



TRANSLATION OF
GAZETTE

Administrative Bulletin of the Public Sector and the Foundation

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— Subject-specific Annex 5.15a Sustainability Science: Ecosystems, Biodiversity and Society to the Framework Examination Regulations (FER) for the Master's Programs at the Leuphana Graduate School of the Leuphana University of Lüneburg

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Subject-specific Annex 5.15a Sustainability Science: Ecosystems, Biodiversity and Society to the Framework Examination Regulations for the Master's Programs at the Leuphana Graduate School of the Leuphana University of Lüneburg

Based on § 41 para. 1 sentence 1 of the Lower Saxony Higher Education Act (NHG) in the version of February 26, 2007 (Nds. GVBl. p. 69), last amended by Art. 7 of the Act of March 23, 2022 (Nds. GVBl. p. 218), the Faculty Council of the Faculty of Sustainability on November 08. 2023 adopted the following Subject-Specific Annex 5.15a to the Framework Examination Regulations for the Master's Programs at the Graduate School of Leuphana University of Lüneburg of September 17, 2008 (Leuphana Gazette No. 15/08 of October 06, 2008), last amended on April 19, 2023 (Leuphana Gazette No. 49/23 of June 16, 2023). The Presidential Board approved the subject-specific annex in accordance with § 44 para. 1 sentence 3 and § 37 para. 1 sentence 3 no. 5b) NHG on December 13, 2023.

Section I

To §2 FER, Aim of the sudy programme, purpose of the examination

Professional Competences

Successful graduates of the Master

- have a critical understanding of key theories, methods, and discourses in sustainability science.
- have in-depth knowledge of current concepts, methods and research approaches in applied ecology and biodiversity research with the interacting foci on ecosystem restoration and social-ecological resilience.
- have an understanding of social-ecological system dynamics and are able to analyze complex social-ecological questions and problems and to structure and advance their solution processes with the participation of relevant actors.
- know methods and concepts of inter- and transdisciplinary research and are able to apply them in international and national working contexts.
- are able to identify, work on and solve sustainability-relevant issues with experts from different disciplines as well as practitioners.

Personal competences

Successful graduates of the master's program are able to

- to work responsibly in teams of experts and to integrate current findings in sustainability science into the work process.
- to systematically analyze complex problems, to develop participatory solutions and to successfully accompany their implementation by applying their acquired knowledge in sustainability science with a focus on applied ecology and biodiversity research.

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- to deal with problems in a team with foresight and to lead and take responsibility for group processes within a context of heterogeneity.
- to explain complex sustainability-related problems and solutions to experts in a transdisciplinary dialogue and to develop solutions further with them.

TO § 3 FER, Modularisation, study structure and scope, standard period of study

The standard period of study is two years. The scope of study is 120 credit points.

Module overview Master Sustainability Science: Ecosystems, Biodiversity and Society

(cf. Also the subject-specific Annex 8 Complementary Studies)

Master Forum 5 CP	Master thesis 25 CP				
Elective 5 CP	Site Characteristics and Biogeochemical Processes 5 CP	Conservation Case Studies, the Present and the Future 5 CP	Qualitative and Quantitative Methods 5 CP	Elective 5 CP	Complementary studies 5 CP
Transdisciplinary Research Project 10 CP		Introduction to Ecosystem Restoration and Social-Ecological Systems 5 CP	Resilience of Ecosystems and Social- Ecological Systems 5 CP	Elective 5 CP	Complementary studies 5 CP
Sustainability Science 5 CP	Transdisciplinary Research Design 5 CP	Methods 5 CP	Introduction to Biodiversity and Ecosystem Functions 5 CP	Elective 5 CP	Complementary studies 5 CP

	Profile Modules
	Integration
	Electives
	Complementary studies

In the first semester the following modules must be taken:

- Sustainability Science (MA-NaWi-3, 5 CP)
- Transdisciplinary Research Design (MA-Sust-2a, 5 CP)
- Methods (MA-Sust-3, 5 CP)
- Introduction to Biodiversity and Ecosystem Functions (MA-EBS-1, 5 CP)

as well as one module of the following electives:

- Introduction to Sustainability Governance (MA-GL-1, 5 CP)
- Introduction to Psychology and Sustainability (MA-P&S-2, 5 CP)
- Resources, Materials, Products and Sustainable Chemistry (MA-RMC-1, 5 CP)

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In the second semester the following modules must be taken:

- Transdisciplinary Research Project (MA-NaWi-6, 10 CP)
- Introduction to Ecosystem Restoration and Social-Ecological Systems (MA-EBS-2, 5 CP)
- Resilience of Ecosystems and Social-Ecological Systems (MA-EBS-3, 5 CP)

as well as one module of the following electives:

- Research Methods: Multivariate Approaches (MA-P&S-1, 5 CP)
- Non-Renewable Resources (NA-RMC-3, 5 CP)
- Current Topics of Sustainability Science I (MA-Sust-4, 5 CP)
- Introduction to Law and Sustainability Transformation (MA-GL-2, 5 CP)

In the third semester the following modules must be taken:

- Site Characteristics and Biogeochemical Processes (MA-EBS-4, 5 CP)
- Conservation Case Studies, the Present and the Future (MA-EBS-5, 5 CP)
- Qualitative and Quantitative Methods (MA-EBS-6, 5 CP)

as well as two modules of the following electives:

- Sustainable Energies (MA-Sust-7, 5 CP)
- Communication of Scientific Results (MA-NaWi-11b, 5 CP)
- Social Entrepreneurship (MA-EAL-6, 5 CP)
- Current Topics of Sustainability Science II (MA-Sust-5, 5 CP)
- Psychology and the Society: Political Negotiations and Sustainability (MA-P&S-5, 5 CP)

To § 5 FER, Academic degrees

Master of Science (M. Sc.)

To § 6 para. 10 FER

The language of teaching and examination is exclusively english.

To § 8 para. 1, Master's thesis

The processing time for the Master's thesis is 5 months.

To § 8 para. 8, Oral examination

There will be a oral examination complementary to the Master's thesis. The grade for the oral examination is be included in the overall grade of the Master's thesis with a proportion of one fifth.

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Modules Master Sustainability Science: Ecosystems, Biodiversity and Society

Compulsory Modules

Modul	Content	Types of taught components (type and number of courses, CH)	Module requirements	CP	Comments
1st semester					
Sustainability Science (MA-NaWi-3)	Beginning with an overview of the existing theoretical foundations of sustainability science and research, the seminar deals with the historical development, current challenges and future potential of this research field. Key aspects include an examination of coupled human-environment systems, sustainable development, and global change. The interaction of disciplinary, interdisciplinary and transdisciplinary research in sustainability science and the fundamentals of a problem- and solution-oriented research field are also discussed.	1 Seminar (1 CH) 1 lecture (1 CH)	Combined assessment	5	English
Transdisciplinary Research Design (MA-Sust-2a)	This module provides the theoretical and epistemological fundamentals of transdisciplinary sustainability research. It introduces integrative approaches to socially-relevant problems, transformative methods of sustainability research, collaboration skills, and team roles. In parallel to the lecture, students begin to familiarize themselves with the strand-specific case (i.e., context, structures and processes, historical development), and explore possible joint research objects.	1 Lecture (2 CH) 1 Seminar (1 CH)	Combined assessment	5	English
Methods (MA-Sust-3)	Within the module students will gain an overview of the wide array of research methods that are applied in sustainability science. The module will also teach the students to obtain information on how to learn more about methods, and how to learn new methods and apply these in their specific work. The course is designed to enable students to develop methodological designs with a mixed methods approach. Building on a broad and diverse conceptual basis the students will work in smaller groups, thereby learning the collaborative skills necessary to utilise the diverse knowledge of the participants.	1 Lecture (3 CH)	Combined assessment	5	English
Introduction to Biodiversity and Ecosystem Functions (MA-EBS-1)	Biodiversity has several components, including species diversity, functional diversity, and phylogenetic diversity, all of which are essential for understanding ecosystem-level consequences of ongoing global biodiversity loss. This course focuses on biodiversity-ecosystem functioning (BEF) research as well as the larger implications of social-ecological systems for biodiversity and ecosystem functioning. It examines how global environmental change drives impacts on biodiversity but also ecosystem functioning, ecosystem services, and nature's contributions to people.	1 Lecture (1 CH) 1 Seminar (1 CH)	Combined assessment	5	English

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Modul	Content	Types of taught components (type and number of courses, CH)	Module requirements	CP	Comments
2nd semester					
Transdisciplinary Research Project (MA-NaWi-6)	In this module, students implement the research plan that they developed in the module 'TD Research Design', and autonomously apply methods of transdisciplinary research. In cooperation with practice partners, they work with different strategies and proposals on the co-production of knowledge and solutions for sustainable development. With the help of regular coaching and input from the lecturers, the students work independently to solve the previously identified case-specific problem, in order to close the identified knowledge gaps in both a scientific and practical manner. At the end of the project re-integration products are finalized and final products publicly presented and discussed.	1 Project (4 CH)	<i>Combined assessment</i>	10	English
Introduction to Ecosystem Restoration and Social-Ecological Systems (MA-EBS-2)	The first half of this course will focus on the biophysical foundations for ecological restoration. Using examples from research projects, scientific literature, and case studies, the students will become familiar with the different ecological theories relevant to restore degraded ecosystems. In the second half of the course, students will learn how restoration can amplify its impact by applying a social-ecological approach. To do so, this part of the course will focus on key social-ecological concepts that are relevant to improve ecosystem restoration in social contexts. Key themes will include resilience, ecosystem stewardship, relational values, coevolution of human and ecological systems, and leverage points for transformation.	1 seminar (2 CH)	Combined assessment	5	English
Resilience of Ecosystems and Social-Ecological Systems (MA-EBS-3)	Resilience is the ability of a complex adaptive system to withstand shocks but continue functioning. Drawing on the foundations laid in the first semester, this course will provide advanced insights into the theory and empirical science of resilience, from both an ecological and social-ecological perspective. Concepts to be investigated include resistance versus resilience, adaptive capacity and the adaptive cycle, panarchy, and social-ecological telecoupling. General resilience principles will be examined, as well as the resilience of ecosystems to specific shocks, such as rapid climate change, pollution or invasive species.	1 seminar (2 CH)	Combined assessment	5	English

Modul	Content	Types of taught components (type and number of courses, CH)	Module requirements	CP	Comments
3rd semester					
Site Characteristics and	An advanced knowledge of site characteristics and biogeochemical processes is an important prerequisite to meeting the many challenges that can occur when trying to restore or protect natural systems. This course aims to	1 lecture (2 CH) 1 Seminar/Exercise (2 CH)	Written examination without supervision	5	English

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3rd semester					
Biogeochemical Processes (MA-EBS-4)	deepen an understanding of (terrestrial) ecosystem processes from a biogeochemical point of view. Due to the central role of soil in biogeochemical cycles, and thus ecosystem restoration, the course will, in particular, highlight (interactive) processes between soils, plants and other components of terrestrial ecosystems. Lab and field exercises will complement lectures and seminars and will impart knowledge on current methods aiming at an analysis of soil ecological processes including an introduction to experimental approaches addressing an assessment of human impacts on processes and biogeochemical cycles in terrestrial ecosystems.				
Conservation Case Studies, the Present and the Future (MA-EBS-5)	The first half of this course will focus on global change ecology research and its link to nature conservation. Potentials and limitations of conservation and restoration approaches will be explored and critically discussed. Using examples from research projects and case studies, students will become familiar with different methods and strategies to maintain ecosystem integrity or to restore degraded ecosystems. In the second half of this course, students will learn how to design management strategies to conserve ecosystems or restore degraded ecosystems by learning about scenario thinking and planning. Here, students will assess different case studies where scenario planning has been used to provide guidelines for management of social-ecological systems, conservation of protected areas and restoration. In addition, based on the idea of 'learning by doing', students will apply scenario planning to real or hypothetical case studies.	1 seminar (2 CH) 1 Exercise (2 CH)	Combined assessment	5	English
Qualitative and Quantitative Methods (MA-EBS-6)	The module provides deeper insights and application experience in scientific methods. With the help of concrete data sets and case studies, demanding current methodological challenges of the relevant scientific fields are considered and discussed. The module builds on the students' prior knowledge and provides deeper insights into methods in order to develop experiential knowledge for the master thesis.	2 seminars (4 CH)	<i>Combined assessment</i>	5	English

Modul	Content	Types of taught components (type and number of courses, CH)	Module requirements	CP	Comments
4th semester					
Master Forum (MA-EBS-7)	Supervision and assistance in the conception, organization and implementation of individual Master's theses; development, presentation, discussion and reflection of questions, concepts and exposés for Master's theses	Colloquium (2 CH)	Combined Assessment	5	English

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Modul	Content	Types of taught components (type and number of courses, CH)	Module requirements	CP	Comments
4th semester					
Master Thesis (MA-EBS-8)	Writing of a Master Thesis	None	1 Master Thesis and 1 oral examination	25	

Electives

Modul	Content	Types of taught components (type and number of courses, CH)	Module requirements	CP	Comments
Electives					
Introduction to Sustainability Governance (MA-GL-1)	This module offers a comprehensive and advanced introduction to environmental and sustainability governance. It aims to provide a thorough understanding of key concepts and theoretical approaches in this field and their application to real-world cases. The module explores the functioning of governance systems in the development and implementation of public policies that address pressing environmental and sustainability issues at local, national, and international levels. The module focuses on both the structural and procedural aspects of governance.	1 Lecture (2 CH)	Written examination under supervision	5	English
Introduction to Psychology & Sustainability (MA-P&S-2)	The course addresses fundamental sustainability problems and questions regarding the ecological, social, and economic dimensions of sustainable behavior. In an interdisciplinary fashion, key concepts of sustainability science are introduced and linked to human behavior. Vice versa, the psychological perspective is established and linked to fundamental sustainability challenges. The course offers an overview of psychological theorizing and empirical findings that aim to understand, explain, predict, and change human behavior in the context of sustainability. Psychological barriers towards sustainable behavior are explored and behavior change interventions are demonstrated to present important levers. The course addresses individual, joint, and collective behavior. The module aims at enabling students to reflect on theoretical, empirical, as well as applied interventions towards sustainable behavior.	1 lecture (2 CH) or 1 seminar (2 CH)	Written Examination under supervision or Combined assessment	5	English
Resources, Materials, Products and Sustainable Chemistry (MA-RMC-1)	Concepts of sustainable chemistry along the life cycle of chemical substances, materials and complex products are explained (e.g. sustainable chemistry and green chemistry, importance of resources, green syntheses, materials and products, specifics of metals, recycling, dissipation, benign by design; safe and sustainable by design, and other concepts, new business models, international substance, material, and chemical management, EU Green Deal with a view to materials and chemicals).	1 Lecture (2 CH)	Combined Assessment	5	English

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Modul	Content	Types of taught components (type and number of courses, CH)	Module requirements	CP	Comments
Electives					
Research Methods: Multivariate Approaches (MA-P&S-1)	In this course students will be provided with an overview of current data analysis techniques suitable for the analysis of multidimensional data, and data with a time component. Selected techniques of multivariate analyses will be discussed in detail. The mathematical foundations of these techniques will be introduced, and the techniques will be applied to data sets from psychology and sustainability science. Student will learn how to integrate data from different sources to model relationships between different variables of interest and draw causal inferences in the field of sustainability psychology.	1 seminar (2 CH) or 1 lecture (2 CH)	Written Examination under supervision or Combined assessment	5	English
Non-Renewable Resources (MA-RMC-3)	Significance of use of non-renewable resources (e.g., metals, minerals, coal, mineral oil, fossil gas, phosphorous, nitrogen) for sustainability including impact of chemicals, materials and products on soil, air, and water and environmental pollution along their life cycle.	Lecture (2 CH)	Combined Scientific Work	5	English
Current Topics of Sustainability Science I (MA-Sust-4)	The module deepens the knowledge in current research fields of sustainability science. Social-ecological systems are considered in a scientifically sound and interdisciplinary manner and are processed against the background of the respective disciplinary foundations and related to current challenges, whereby the problem-solving contribution and the potential of the research field become clear.	1 lecture (1 CH) and 1 seminar (2 CH)	<i>Written examination without supervision or written examination under supervision</i>	5	English
Introduction to Law and Sustainability Transformation (MA-GL-2)	This course introduces the concept of law, legal methodology and the role of law in sustainability transformation. It offers a critical understanding of the structure and functioning of international, European and national law both as an important tool to steer societies towards sustainability and, importantly, as a constraint to such efforts. A particular focus of the course is on the interrelationship between the different levels of law as well as key differences between them with respect to actors, law-making, instruments, implementation and enforcement from a global, regional and domestic level.	1 lecture (2 CH)	<i>Written examination under supervision</i>	5	English
Sustainable Energies (MA-Sust-7)	The seminar focusses on the analysis of sustainable energies in regards of sustainability aspects showing up current research and development examples as well as the analysis of the application of systems.	1 seminar (4 CH)	<i>Written examination without supervision</i>	5	English
Communication of Scientific Results (MA-NaWi-11b)	The subject of the module is the communication of scientific findings, theses and research results. The focus is on addressee- and context-related approaches and strategies in preparation and publication for scientific and non-scientific target groups as well as possibilities and limits of inter- and transdisciplinary communication.	1 seminar (2 CH) or 1 lecture (2 CH)	Combined Assessment or written examination without supervision	5	English
Social Entrepreneurship	The purpose of this course is to explore new social enterprise creation that combines a social and an	1 seminar (2 CH)	Combined assessment	5	English

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Electives					
(MA-EAL-6)	economic mission in order to simultaneously create social impact and economic profit. In this course, a social venture is defined as an innovative start-up firm, which utilizes market-based solutions as a tool for addressing social and environmental problems. By adopting a process perspective – from initial problem recognition all the way to establishing an impactful social venture – this course offers a holistic overview of the steps involved in creating businesses for societal change. Given the systemic nature of many sustainability-related challenges, this course combines insights from various theoretical approaches, coupled with practical techniques and methods for analysing and evaluating social business opportunities, crafting impact-oriented strategies, and developing creative approaches to utilize technology for social impact.				
Current Topics of Sustainability Science II (MA-Sust-5)	The module deepens the knowledge in current research fields of sustainability science. Social-ecological systems are considered in a scientifically sound and interdisciplinary manner and are processed against the background of the respective disciplinary foundations and related to current challenges, whereby the problem-solving contribution and the potential of the research field become clear.	1 seminar (2 CH) or 1 lecture (2 CH)	<i>Written examination without supervision or written examination under supervision</i>	5	English
Psychology and the Society: Political Negotiations and Sustainability (MA-P&S-5)	The course deals with social interactions and joint decision-making processes on the level of society. The course integrates social, cultural, economic, political, or ecological factors affecting present and future generations wellbeing. Focusing on the sustainable development of societies, the course will particularly deal with policy decision making, social conflicts, and their resolution via political negotiations. Linking psychological research to the field of sustainability science, decision-making and negotiation processes will be examined in the context of intragenerational and intergenerational conflicts. Studies on noncommunicative (i.e., action-response-interaction) and communicative social interaction (e.g., proposal-counterproposal interaction) will be discussed. Different theoretical accounts and empirical studies from the field of socialpsychological action research will be linked to the topics of sustainability science.	1 Seminar (2 CH)	<i>Combined assessment</i>	5	English

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Section II

Entry into force

This subject-specific annex comes into force in the winter semester 2024/25.

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