983 ff.  Porter, M. E.: Competitive Advantage, various versions EN/DE, 1985 ff.  Sanford, C. (2011): The Responsible Business. Reimagining Sustainability and Success, San Francisco: Jossey-Bass.  Steinmann, H. / Schreyögg, G. / Koch, J.: Management. Grundlagen der Unternehmensführung. Konzepte – Funktionen – Methoden, 7th edition., Wiesbaden 2013: Gabler.  Von Clausewitz, C.: Vom Kriege, Hinterlassenes Werk, Berlin 1832 (Ullstein 1998). | |

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| **Module number** | **Module name** | **Lecturer responsible** |
| M\_BE 5.5.1  (M\_BCM 3.7) | Interkulturelle  Kommunikation | Prof. Löhr  albert.loehr@tu-dresden.de |
| **Objectives** | Students will become familiar with the concept of communication and its placement within various theories of communication relationships (e.g. psychological, sociological and system theories) as well as with the principle of rational argumentation and divergent argumentation strategies (rhetoric). They will learn the theoretical and practical application of communication theories for internal and external business communication and will gain an awareness of the problems that arise when dealing with cultural differences in a globalised society. | |
| **Content** | This module covers the theories of communication and linguistics: Argumentation theory, communication theories, organisational communication in theory and in practice. It also covers the central elements of communication ethics as well as some key conceptual requirements for communication theory from the field of cultural anthropology. These include the concept of culture, differentiation and pluralism of cultures, historical development of cultures as the framework for human actions, cultures and institutions, interculturalism and the clash of civilisations. | |
| **Teaching and learning formats** | Lectures (2 hrs/wk), seminars (2 hrs/wk) and self-study. All teaching for this module is done in English. | |
| **Participation requirements** | None | |
| **Applicability** | This is one of eleven electives in the Business Ethics and Responsible Management Master’s degree programme, of which six must be chosen.  This module is also one of nine electives for the Biodiversity and Collection Management Master’s degree programme, of which four must be selected. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined with one oral examination held in English of 20 minutes. Coursework in preparation for the examination is to write a short presentation in English, working in a group of at most 4, with a total duration of 20 minutes. | |
| **Credit points and grades** | 5 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the module** | This module runs once per year in the winter semester. | |
| **Workload** | The total workload for this module is 150 hours. Of these, 60 hours are allocated for lectures and teaching activities and 90 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |
| **Recommended literature** | Bolten, J, (2015): Einführung in die interkulturelle Wirtschaftskommunikation, 2nd edition., Vandenhoeck & Ruprecht.  Huntington, S. (1996): Kampf der Kulturen. Die Neugestaltung der Weltpolitik im 21. Jahrhundert, München/Wien: Europa-Verlag.  Lüsebrink, H.-J. (2012): Interkulturelle Kommunikation: Interaktion, Fremdwahrnehmung, Kulturtransfer, 3rd Edition, J.B. Metzler.  Schopenhauer, A. (1830): Die Kunst, Recht zu behalten, various Editions.  Wohlrapp, (2008): Der Begriff des Arguments, Königshausen & Neumann. (Engl.: The Concept of Argument. A Philosophical Foundation, Springer 2014) | |

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| **Module number** | **Module name** | **Lecturer responsible** |
| M\_BCM 3.8 | Biodiversity Management and Sustainability | Prof. Kramer  matthias.kramer@tu-dresden.de |
| **Objectives** | Students will be qualified to integrate aspects of biodiversity into sustainability management in businesses. | |
| **Content** | This module covers   1. System concepts in environmental science 2. Globalisation versus regionalisation 3. Global economic cycles and value creation 4. International and national programmes for implementing the UN’s sustainable development goals 5. Ecosystem services and biodiversity indicators (analysis and exploitation strategies) 6. Internationally oriented biodiversity management as part of sustainability strategies in business 7. Biodiversity-oriented consideration of operational functions and cross-sectional fields 8. Examples of biodiversity and good company. | |
| **Teaching and learning formats** | Lectures (2 hrs/wk), seminars (2 hrs/wk) and self-study. | |
| **Participation requirements** | None. | |
| **Applicability** | This module is one of nine electives for the Biodiversity and Collection Management Master’s degree programme, of which four must be selected.  This module is also one of 29 electives from which students on the Ecosystem Services Master’s degree programme must select according to Sec. 27(3) of the examination regulations.  This module is a core module for the focus area of environmental management in the International Management Master’s degree programme; in accordance with Sec. 26(4)(2) of the examination regulations for the International Management Master’s degree programme, two of the six focus areas must be chosen.  This module is one of five electives from the focus area of biodiversity and nature conservation in the Biotechnology and Applied Ecology Master’s degree programme, of which modules worth 15 credit points are to be chosen.  This is a core module in the Business Ethics and Responsible Management Master’s degree programme. | |
| **Requirements for the award of credit points** | Credit points are earned upon successful completion of the module. This module is examined via a seminar paper including a presentation requiring 50 hours of work. | |
| **Credit points and grades** | 5 credit points are awarded for this module. The module grade is the grade achieved for the assessed work. | |
| **Frequency of the module** | This module runs once per year in the winter semester. | |
| **Workload** | The total workload for this module is 150 hours. Of these, 60 hours are allocated for lectures and teaching activities and 90 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

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| **Module number** | **Module name** | **Lecturer responsible** |
| M\_ESS 1.4  (M\_BCM 3.9) | Methoden empirischer Sozialforschung | Prof. Ring  irene.ring@tu-dresden.de |
| **Objectives** | Upon completion of this module, students will have a comprehensive overview of the range of empirical research methods available in the social sciences and will be able to apply these to social science research problems and issues. They will have the required social competencies to negotiate access to a field of research with all stakeholders involved in a culturally appropriate manner. They will be able to reflect upon and assess from a methodical standpoint the possibilities and limitations of generalising the findings of empirical social science research studies. | |
| **Content** | The module covers the specific features of empirical social research and comprises the following four topic areas:  1) Research topics, research questions and aims, research designs and sampling methods – steps in the systematic preparation of an empirical social science research project.  2) The common methods of data collection used in empirical social research, in particular, the traditional tool of standardised quantitative interviews, the Delphi interview, guided individual and group interviews, ethnographic methods of observing participants as well as strategies for quantitative and qualitative inclusion of secondary data sources.  3) An overview of the methods and approaches of qualitative and quantitative data analysis.  4) Reporting on research projects, including aspects such as the traditional placement of empirical studies in research literature as well as reporting and presentation of research findings. | |
| **Teaching and**  **learning forms** | Lectures (2 hrs/wk), seminars (2 hrs/wk) and self-study. | |
| **Participation requirements** | None. | |
| **Applicability** | This module is a core module for the Ecosystem Services Master’s degree programme; it is a prerequisite for module M\_ESS 2.6. This module is one of nine electives for the Biodiversity and Collection Management Master’s degree programme, of which four must be selected. | |
| **Requirements for the award of credit points** | This module is examined with coursework requiring 30 hours of work. A short oral presentation of 15 minutes is required in advance of the examination. | |
| **Credit points and grades** | 5 credit points are awarded for this module. The module grade is the grade achieved in the examination. | |
| **Frequency of the**  **module** | This module runs once per year in the winter semester. | |
| **Workload** | The total workload for this module is 150 hours. Of these, 60 hours are allocated for lectures and teaching activities and 90 hours for self-study, including exam preparation and the examination itself. | |
| **Module duration** | The module lasts for one semester. | |

**Annex 2**

### Study plan

with type and scope of courses given in hrs/week

as well as required work, the type, scope and format of which can be found in the module descriptions

| **Module no.** | **Module name** | **1. Semester** | **2. Semester** | **3. Semester** | **4. Semester** | **CP** |
| --- | --- | --- | --- | --- | --- | --- |
| L/E/S/P | L/E/S/P | L/E/S/P |  |
| **Core modules** | | | | | | |
| M\_BCM 1.1 | Applied Ecology | 2/1/1/0  *1 Ex* |  |  |  | 5 |
| M\_BCM 1.2 | Taxonomy and Systematics of Plants and Fungi | 2,5/1,5/0/0 1 Ex |  |  |  | 5 |
| M\_BCM 1.3 | Taxonomy and Systematics of Animals | 3/4/2/0 2 Ex |  |  |  | 10 |
| M\_BCM 1.4 | Foundations of Management | 0/0/2/0  1 CW, 1 Ex |  |  |  | 5 |
| M\_BCM 1.5 | Ecosystem Services –  Foundations | 1,5/2/0/0 1 Ex |  |  |  | 5 |
| M\_BCM 1.6 | Field Ecology |  | 2/0/1/6  *1 Ex* |  |  | 10 |
| M\_BCM 1.7 | Museum and Collections |  |  | 2/2/0/0  Excursions 1.5 days  *1 Ex* |  | 5 |
| M\_BCM 1.8 | Collection-based research |  |  | 0/1,5/1/1,5 *1 Ex* |  | 5 |
| **Electives** | | | | | |  |
| M\_BCM 2.1\* | Botany - special aspects of collection management |  | 0/0/1/8 *1 Ex* |  |  | 10 |
| M\_BCM 2.2\* | Terrestrial Zoology - special aspects of collection management |  | 0/0/1/8 *1 Ex* |  |  | 10 |
| M\_BCM 2.3\* | Aquatic Zoology - special aspects of collection management |  | 0/0/1/8 *1 Ex* |  |  | 10 |
| M\_BCM 2.4\* | Geology and Paleoecology - special aspects of collection management |  | 0/0/1/8 *1 Ex* |  |  | 10 |
| M\_BCM 2.5\* | Science and Society |  | 0/0/1/8  *1 Ex* |  |  | 10 |
| M\_BAÖ 1.10  (M\_BCM 3.1)\*\* | Microbial Ecology |  |  | 3,5/0/0,5/0 *1 Ex* |  | 5 |
| M\_BAÖ 1.6  (M\_BCM 3.2)\*\* | Molecular Ecology |  |  | 1/2,5/0,5/0  *1 Ex* |  | 5 |
| M\_BAÖ 1.8 (M\_BCM 3.3)\*\* | Biomineralization and Environmental Analysis |  |  | 3/1/2/1 *1 CW, 1 Ex* |  | 5 |
| M\_BAÖ 4.1  (M\_BCM 3.4)\*\* | Environmental Law |  |  | 4/1/0/0 *1 Ex* |  | 5 |
| M\_ESS 2.5  (M\_BCM 3.5)\*\* | Ecosystem Services - Case Studies |  |  | 0/0/4/0 *1 Ex* |  | 5 |
| M\_BE 1.1.0  (M\_BCM 3.6)\*\* | Responsible Management |  |  | 3/1/0/0 *1 Ex* |  | 5 |
| M\_BE 5.5.1  (M\_BCM 3.7)\*\* | Intercultural Communication |  |  | 2/0/2/0 *1 CW, 1 Ex* |  | 5 |
| M\_BCM 3.8\*\* | Biodiversity Management and Sustainability |  |  | 2/0/2/0  *1 Ex* |  | 5 |
| M\_ESS 1.4  (M\_BCM 3.9)\*\* | Methods of Empirical Social Research |  |  | 2/0/2/0  *1 CW, 1 Ex* |  | 5 |
|  |  |  |  |  | Master’s Dissertation | 27 |
|  |  |  |  |  | Colloquium | 3 |
| **CP** | | 30 | 30 | 30 | 30 | **120** |

\* Alternative (2 out of 5) \*\*  Alternative (4 out of 9)

CP Credit Points P Practical placement

L Lectures CW Coursework

E Practical exercises Ex Examination(s)

S Seminars