

Module Manual

Master Program

Sustainable Land Management

and Conservation

January 2024

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Module Name: 1. Biogeography and Ecosystems Analysis Module Coordinator: Prof. Dr. Caroline Stolter Lecturers: Prof. Dr. Caroline Stolter			
Study Programme: M	aster Sustainable Land Ma	nagement and Conserv	ration
Classification in the S	Study Programme: Comp	ulsory Course	
Semester: winter			Blocked Course: no
Work Load: 150 h	Teaching Hours: 45 h (60 lessons of 45 minutes)	Credits: 5
Distribution of Work	Load (in Teaching and Lea	arning Forms):	
Teaching and Learnin Seminar/ Practical Cou Self-study incl. Practica Exam Preparation	Teaching and Learning FormsHoursSeminar/ Practical Course45 h (60 lessons of 45 minutes)Self-study incl. Practice and105 h		5 minutes)
Examination (acc. SP	O): Written Examination (9	0 minutes)	Language: English
Requirements (from c	ther modules of the study	program): none	
Learning Outcomes: Students will gain understanding of interrelationships, interactions and processes in the environ- ment. They understand the mutability and sensitivity of ecosystems in space and time. The stu- dents have knowledge of the basics of the study of species communities, they understand the global patterns of biodiversity, dispersal and distribution of species as well as globally negative impacts of human activities on species communities, ecosystem services and land use potentials. Students possess the ability to engage in scientific discourse with regard to current problems. They acquire the ability to independently conduct scientific research, preparation, assessment, presentation, and critically engage with current issues of conservation and land use.			
 Main Topics: Advanced ecology and ecosystem research Origin, delimitation and characteristics of the biomes and the individual faunal and floral kingdoms 			
 Literature // Study Materials: Biogeography, Lomolino et al., Sinauer Associates Inc. Alternating depending on focus topics 			

Module Name: 2. Landscape Ecology and Agroecology Module Coordinator: Prof. Dr. Christina Fischer Lecturers: Prof. Dr. Christina Fischer		
Study Programme: M	aster Sustainable Land Management and Conserv	vation
Classification in the S	Study Programme: Compulsory Course	
Semester: winter		Blocked Course: no
Work Load: 150 h	Teaching Hours within: 45 h (60 lessons of 45 minutes)	Credits: 5
Distribution of Work I	Load (in Teaching and Learning Forms):	
Teaching and Learning FormsHoursSeminar/ Practical Course45h (60 lessons of 45 minutes)Self-study incl. Practice and105 h		5 minutes)
Examination (acc. SPO): Examination report Preliminary performance: individual presentation (20 minutes) on a cur- rent topic of landscape ecology and/ or agroecology		
Requirements (from o	ther modules of the study program): none	
Learning Outcomes: Students are able to understand landscape-ecological relationships and patterns at different spa- tial scales and to analyze them with the help of different landscape indices. They learn to relate the landscape ecology perspective to agroecological principles. Students have knowledge of key fac-tors in agroecosystems and different agroecological concepts. They are able to find, read, understand, present and discuss current scientific publications in this context. Furthermore, they are qualified to identify different landscape ecological parameters and sustainability indicators for the conversion of conventional systems into ecological-based man- agement.		
 Main Topics: introduction to landscape ecology and scale causes of landscape patterns landscape metrics ecosystem processes in heterogeneous landscapes landscape dynamics in a rapidly changing world the need for sustainable food production systems the agroecological concept key ecological factors and resources that impact agriculture system-level interactions agroecological principles to achieve sustainability 		

- Literature // Study Materials: Gliessman, Stephen R. (2014) Agroecology: The Ecology of Sustainable Food Systems. **CRC** Press
 - Turner, Monica G. & Gardner, Robert H. (2015) Landscape Ecology in Theory and Prac-tice: Pattern and Process. Springer • Recent scientific publications

Module Name: 3. Applied Statistics Module Coordinator: Prof. Dr. Christina Fischer/NN Lecturers: Prof. Dr. Christina Fischer/NN			
Study Programme: M	laster Sustainable Land M	lanagement and Conserv	vation
Classification in the S	Study Programme: Comp	oulsory Course	
Semester: winter			Blocked Course: no
Work Load: 150 h	Teaching Hours within (60 lessons of 45 minute	: 45 h s)	Credits: 5
Distribution of Work	Load (in Teaching and Le	earning Forms):	
Teaching and Learnin Seminar/ Practical Cou Self-study incl. Practico Exam Preparation	Teaching and Learning FormsHoursSeminar/ Practical Course45 h (60 lessons of 45 minutes)Self-study incl. Practice and105 h		
Examination (acc. SPO): Examination report (Working on a concrete research question and independently analyzing a given data set using the statistical methods learned in the course. Preparation of a protocol, which is structured according to a scientific publication).			
Requirements (from other modules of the study program): none			
Learning Outcomes: Students are able to evaluate data from society, nature and the environment using current meth- ods of applied environmental statistics. Students are able to plan observational studies and exper- iments in such a way that hypotheses can be tested. Students are confident in the use of data types, distributions, and measures of distribution. They are skilled in descriptive statistics, as well as basic statistical modelling methods to identify and test relationships in ecological data. They are able to visualize statistical results and translate them into practically relevant conclusions. Furthermore, the students will be able to confidently use the freely available statistical software R.			
 Main Topics: experimental design introduction into the statistical software R correlations and associations linear models, multiple regressions generalized linear model, linear mixed effects models introduction to multivariate methods visualization, interpretation of results, textual description, statistical methods and presentation of results 			

- Crawley, Michael (2014) Statistics: An Introduction Using R. Wiley.
- Crawley, Michael (2012) The R Book. Wiley.
- Help systems of the used software

Module Name: 4. Project Planning and Implementation **Module Coordinator:** Prof. Dr. Christina Fischer, Prof. Dr. Anita Kirmer, Prof. Dr. Markus Meyer, Prof. Dr. Caroline Stolter, Prof. Dr. Sabine Tischew **Lecturers:** All professors of the study area nature conservation

Study Programme: Master Sustainable Land Management and Conservation

Classification in the Study Programme: Compulsory Course Semester: winter Blocked Course: no Work Load: 300 h Teaching Hours within: 22.5 h (30 lessons of 45 minutes) Credits: 10

Distribution of Work Load (in Teaching and Learning Forms):

Teaching and Learning Forms
Seminar/ Practical Course
Self-study incl. Practice and
Exam Preparation

Hours 22.5 h (30 lessons of 45 minutes)

277.5 h

Examination (acc. SPO): Project Language: English

Requirements (from other modules of the study program): none

Learning Outcomes:

The students learn how to organize independently plans or projects for the conservation, the management, the development and/ or restoration of nature and landscape. The students have the ability to work in a team. On the basis of their acquired knowledge, they can work academically preparing their master thesis. The students have experience with specialized literature, know the correct methods of researching sources and quoting and are familiar with specific information systems.

Main Topics:

- Selection of a suitable project topic
- Conceptualisation of the project
- Processing of the planning, development of the project or the conception
- Documentation of the project results

Literature // Study Materials:

Alternating depending on focus topics

Module Name: 5. Global Environmental Problems and International Nature Conservation **Module Coordinator:** Prof. Dr. Markus Meyer **Lecturers:** Prof. Dr. Markus Meyer, Prof. Dr. Alexander Schmidt

Study Programme: Master Sustainable Land Management and Conservation			
Classification in the Study Programme: Compulsory Course			
Semester: summer	Semester: summer Blocked Course: no		
Work Load: 150 h	Teaching Hours within: 45 (60 lessons of 45 minutes)	h	Credits: 5
Distribution of Work Load (in Teaching and Learning Forms):			
Teaching and Learning FormsHoursSeminar/ Practical Course45 h (60 lessons of 45 minutes)Self-study incl. Practice and105 h			
Examination (acc. SPO): Written Examination (90 minutes) Language: English			
Requirements (from other modules of the study program): none			
Learning Outcomes: Students will recognize the global connections and effects of climate change and anthropogenic on the landscape and are able to implement the corresponding conclusions in their own nature conservation action. On the basis of the knowledge gained about international agreements and			

the and basics for nature conservation work in all regions of the world, they will be able to act as international actors. The students will also be able to quantify the effects of global change on the basis of models.

- Global ecological problems: climate change, landscape overuse/desertification, water balance, decline in Biodiversity
- Modeling approaches to quantify global change and adaptation mechanisms (focus on biodiversity and ecosystem services)
- Environmental policy and international conservation policy
- International conventions
- Presentation of global instruments for nature conservation (CBD, Decade of Biological Diversity, Kunming-Montreal Global Biodiversity Framework)
- Examples of implementation of conservation strategies
- Nature conservation in different regions

- International treaties on nature conservation incl. comments and reports (Ramsar, Bonn, Bern etc.)
- Recent scientific publications as well as technical papers (e.g. from BMU, BfN, UN, COP, IPCC, IPBES)

Module Name: 6. Sustainable Land Management
Module Coordinator: Prof. Dr. Markus Meyer
Lecturers: Prof. Dr. Markus Meyer

Study Programme: Master Sustainable Land Management and Conservation

Classification in the Study Programme: Compulsory Course

Semester: summer		Blocked Course: no
Work Load: 150 h	Teaching Hours within: 45 h (60 lessons of 45 minutes)	Credits: 5

Distribution of Work Load (in Teaching and Learning Forms):

Teaching and Learning Forms	Hours
Seminar/ Practical Course	45 h (60 lessons of 45 minutes)
Self-study incl. Practice and	
Exam Preparation	105 h

Examination (acc. SPO): Examination report

Language: English

Requirements (from other modules of the study program): Landscape and Agroecology, Biogeography and Ecosystems Analysis

Learning Outcomes:

This module provides students the tools for doing research on sustainable land management and for developing major strategies. Students will integrate methods to identify strategies for managing land as part of the overall social-ecological system. After successful completion of this module, students are expected to be able to:

- discuss sustainable land management challenges,
- select and apply methods from natural and social sciences to assess and govern sustainable land management,
- identify data sources and to collect data for the aforementioned tasks,
- analyze the outcome of land management holistically using multiple methods
- plan measures for sustainable land management
- elaborate on findings and to present them in presentations and publications for readers in science and practice

- Introduction to major challenges in sustainable land management
- Introduction to methods in empirical social research, mainly quantitative and qualitative participatory methods, especially mixed methods approaches
- Strategies for stakeholder involvement and knowledge transfer strategies
- Frameworks and guidelines to integrate approaches from natural (e.g., module "Landscape and Agroecology") and social sciences

- Student-led project on sustainable land management challenges in teams:
 - Research design: selection of suitable methods and data
 - Method selection and application
 - Reporting for science and practice: oral and written
 - Peer-review: feedback to other groups' presentations and reports

- Biggs, Reinette; Vos, Alta de; Preiser, Rika; Clements, Hayley; Maciejewski, Kristine; Schlüter, Maja (ed.) (2022): The Routledge Handbook of Research Methods for Social-Ecological Systems. New York: Routledge.
- World Bank (2008): Sustainable land management sourcebook. Washington, DC: World Bank (Agriculture and rural development).
- https://www.fao.org/land-water/land/sustainable-land-management/en/
- https://elearning.fao.org/course/view.php?id=454&lang=ar

Module Name: 7. Advisory in (Agro-)Ecological Management Module Coordinator: Prof. Dr. Markus Meyer Lecturers: NN

Study Programme: Master Sustainable Land Management and Conservation

Classification in the Study Programme: Compulsory Course

Semester: summer		Blocked Course: no
Work Load: 150 h	Teaching Hours within: 45 h (60 lessons of 45 minutes)	Credits: 5

Distribution of Work Load (in Teaching and Learning Forms):

Teaching and Learning Forms	Hours
Seminar/ Practical Course Self-study incl. Practice and	45 h (60 lessons of 45 minutes)
Exam Preparation	105 h

Examination (acc. SPO): Oral Examination (30 minutes) Language: English

Requirements (from other modules of the study program): none

Learning Outcomes:

This module provides students the competence and tools for advising land users, especially farmers, on implementing land management and measures while considering the impact on biodiversity, ecosystem functions, and services

After successful completion of this module, students are expected to be able to:

- be aware of the position of a land user and a conservationist in a consultancy process.
- select choose and use the competences and tools in different contexts (heterogeneity in landscape and land management (e.g., smallholders, holdings))
- initiate and implement the advisory process
- use of best practices and pitfalls in the advisory process
- consider the requirements for advisors.
- do a peer- and self-assessment on competences, success and behavior in the consultancy process

- Methods for communication and consultation of land users, especially farmers
- Acceptance of biodiversity and other ecological measures by farmers
- Identification of suitable areas in the landscape context and the ecological network
- Implementation of ecological measures across farms (cooperation)
- Economic considerations of ecological measures (costs, cost comparison, financing possibilities
- Roel plays and consulting projects for agroecological management

- RS and MEAS. 2015. Managing natural resources: A SMART Skills manual. Catholic Relief Services, Baltimore, MD, and Modernizing Extension and Advisory Services project, University of Illinois at Urbana-Champaign.
- Kassam, A. (ed.) (2020): Advances in Conservation Agriculture: Volume 1: Systems and science. Burleigh Dodds Science Publishing.
- Kassam, A. (ed.) (2020): Advances in Conservation Agriculture: Volume 2: Practice and Benefits. Burleigh Dodds Science Publishing.
- Kassam, A. (ed.) (2020): Advances in Conservation Agriculture: Volume 3: Adoption and Spread. Burleigh Dodds Science Publishing.

Module Name: 8. Project Sampling and Data Processing **Module Coordinator:** Prof. Dr. Christina Fischer, Prof. Dr. Anita Kirmer, Prof. Dr. Markus Meyer, Prof. Dr. Caroline Stolter, Prof. Dr. Sabine Tischew **Lecturers:** All professors of the study area nature conservation

Study Programme: Master Sustainable Land Management and Conservation

Classification in the Study Programme: Compulsory Course

Semester: summer		Blocked Course: no
Work Load: 300 h	Teaching Hours within: 22.5 h (30 lessons of 45 minutes)	Credits: 10

Distribution of Work Load (in Teaching and Learning Forms):

Teaching and Learning Forms
Seminar/ Practical Course
Self-study incl. Practice and

Hours 22.5 h (30 lessons of 45 minutes)

277.5 h

Examination (acc. SPO): Project	Language: English
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Requirements (from other modules of the study program): none

Learning Outcomes:

Exam Preparation

The students are able to work in teams and independently scientific. They are able to apply the acquired knowledge from previous modules a to a concrete project question. They possess competences in dealing with literature, methods as well as specialized information systems.

Main Topics:

- Selection of a suitable project topic (topics are offered by the lecturers at the beginning of the respective semester)
- Conception of the project
- Implementation of the project in the field of nature conservation, sustainable land management, ecological analysis and evaluation
- Documentation and presentation
- Seminar scientific methods

Literature // Study Materials:

- Literature, spatial and non-spatial data depending on the chosen project

Module Name: 9. Spe Module Coordinator: Lecturers: NN	cific Geoinformatics and Re Prof. Dr. Matthias Pietsch	emote Sensing	
Study Programme: M	aster Sustainable Land Ma	nagement and Conserv	vation
Classification in the S	Study Programme: Elective	e Module	
Semester: winter			Blocked Course: no
Work Load: 150 h	Teaching Hours within: 4 (60 lessons of 45 minutes)	45 h)	Credits: 5
Distribution of Work	Load (in Teaching and Lea	rning Forms):	
Teaching and Learnin Seminar/ Practical Cou Self-study incl. Practica Exam Preparation	ng Forms Irse e and	Hours 45 h (60 lessons of 4 105 h	5 minutes)
Examination (acc. SPO): term paper Preliminary performance: Performance record (evaluation of remote sensing data (e.g. aerial photographs, satellite images) using of different classification methods as well as GIS-technical creation and evaluation of existing technical data as well as official geobase data; Preparation of thematic maps as well as documentation of the approach and results)			Language: English
Requirements (from c	ther modules of the study p	program): none	
 Learning Outcomes: After successful compl are able to underst (GNSS), global orie igation (GPS, Glon will be capable to d jects (data manage (e.g. multi-criteria e) understand how to ings of different ser will be capable of u derstanding of exis dents are supposed sources (e.g. COR are able to acquire ent methods (e.g. in 	etion of the module student and the basics of reference entation with technical aids ass, Galileo) levelop their own workflow a ement, data quality, data sto evaluation, overlay functions work with a database, cond nsors and technologies using GIS data during whole ting standards and standard to collect sets of data and INE, GMES, NATURA 2000 remote sensing data from o ndices, classification metho	ts: systems for global nav and instruments such a and approach to data m orage) with the help of G s) duct basic GIS analyses e planning processes ar dization initiatives (e.g. l metadata from Europe) sites) different sources and ev ods, ML).	rigation by satellite is maps and satellite nav- nanagement in GIS pro- GIS tools and methods is and handle data captur- nd develop a basic un- OGC, INSPIRE). Stu- ean and worldwide re- valuate them with differ-

Main Topics:

Students use software products for the acquisition, analysis and visualization of GIS and remote sensing data (ERDAS Imagine, ESRI products). They generate image mosaics and evaluate landscape ecological parameters. For this purpose, raster and vector data of different quality are evaluated. Possibilities of data transformation as well as data exchange between software systems from the CAD and GIS area are presented and tested. The use of geoservices as well as the mapping of the complete process workflow are part of the module.

- Smith, M., Goodchild, M., Longley, P. (2018): Geospatial Analysis A comprehensive guide to principles, techniques and software tools, 6th edition (online <u>Geospatial Analysis</u> <u>6th Edition, 2018 - de Smith, Goodchild, Longley and Colleagues (spatialanalysisonline.com)</u>
- Flacke, W., Kraus, B. (2005): Working with Projections and Datum Transformations in ArcGIS, Points Verlag Norden
- Lillesand, Kiefer, Chipman (2015): Remote Sensing and Image Interpretation, Wiley
- Online ressources (e.g. ESRI Virtual Campus)

Module Name: 10. Ecological Modeling Module Coordinator: Prof. Dr. Markus Meyer Lecturers: Prof. Dr. Markus Meyer, NN			
Study Programme: M	laster Sustainable Land N	lanagement and Conserv	vation
Classification in the S	Study Programme: Com	pulsory Course	
Semester: winter			Blocked Course: no
Work Load: 150 h	Teaching Hours within (60 lessons of 45 minute	: 45 h ss)	Credits: 5
Distribution of Work	Load (in Teaching and Le	earning Forms):	
Teaching and Learnin Seminar/ Practical Cou Self-study incl. Practica Exam Preparation	n g Forms urse e and	Hours 45 h (60 lessons of 4 105 h	5 minutes)
Examination (acc. SP	O): Examination Report		Language: English
Requirements (from other modules of the study program): none			
Learning Outcomes: The course provides an overview of classic and recent ecological models. The students gain basic knowledge to understand and classify common modelling techniques in Ecology. The course includes theoretical introductions into different ecological concepts underlying the presented ecological models as well as practical parts where the models are applied to deepen the understanding. The model application can include pen-and-paper exercises (e.g., Island Biogeography) but also the software R (e.g., Measuring Biodiversity). The course equips the student with a broad understanding of current modelling techniques relevant for sustainable land management and the conservation of habitats and species and thus allows the participants to apply models in specific future projects.			
Main Topics: Introduction to Metapopulation Species distribut Individual-base Biodiversity The Measuring Biod Machine Learn Spatial Models	Ecological Modeling n models ution models d models eories (e.g., Island Bioged diversity ing	ography)	

- Magurran 2004 Measuring Biological Diversity
- Jopp, Reuter and Breckling (Eds.) Modeling Complex Ecological Dynamics
- Grimm and Railsback 2005 Individual-based Modeling and Ecology
- Gotelli 2008 A Primer of Ecology
- Begon and Townsend 5th Edition 2021 Ecology from Individuals to Ecosystems

Module Name: 11. Ecological Restoration
Module Coordinator: Prof. Dr. Anita Kirmer
Lecturers: Prof. Dr. Anita Kirmer

Study Programme: Master Sustainable Land Management and Conservation

Classification in the Study Programme: Elective Module

Semester: summer		Blocked Course: no
Work Load: 150 h	Teaching Hours within: 45 h (60 lessons of 45 minutes)	Credits: 5

Distribution of Work Load (in Teaching and Le	earning Forms):	
Teaching and Learning Forms Seminar/ Practical Course Self-study incl. Practice and	Hours 45 h (60 lessons of 4	5 minutes)
Exam Preparation	105 h	
Examination (acc. SPO): Examination Report		Language: English

Requirements (from other modules of the study program): Biogeography and Ecosystem analysis

Learning Outcomes:

Based on presented and self-researched case studies, students understand essential scientific concepts of restoration ecology and acquire comprehensive technical and methodological competencies in the ecological restoration habitats. By evaluating international literature on selected restoration topics and independently analyzing and evaluating restoration successes in practice, they work in teams to develop solutions to problems for restoring degraded biotopes/habitats and species communities, taking into account climate change and related problems. Students learn to handle complex data sets from field trials, to evaluate and interpret them using scientific methods, and to derive management recommendations and development prognoses from the results. They are also able to research the state of knowledge on a specific topic, write concise scientific texts and apply these skills to the example of a scientific poster. They present their findings and represent them in discussion groups that prepare them for real-life situations in practice. In the process, students give each other appreciative feedback, learn to work cooperatively and responsibly in groups, and to present and argue complex content in a comprehensible manner.

- Introduction to methodical basics for the planning and implementation of restoration measures (abiotic, biotic as well as socio-economic framework conditions).
- Presentation of main objectives and restoration measures in restoring different habitat types as well as problems in achieving the objectives and possible solutions

- Field trips to restoration sites in cooperation with NGOs and state authorities on selected topics (e.g., biodiversity enhancement in agricultural landscapes, restoration and management of grasslands and heathlands, wild seed propagation, post-mining sites, compensation measures)
- Planning and practical implementation of habitat restoration and survey of restoration success in the field

- Gann GD, McDonald T, Walder B, Aronson J, Nelson CR, Jonson J, Hallett JG, Eisenberg C, Guariguata MR, Liu J, Hua F, Echeverria C, Gonzales, EK, Shaw N, Decleer K, Dixon KW. 2019. International principles and standards for the practice of ecological restoration. Second edition. Restoration Ecology S1-S46.
- Kiehl, K., Kirmer, A., Shaw, N., Tischew, S. [eds.] (2014): Guidelines for Native Seed Production and Grassland Restoration. Cambridge Scholar Publishing. ISBN 1-4438-5900-1
- Scotton, M., Kirmer, A., Krautzer, B. [eds.] (2012): Practical handbook for seed harvest and ecological restoration of species-rich grasslands. Cleup Editore, Italy. ISBN: 9788861298002 (open access)
- Van Andel, J., Aronson, J. (2012): Restoration Ecology: The New Frontier. Blackwell Publishing. DOI:10.1002/9781118223130.

Module Name: 12. Mo Module Coordinator: Lecturers: Prof. Dr. W	elecular Biological Methods Prof. Dr. Wilfried Rozhon lifried Rozhon, Dr. Jörg Gei	in Nature Conservation istlinger, MSc Sarah Re	epert,
Study Programme: M	aster Sustainable Land Ma	nagement and Conserv	vation
Classification in the S	Study Programme: Elective	e Module	
Semester: winter			Blocked Course: no
Work Load: 150 h	Teaching Hours within: 4 (60 lessons of 45 minutes)	45 h	Credits: 5
Distribution of Work	Load (in Teaching and Lea	rning Forms):	
Teaching and Learnin Seminar/ Practical Cou Self-study incl. Practica Exam Preparation	n g Forms Irse e and	Hours 45 h (60 lessons of 4 105 h	5 minutes)
Examination (acc. SP	O): Examination Report		Language: English
Requirements (from other modules of the study program): none			
Learning Outcomes: The students have known lar methods and can a They can isolate DNA ed DNA. The students are able biological sample. They know next gener iments to study the gener They can use sequence The students are able lecular biological meth	owledge about genetics, par pply them for environmenta from difficult matrices and o to apply DNA-based metho ation sequencing (NGS) ten nus/species composition, fo es to calculate phylogenetic to study the genetic variabil ods.	rticularly population ger l protection. check the concentration ods to attribute a genus chniques and can plan r instance in soil sampl c trees. lity of populations using	netics, as well as molecu- n and quality of the isolat- , maybe also species to a and perform such exper- es. biochemical and mo-
Main Topics: Genetics and p Methods in mol sequencing, NG Molecular phylo Methods in mol Microbiome and Identification of Investigation of Genetic drift. Application of n	opulation genetics. ecular biology, particularly I GS, RFLP and VNTR analys ogeny. ecular biology for species ic alysis. individuals in a population the genetic diversity of pop nolecular methods for speci	DNA isolation, PCR, ele sis. dentification, for instanc using DNA-based meth pulations. les protection.	ectrophoresis, Sanger ce "DNA-barcoding". nods.

- Brown TA: Gene Cloning and DNA Analysis: An Introduction, 8th Edition, 2020. Wiley-Blackwell, ISBN 1119640784.
- Lodge J, Lund P: Gene Cloning. 2007. Taylor & Francis Ltd. ISBN 0748765344.

 Kumar A, et al.: Molecular Genetics and Genomics Tools in Biodiversity Conservation. 2023. Springer. ISBN 9811660077.
 DeWoody AJ: Molecular Approaches in Natural Resource Conservation and Management. 2010. Cambridge University Press, ISBN 0521731348.

Module Name: 13. Feeding Ecology, Wildlife and Livestock Management Module Coordinator: Prof. Dr. Caroline Stolter Lecturers: Prof. Dr. Caroline Stolter			
Study Programme: N	laster Sustainable Land I	Management and Conserv	vation
Classification in the	Study Programme: Con	npulsory Course	
Semester: winter			Blocked Course: no
Work Load: 150 h	Teaching Hours within (60 lessons of 45 minut	n: 45 h es)	Credits: 5
Distribution of Work	Load (in Teaching and L	earning Forms):	
Teaching and Learnin Seminar/ Practical Cou	ng Forms urse	Hours 45 h (60 lessons of 4	5 minutes)
Exam Preparation	e and	105 h	
Examination (acc. SPO): Written Examination (90 minutes)Language: EnglishPreliminary performance: presentationImage: English		Language: English	
Requirements (from other modules of the study program): none			
Learning Outcomes: Students will be able to evaluate the sustainability of land use by wildlife and livestock in different ecosystems. In addition to gaining knowledge of animal-plant interactions, they will also gain knowledge of managing livestock and wild herbivores Students will be able to assess the needs of animals and take appropriate actions to improve or maintain the conditions of ecosystems and rangelands. Students possess the ability to engage in scientific discourse with regard to current problems. They acquire the ability to independently conduct scientific research, preparation, as- sessment, presentation, and critically engage with current issues of land use.			
 Main Topics: rangeland and veld management, global livestock production systems, livestock and climate change feeding ecology and nutrition of ruminants and wild herbivores 			
 Literature // Study Materials: Rangeland systems, Briske (Ed.), Springer, Game ranch management, Bothma (Ed.), Van Schaik, Veld management: Principles and practice, van Outshoorn, Briza, Veld Management in South Africa, Tainton (Ed.), KZN Press, Integrative wildlife nutrition, Barboza et al. (Eds.), Springer Alternating depending on focus topics 			

Module Name: 14. Master's Thesis Module Coordinator: All professors of the study area nature conservation

Study Programme: Master Sustainable Land Management and Conservation

Classification in the Study Programme: Compulsory Course

Semester: summer		Blocked Course: yes
Work Load: 750 h	Teaching Hours within: none	Credits: 25

Distribution of Work Load (in Teaching and Learning Forms):

Teaching and Learning Forms	Hours
Self-study	750 h

Examination (acc. SPO): Master's Thesis Language: English

Requirements (from other modules of the study program): none

Learning Outcomes:

The students are able to work independently on a subject-related problem with a scientific claim
within a given time of 20 weeks, to apply suitable methods and scientific findings, to overview the
subject-related contexts and to present the findings convincingly, clearly, in appropriate language
and in a clear form.

Main Topics:

- Selection of a suitable topic.
- Independent performance of all necessary work and related extensive research of sources
- Precise documentation of the methodology
- Documentation and discussion of the results in the sense of the preparation of an application-oriented scientific thesis.
- Thesis under exact application of suitable methods to the result protection
- Derivation of recommendations for action and conclusions

Literature // Study Materials:

 Topic-dependent specifications, guidelines and instructions for writing the Master's thesis are provided by the supervisors.

Module Name: 15. Master Colloquium Module Coordinator: All professors of the study area nature conservation

Study Programme: Master Sustainable Land Management and Conservation

Classification in the Study Programme: Compulsory Course

Semester: summer		Blocked Course: yes
Work Load: 150 h	Teaching Hours within: none	Credits: 5

Distribution of Work Load (in Teaching and Learning Forms):

Teaching and Learning Forms	Hours
Self-study	150 h

Requirements (from other modules of the study program): none

Learning Outcomes:

In the colloquium for the Master's thesis, students are able to present scientific findings and their and their own results in lecture form, supported by modern means, and present them convincingly in a scientific dispute in terms of content and method. convincingly in a scientific discourse.

Main Topics:

- Defense of the thesis within the framework of a special colloquium in front of a multimember examination committee and the university public
- Discussion of the results and classification in the subject areas

Literature // Study Materials:

Topic-dependent specifications