LEUPHANA
UNIVERSITÄT LÜNEBURG

TRANSLATION OF LEUPHANA GAZETTE 29/15 // 9. JULI 2015

SUBJECT-SPECIFIC SCHEDULE 5.1 MAJOR IN SUSTAINABILITY SCIENCE, AMENDED - SUSTAINABILITY SCIENCE TO THE EXAMINATION REGULATIONS (ER) FOR THE MASTER'S PROGRAM ARTS & SCIENCES AT THE GRADUATE SCHOOL OF LEUPHANA UNIVERSITY OF LÜNEBURG

SUBJECT-SPECIFIC SCHEDULE 5.5 GLOBAL SUSTAINABILITY SCIENCE (DOUBLE DEGREE IN CONJUNCTION WITH ARIZONA STATE UNIVERSITY) FOR THE MASTER'S PROGRAM IN ARTS AND SCIENCES ON THE EXAMINATION REGULATIONS (ER) MASTERS'S PROGRAMS AT THE GRADUATE SCHOOL OF LEUPHANA UNIVERSITY OF LÜNEBURG.

Please note: Only the German version of this Subject-related Schedule (FSA) shall be valid exclusively

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Subject-Specific Schedule 5.1 Major in Sustainability Science, amended - Sustainability Science to the Examination Regulations (ER) for the Master's Program Arts & Sciences at the Graduate School of Leuphana University of Lüneburg

Pursuant to Section 44(1), sentence 2 of Lower Saxony Higher Education Act (NHG), the Council of the Faculty of Sustainability at Leuphana University of Lüneburg has, on 11.02.2015, adopted the amended Subject-specific Schedule Major in Sustainability Science dated October 29, 2008 (Leuphana Gazette No. 02/09 of February 06th, 2009) on the Examination Regulations for the Master's Programs at this University's Graduate School, dated May 21st, 2014 (Leuphana Gazette No. 13/14 of June 27th, 2014). The Governing Board approved the Subject-specific Schedule pursuant to Section 44(1) sentence 3 and Section 37(1), sentence 3, No. 5 b) of Lower Saxony Higher Education Act (NHG) on 03.06.2015.

Subject-Specific Schedule 5.1 Major in Sustainability Science - to the Examination Regulations for the Master's Program Arts & Sciences at the Graduate School of Leuphana University of Lüneburg

The Examination Regulations for the Master's Programs of the Graduate School of Leuphana University of Lüneburg are amended by complementary matters and specifications as follows:

With regard to § 5 Academic Degrees

Master of Science (M. Sc.)

Overview of Modules Major in Sustainability Science

4	Master's Forum Sustainability Sciences 5 CP	Master's Thesis 25 CP				
3	Research perspectives:*** Elective Compulsory Module 5 CP	Advanced level:** 3. Elective Compulsory Module Humanities or Natural Sciences 5 CP	Advanced level:** 4. Elective Compulsory Module Humanities or Natural Sciences 5 CP	Integration: Trans-disciplinary Research Project 2 10 CP		Complementary: 5 CP
2	Research Methods in Sustainability Sciences 5 CP	Advanced level:** 1. Elective Compulsory Module Humanities or Natural Sciences 5 CP	Advanced level:** 2. Elective Compulsory Module Humanities or Natural Sciences 5 CP	Integration: Transdisciplinary Research Project 1 10 CP		Complementary: 5 CP
1	Sustainability Science 5 CP	Advanced-level of Perspectives of Natural Sciences* 1. Elective Compulsory Module 5 CP	Advanced-level of Perspectives of Natural Sciences* 2. Elective Compulsory Module 5 CP	Advanced-level of Perspectives of Natural Sciences / Humanities 1. Elective Compulsory Module 5 CP	Advanced-level of Perspectives of Humanities* 2. Elective Compulsory Module 5 CP	Complementary: 5 CP

	Advanced-level of Perspectives of Natural Sciences / Humanities
	Advanced level
	Integration
	Master's Forum / Research Perspectives, Master's Thesis

* Selection of 2 out of 3 modules

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** Selection of 4 out of 16 modules
*** Selection of 1 out of 2 modules

The Modules **"In-Depth Perspectives of Natural Sciences / Humanities"** (20 CP) introduce both fundamental pillars and perspectives of the Lüneburg Sustainability Sciences - Sustainability Sciences and Sustainability Humanities.

The **"In Depth"** Modules (20 CP) are oriented on the advanced treatment of current issues of sustainability research from subject-specific science or problem-oriented perspective.

The Modules of **"Integration"** (20 CP) bring together the fundamentals and in-depth perspective, as well as the natural sciences and humanities of the project-oriented sustainability sciences. As a rule, the Integration Field is comprised of an inter- and trans-disciplinary student research project stretching over two semesters, where students work as a team together with scientists and practitioners on sustainability-related problems.

In the modules of "**Master Forum / Research Perspectives, Master Thesis"** (45 CPs), theoretical and normative assumptions and methodological approaches of sustainability science are treated. Furthermore, students prepare for practical requirements of sustainability research (design, planning, implementation and mediation of own research) and receive support in writing their Master's Thesis.

With regard § 3 of Examination Regulations
In the **1st Semester**, the module on "Sustainability Science" as well as two compulsory elective modules must be selected from three advanced compulsory elective modules on offer from the fields of natural sciences and humanities.

During the **2nd Semester**, both compulsory modules
— "Research Methods in Sustainability Sciences"
— "Transdisciplinary Research Project 1",
as well as two modules from advanced-level elective compulsory modules on offer must be studied.
During the **3rd Semester,** students must include the following modules in their degree program: either the module "Communication of Scientific Results" or "Organization of Research Projects" and the module "Trans-disciplinary Research Project 2", as well as two modules from advanced-level elective compulsory modules on offer.

Compulsory Modules means all Modules, whose successful completion is a prerequisite to the successful completion of the Program of Study. The grade achieved in these Modules is included in the final grade.
Compulsory Elective Modules means Modules from which the students select an obligatory set number being a prerequisite to the successful completion of the Program of Study. The grade of these Modules is included in the final grade.

Table of Modules of the 1st Semester in Major Sustainability Science

Module	Content	Type of tuition (number, type and AHWS)	Type and number of examinations pursuant to § 8 ER	CP	Commentary
Ecosystem Responses to Chemical Pollution [Ecosystem Responses to Chemical Pollution] (Ma-NaWi-1a)	Biogeochemical principles and definition of anthropogenic chemical contaminants; classes, emission sources, distribution, process cycle and breakdown, effects of legislation and control of pollutants; fate in ecosystems; substances with increasing significance; impact on the nutrient cycle	1 Lecture (2 AHWS) *and* 1 Seminar (2 AHWS)	1 written academic assignment or 1 written examination (90 Min.)	5	As a rule in the English language

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Module	Content	Type of tuition (number, type and AHWS)	Type and number of examinations pursuant to § 8 ER	CP	Commentary
Advanced-level of Perspectives of Natural Sciences (Elective Compulsory Module)	and the species composition				
Earth Systems and Climate change [Earth Systems and Climate change] (Ma-NaWi-1b) *Advanced-level of Perspectives of Natural Sciences (Elective Compulsory Module)*	Climate systems components; greenhouse effect and radiative forces; changes in climatic parameters; water cycle; natural variability and anthropogenic signal; historical perspective, scenario-based projections; regional climate change impact on communities, populations; Functions and Services of Ecosystems;	1 Lecture (2 AHWS) *and* 1 Seminar (2 AHWS)	1 written academic assignment or 1 written examination (90 Min.)	5	As a rule in the English language

Modules of the 1st Semester in Major Sustainability Science, continued

Module	Content	Type of tuition (number, type and AHWS)	Type and number of Examination performance pursuant to § 8 ER)	CP	Commentary
Geochemical Aspects of Compounds in the Environment and Sustainable Chemistry [Geochemical Aspects of Compounds in the Environment and Sustainable Chemistry] (Ma-NaWi-1c) *Advanced-level of Perspectives of Natural Sciences (Elective Compulsory Module)*	This seminar treats, next to thermodynamic aspects, kinetic aspects and their significance for geochemical and ecological systems. In practical lab classes, experiments are carried out on the field of distribution and fate of substances in the environment and sustainable chemistry (including use of computer models).	1 Seminar (2 AHWS) *and* 1 Exercise (2 AHWS)	1 Combined academic assignment	5	As a rule in the English language
Sustainability Communication [Sustainability Communication] (Ma-NaWi-2a) *Advanced perspectives of Humanities (compulsory elective module)*	The module focuses on the fundamentals of communication science of sustainability communication. The theoretical aspects are applied to current implementation strategies of sustainability communication. The aim is, furthermore, to merge theory and practice in one independent research task.	1 Seminar (4 AHWS)	1 written academic assignment	5	
Market-oriented Sustainability Management [Market-oriented Sustainability Management] (Ma-NaWi-2b)	This module treats advanced theories and methods of the market-oriented sustainability management, sustainable marketing, business practices and case studies. The fundamentals are taught by e-learning.	1 Seminar (4 AHWS)	1 Combined academic assignment	5	As a rule in the English language

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Advanced perspectives of Humanities (compulsory elective module)					
Sustainability Governance [Sustainability Governance] (Ma-NaWi-2c) *Advanced perspectives of Humanities (compulsory elective module)*	The focus of the module is provided by the sciences of jurisprudence, economics, the science of social policy, as well as the fundamentals of scientific planning in environmental and sustainability governance. Principally, theories, notions, and methods are introduced and parallels drawn with practical examples.	1 Seminar (2 AHWS) *and* 1 Seminar (2 AHWS)	1 written academic assignment	5	As a rule 2 of 4 seminars in English
Sustainability Science (Ma-NaWi-3) *Master's* Forum/ *Research perspectives (compulsory module)*	This seminar provides an overview of the most varied aspects of "Sustainability Science". Subjects treated include The Great Acceleration, System and Resilience Thought and Socio-ecologic Systems. Theoretical principles are developed and investigated through practical examples.	1 Seminar (2 AHWS)	1 written academic assignment	5	As a rule in the English language

Modules of the 2nd Semesters in Major Sustainability Science

Module	**Content**	**Type of tuition (number, type and AHWS)**	**Type and number of examinations pursuant to § 8 ER)**	**CP**	**Commentary**
Conservation Biology [Conservation Biology] (Ma-NaWi-4a) *Advanced level Natural Sciences (Elective Compulsory Module)*	Conservation Biology deals with the causes of biodiversity loss, as well as protection measures. This course provides theoretical foundations to various subject areas, such as habitat loss, fragmentation, climate change and invasive species. Relevant theory is taught in combination with practical exercises.	1 Lecture (1 AHWS) *a*nd 1 Exercise (3 AHWS)	1 written academic assignment or 1 Combined academic assignment	5	As a rule in the English language
Ecosystem processes: a biogeochemical perspective [Ecosystem processes: a biogeochemical perspective] (Ma-NaWi-4b) *Advanced level Natural Sciences (Elective Compulsory Module)*	The lecture, the field course or lab sessions will elaborate the following subjects: Definition of ecosystem processes, Energy and material flows, biogeochemical and soil ecology processes within ecosystems Nutrient fluxes and equilibria in soil, soil-structure and classification, soil conservation and management, Anthoropogenic impacts on biogeochemical cycles	1 Lecture (1 AHWS) *and* 1 Exercise (3 AHWS)	1 written academic assignment or 1 written examination (90 Min.)	5	As a rule in the English language
Geochemical parameters and sampling strategies [Geochemical parameters and sampling strategies] (Ma-NaWi-4c) *Advanced level Natural Sciences (Elective Compulsory Module)*	The seminars and laboratory practice cover: - Chemical, physical and biological soil characteristics - Focus on soil water content, coil contaminants and biogeochemical cycles (role of soil in relation to GHG emissions and storage, particularly carbon and nitrogen cycle) - Climate-appropriate sustainable soil and land use - Scenario-based planning and implementation of sample-taking at a groundwater monitoring well - Sample storage - Development of scenarios and subsequent presentation based of on the results of investigation results of the samples investigated in research carried outside the framework of the module	1 Seminar (0.5 AHWS) *and* 1 Exercise (1.5 AHWS) and 1 Seminar (1 AHWS) *and* 1 Exercise (2 AHWS)	1 Practical Work Performance	5	
Environmental fate and design of chemical	Lecture and practical handle the theory and the practical use of modern analytical tools and	1 Exercise (4 AHWS) *and*	1 Practical Work Performance	5	

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Module	Content	Type of tuition (number, type and AHWS)	Type and number of examinations pursuant to § 8 ER)	CP	Commentary
products [Environmental fate and design of chemical products] (Ma-NaWi-4d) *Advanced level* *Natural Sciences* *(Elective Compulsory Module)*	analysis techniques of earth sciences, environmental chemistry and sustainable chemistry.	1 Lecture (2 AHWS)			
Theories and Perspectives of Sustainability Communication [Theories and Perspectives of Sustainability Communication] (Ma-NaWi-5a) *Advanced level* *Humanities* *(Elective Compulsory Module)*	Current state of research on theories and conditions for success of participation, cooperation and communication in the context of governance for sustainable development, also with regard to global socio-ecological systems; reflection of empirical research results based on current international publications. Academic Research Project	1 Seminar (4 AHWS)	1 Combined academic assignment	5	As a rule in the English language

Modules of the 2nd Semester in Major Sustainability Science, continued

Module	Content	Type of tuition (number, type and AHWS)	Type and number of examinations pursuant to § 8 ER)	CP	Commentary
Sustainability Performance Measurement, Management and Communication [Sustainability Performance Measurement, Management and Communication] (Ma-NaWi-5b) *Advanced level* *Humanities* *(Elective Compulsory Module)*	This module deals with measurement methods of sustainability performance, sustainability accounting and controlling and the management of sustainability information, reporting and communication.	1 Lecture (2 AHWS) *and* 1 Exercise (2 AHWS)	1 Combined academic assignment or 1 written examination (90 Min.)	5	As a rule in the English language
Sustainability Economics Sustainability economics (Ma-NaWi-5c) *Advanced level* *Humanities (compulsory elective module)*	In this module, students learn advanced theories and methods of economics sustainability research (sustainable economy). They also learn to apply them independently and research-oriented to the analysis of current economic sustainability issues.	1 Lecture (2 AHWS) *and* 1 Exercise (2 AHWS)	1 written examination (90 Min.) or 1 written academic assignment	5	As a rule in the English language
Sustainability, Digital Media and Information Society [Sustainability, Digital Media and Information Society]	Interactions between computing systems and society, as well as their implications for sustainable development from different perspectives: 1. Information Systems in Organizations 2. Personalized or Individualized Computer Systems; 3. Digital Media; 4. Ambient	1 Lecture (2 AHWS) *and* 1 Seminar (2 AHWS)	1 Combined academic assignment	5	

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Module	Content	Type of tuition (number, type and AHWS)	Type and number of examinations pursuant to § 8 ER)	CP	Commentary
(Ma-NaWi-5d) *Advanced level Humanities (compulsory elective module*)	Computing; Methods of Computing Systems Development				
Sustainability, Governance and Law [Sustainability, Governance and Law] (Ma-NaWi-5e) *Advanced level Humanities (compulsory elective module*)	Reflection on the political and legal prerequisites, conditions and formulation approaches of a sustainable society: Theoretical and Empirical perspectives of environmental law and environmental and sustainability policy - especially at international level; latest developments in sustainability-oriented research in law, social studies and politics	1 Seminar (2 AHWS) *and* 1 Seminar (2 AHWS)	1 Combined academic assignment	5	As a rule in the English language
Trans-disciplinary Research Project 1 [Transdisciplinary Research Project 1] (Ma-NaWi-6) *Integration (compulsory module)*	Students elaborate sustainable development strategies on the basis of a socially relevant challenge in cooperation with practitioner players. On the basis of the theoretical and methodological principles of transdisciplinary research, as well as the thematic priority, they define the research issue and elaborate a research plan.	1 Project (4 AHWS) or 1 Lecture (1 AHWS) *and* 1 Project (3 AHWS)	1 written academic assignment or 1 Combined academic assignment	10	As a rule rule 1 Project in the English language
Research Methods in Sustainability Sciences [Research Methods in Sustainability Sciences] (Ma-NaWi-7) *Master's* Forum/ *Research Perspectives (compulsory module)*	Modelling and simulation methods in the sciences of sustainability as applied to nature as well as humanities, the focus being on formal specifications and calculation methods (solvers for linear and non-linear algebraic equations systems, continuous simulation as approach on dealing with systems of ordinary differential equations)	1 Seminar (2 AHWS)	1 Combined academic assignment	5	As a rule in the English language

Modules of the 3rd Semesters in Major Sustainability Science

Module	Content	Type of tuition (number, type and AHWS)	Type and number of examinations pursuant to § 8 ER)	CP	Commentary
Advanced Sustainable and Environmental Chemistry [Advanced Sustainable and Environmental Chemistry] (Ma-NaWi-8a) *Advanced level Natural Sciences (Elective Compulsory Module)*	In-depth investigation of current issues in the fields of environmental chemistry and sustainable chemistry.	1 Lecture (4 AHWS)	1 Combined academic assignment or 1 written academic assignment	5	As a rule in the English language
Sustainable Energies [Sustainable Energy] (Ma-NaWi-8b) *Advanced level Natural Sciences (Elective Compulsory Module)*	The lecture focuses on the presentation of renewable energy and the consequences of their use in existing systems. The seminar reviews renewable energy in terms of sustainability factors, applying current examples of research and development and carries out a check of the applicability of these systems.	1 Lecture (2 AHWS) *and* 1 Seminar (2 AHWS)	1 written academic assignment	5	
Macroecology and Global Change Biology	This Module deals with the analysis of world-wide biodiversity patterns. Further subjects are climate	1 Lecture (1 AHWS) *and*	1 written academic assignment	5	As a rule in the English language

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Module	Content	Type of tuition (number, type and AHWS)	Type and number of examinations pursuant to § 8 ER)	CP	Commentary
[Macroecology and Global Change Biology] (Ma-NaWi-8c) *Advanced level* *Natural Sciences* *(Elective Compulsory Module)*	modelling and prognosis of future distribution ranges of species, communities and ecosystems (including Maxent).	1 Exercise (3 AHWS)	or 1 Combined academic assignment		
Models in Global Change Research Models in Global Change Research (Ma-NaWi-8d) *Advanced level* *Natural Sciences* *(Elective Compulsory Module)*	Fundamental notions and use of models in global change research: 1. Models for various climate subsystems and their integration with earth system models (global and regional climate models and diagnostic models for impact studies); 2. Parametric and Interactive Models; 3. Statistical models in climate impact research; 4. Practical application of simplified training models (Daisyworld model, full educational NASA climate model); 5. Handling large model data bases; 6. Studies on the spread of species under the pressure of climate change with the aid of niche models	1 Lecture (2 AHWS) *and* 1 Exercise (2 AHWS)	1 written academic assignment	5	As a rule in the English language
Social Ecology – Conceptual and Methodological Principles, Social-Ecological Space Research [Social Ecology – Conceptual and Methodological Principles, Social-Ecological Space Research] (Ma-NaWi-9a) *Advanced level* *Humanities (compulsory elective module)*	Selected Concepts and Methods of socio-ecologic research are elaborated as part of a detailed literature study; the contribution of social ecology as research type for sustainability research - especially on issues pertaining to sustainable spatial development - is discussed on the basis of selected projects.	1 Seminar (2 AHWS) *and* 1 Seminar (2 AHWS)	1 Combined academic assignment	5	
Sustainability, Culture and Education [Sustainability, Culture and Education] (Ma-NaWi-9b) *Advanced level* *Humanities (compulsory elective module)*	The module's contents will provide an interaction with theoretical approaches to education for Sustainable Development and closely related concepts (for example, global learning, intercultural education, education for all). Discourses from the field of Educational Science (for example, competence orientation, education indicators, quality measurement) and practical implementation provide the focus of this seminar.	1 Seminar (4 AHWS)	1 written academic assignment or 1 Combined academic assignment	5	As a rule in the English language

Modules of the 3rd Semester in Major Sustainability Science, continued

Module	Content	Type of tuition (number, type and AHWS)	Type and number of examinations pursuant to § 8 ER	CP	Commentary
Sustainability and Social Developments [Sustainability and Social Developments] (Ma-NaWi-9c)	Sustainability in the context of social developments: demographic change, socio-technological developments and recent human-machine relationship, elaboration of social models and metaphors, interactions between physically tangible and symbolic socio-cultural nature	1 Seminar (2 AHWS)	1 Combined academic assignment	5	

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Module	Content	Type of tuition (number, type and AHWS)	Type and number of examinations pursuant to § 8 ER	CP	Commentary
Advanced level Humanities (compulsory elective module)	conditions, changes in societal relationships with nature.				
Transdisciplinary Research Project 2 [Transdisciplinary Research Project 2] (Ma-NaWi-10) *Integration (compulsory module)*	Students elaborate sustainable development strategies on the basis of a socially relevant challenge in cooperation with practitioner players. They independently apply methods of inter- and transdisciplinary research and process research findings in an academic and science-oriented manner.	1 Project (4 AHWS) or 1 Lecture (1 AHWS) *and* 1 Project (3 AHWS)	1 written academic assignment or 1 Combined academic assignment	10	As a rule 1 Project in the English language
Organisation of Research projects [Organisation of Research projects] (Ma-NaWi-11a) *Master*'s Forum/ *Research perspectives (compulsory elective module)*	Basic notions of project management, documentation, planning, tools and methods, procedure models, and agile approaches. Tools, network planning, but also applying for, and reporting, scientific research projects. Project life-cycle from the idea and finding funding to the exploitation of research results.	1 Seminar (2 AHWS)	1 Combined academic assignment	5	
Communication of Scientific Results [Communication of Scientific Results] (Ma-NaWi-11b) *Master*'s Forum/ *Research perspectives (compulsive elective module)*	The Module's object is the communication of scientific results, theses and research findings. Contextual approaches and strategies for processing and publication aimed at scientific and non-scientific audiences of inter- and transdisciplinary communication, as well as their possibilities and limitations, provide its focus.	1 Seminar (2 AHWS) or 1 Lecture (2 AHWS)	1 Combined academic assignment or 1 written academic assignment	5	As a rule in the English language

Modules of the 4th Semesters in Major Sustainability Science

Module	Content	Type of tuition (number, type and AHWS)	Type and number of examinations pursuant to § 8 ER)	CP	Commentary

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Master's Forum Sustainability Sciences [Masters Forum Sustainability Sciences] (Ma-NaWi-12) *Master's* Forum/ *Research Perspectives (Elective Module)*	Technical supervision and support of the design, organization and realization of individual Master's Theses; Development, presentation, discussion and re-flexion of issues, concepts and synopsis for Master's Thesis	1 Colloquium (2 AHWS)	1 Combined academic assignment	5	
Master Thesis [MA-Thesis] (Ma-NaWi-13) *Master's Forum/ Research Perspectives (compulsory module)*	Preparation of the Master's Thesis	none	1 Master's Thesis	25	

With regard § 8 of Examination Regulations
The Master's thesis shall be completed within five months. The extend of the Master's Thesis shall be determined by the Examiners. A *viva voce* examination, held in Lüneburg (§ 7 ER), during which the Examinee presents the results of the Master's thesis and answers questions by the Examiner, is integral part of the Master's thesis. The grade of the *viva voce* examination is assessed as an examination performance. The grade is included at the rate of one fifth of the total grade for the Master's thesis.

Entry into Force
This amended Subject-specific Schedule shall enter into force following approval by the Governing Body of Leuphana University of Lüneburg, following its publication in the Official Gazette of Leuphana University of Lüneburg for Winter Semester 2015/16. The Subject-specific Schedule 5.1 of October 29, 2008 (Leuphana Gazette No. 02/09 of February 9, 2009), last amended by resolution of May 08, 2013 (Leuphana Gazette No. 21/13 of July 22, 2013) is hereby repealed.

AHWS = Academic Hour per Week per Semester

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Translation of Leuphana GAZETTE 29/15 // 9. Juli 2015
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Subject-Specific Schedule 5.5 Global Sustainability Science (Double Degree in conjunction with Arizona State University) for the Master's Program in Arts and Sciences on the Examination Regulations (ER) Master's Programs at the Graduate School of Leuphana University of Lüneburg

Pursuant to Section 44(1), sentence 2 of Lower Saxony Higher Education Act (NHG), the Council of the Faculty of Sustainability at Leuphana University of Lüneburg has, on 13.05.2015, adopted the Subject-specific Schedule Global Sustainability Science (Double Degree with Arizona State University) No. 5.5 for the Master's Program in Arts & Sciences for the Examination Regulations dated September 17th, 2008 (Leuphana Gazette No. 15/08 of October 06th, 2008) of the Master's Programs at this University's Graduate School, last amended on May 21st, 2014 (Leuphana Gazette No. 13/14 of June 27th, 2014).
The Governing Board approved the Examination Regulations pursuant to Section 37(1) sentence 3 No. 5 b) of Lower Saxony Higher Education Act (NHG) on 03.06.2015.

The Examination Regulations for the Master's Programs of the Graduate School of Leuphana University of Lüneburg are amended as follows:

With regard §1 of ER, Scope of application, Definitions

Any component of the course, which must be completed at Leuphana University of Lüneburg, shall be governed by the Graduate School's Examination Regulations for the Master's Programs, as well as by the attached Subject-specific Schedule. The components of the course, which must be completed at Arizona State University in the 3rd semester, are governed by the examination regulations of that University. The regulations will be released in good time via the University's internet system.

With regard §3 of ER, Standard duration of Study, structure and Content
The standard duration of Study is two years. The 1st and 2nd semesters will be completed at Leuphana University of Lüneburg and the 3rd semester at Arizona State University. The Master Thesis (4th Semester) can be composed either at Leuphana University of Lüneburg or at Arizona State University.
The Master Studies are successfully completed when a total of 120 Credit Points (CP) pursuant to the Subject-specific Schedule have been attained at Leuphana University of Lüneburg and Arizona State University. The modules intended for study in Lüneburg must be completed at Leuphana University of Lüneburg and those intended for Arizona State University must be completed at Arizona State University. Should the required number of CPs in Arizona State University not be achieved, or the Master of Science (M. Sc.) of Arizona State University not be awarded, then the Master Studies at Leuphana University of Lüneburg shall be considered not completed.

With regard §5 ER, Academic Degrees, Double Degree
Master of Science (M. Sc.); Award of two Degrees, each a Master of Science (M. Sc.) in Global Sustainability Science by Leuphana University of Lüneburg, as well as a Master of Science (M. Sc.) by Arizona State University.

With regard §6 (3) ER
The language of instruction and examination is exclusively English.

Overview of Modules Global Sustainability Science

<table>
<tr><td rowspan="2">2nd Academic Year</td><td>4. Sem. LUL</td><td colspan="2">Masterforum Sustainability Sciences
5 CP</td><td colspan="4">Master's Thesis
25 CP</td></tr>
<tr><td>3. Sem. ASU</td><td colspan="2">Elective Courses (methods)
3 US-CP = 9 ECTS-CP</td><td colspan="2">Elective Courses (general)
3 US-CP = 9 ECTS-CP</td><td>Research Project V = Proposal Writing SOS 579
3 US-CP = 9 ECTS-CP</td><td>Research Project VI = SOS 592** (research)
1 US-CP = 3 ECTS-CP</td></tr>
<tr><td rowspan="2">1st Academic Year</td><td>2. Sem. LUL</td><td>Research Methods in Sustainability Sciences
5 CP</td><td>Sustainability, Governance and Law
5 CP</td><td>Elective Courses**
5 CP</td><td>Elective Courses**
5 CP</td><td colspan="2">Trans-disciplinary Research Project 1
10 CP</td></tr>
<tr><td>1. Sem. LUL</td><td>Sustainability Science
5 CP</td><td>Research Methods in Sustainability Science (introduction)
5 CP</td><td>Advanced Fundamentals* (natural sciences)
5 CP</td><td>Advanced Fundamentals* (social sciences)
5 CP</td><td>Research Project 1 5 CP</td><td>Research Project 2* 5 CP</td></tr>
</table>

*: Selection of 1 out of 3 modules
**: Selection of 2 out of 8 modules

	Advanced-level of Perspectives of Natural Sciences / Humanities
	Integration: Transdisciplinary Research Projects
	Advanced - Compulsory Courses
	Master's Forum / Research Perspectives, Master's Thesis

The Dual Master's Degree in Global Sustainability Science (Double Degree) is offered at Leuphana University of Lüneburg in the Master's Program Arts & Sciences of the Graduate School and comprises a total of 120 CP including a study period to be completed at the Arizona State University. The curriculum comprises compulsory and elective modules and is set out as described below.

In the **first semester** (30 CPs), modules of the natural sciences and humanities, as well as introductory modules, will be completed in sustainability research, each worth 5 CPs and studied at an advanced level.

In the **second semester** (30 CPs), the two modules building on the first-semester modules in Natural Sciences and Humanities, and Research Methods of Sustainability Science, and Sustainability, Policy and Law, must be completed (each earning 5 CPs), and the Transdisciplinary Research Project 1 must be completed (worth10 CPs).

In the **third semester** all students must acquire (10 US CP / 30 ECTS) at Arizona State University for Research Proposal modules, an elective module in Sustainability Research and its Methods and General Sustainability Sciences, each worth 3 US-CP, as well as Research Project VI (Research), worth 1 US-CP.

With regard § 21 ER, Type and Extent of Examinations

Modules in the first year of study *Global Sustainability Science* in Lüneburg – 1. Semester

Module	Content	Type of tuition (number, type and AHWS)	Type and number of examinations pursuant to § 8 ER	CP	Commentary
Sustainability Science (Ma-NaWi-3) *Master's* Forum/ *Research perspectives* *(compulsory module)*	This seminar provides an overview of the most varied aspects of "Sustainability Science". Subjects treated include The Great Acceleration, System and Resilience Thought and Socio-ecologic Systems. Theoretical principles are developed and investigated through practical examples.	1 Seminar (2 AHWS)	1 written academic assignment	5	As a rule in the English language
Research Methods in Sustainability Science (introduction) [Research Methods in Sustainability Science (introduction)] (Ma-GSS-1) *Research project and methods* *(compulsory module)*	This seminar will impart fundamental methodological concepts and approaches of transformative sustainability research, exemplary methods within the framework of these approaches, as well as bases of inter- and transdisciplinarity.	1 Seminar (2 AHWS)	1 Combined academic assignment	5	As a rule in the English language
Research Project 1 [Research Project 1] (Ma-GSS-2) *Research project and methods* *(compulsory module)*	Introduction to Inter- and Transdisciplinary Research Projects and Cross-cultural Team Work	1 Seminar (2 AHWS)	1 Combined academic assignment	5	As a rule in the English language
Research Project 2 [Forschungsprojekt 2] (Ma-GSS-3) *Research project and methods* *(compulsory module)*	Begin of joint research projects - Elaboration of research projects	1 Seminar (2 AHWS)	1 Combined academic assignment	5	As a rule in the English language
Ecosystem Responses to Chemical Pollution [Ecosystem Responses to Chemical Pollution] (Ma-NaWi-1a) *Advanced-level of Perspectives of Natural Sciences* *(Elective Compulsory Module)*	Biogeochemical principles and definition of anthropogenic chemical contaminants; classes, emission sources, distribution, process cycle and breakdown, effects of legislation and control of pollutants; fate in ecosystems; substances with increasing significance; impact on the nutrient cycle and the species composition	1 Lecture (2 AHWS) and 1 Seminar (2 AHWS)	1 written academic assignment or 1 written examination (90 Min.)	5	As a rule in the English language
Earth Systems and Climate change [Earth Systems and Climate change] (Ma-NaWi-1b) *Advanced-level of Perspectives of Natural Sciences* *(Elective Compulsory Module)*	Climate systems components; greenhouse effect and radiative forces; changes in climatic parameters; water cycle; natural variability and anthropogenic signal; historical perspective, scenario-based projections; regional climate change impact on communities, populations; Functions and Services of Ecosystems;	1 Lecture (2 AHWS) and 1 Seminar (2 AHWS)	1 written academic assignment or 1 written examination (90 Min.)	5	As a rule in the English language
Geochemical Aspects of Compounds in the Environment and Sustainable Chemistry [Geochemical Aspects of Com-	This seminar treats, next to thermodynamic aspects, kinetic aspects and their significance for geochemical and ecological systems. In practical lab sessions, experiments are carried out on	1 Seminar (2 AHWS) and 1 Exercise (2 AHWS)	1 Combined academic assignment	5	As a rule in the English language

Module	Content	Type of tuition (number, type and AHWS)	Type and number of examinations pursuant to § 8 ER	CP	Commentary
pounds in the Environment and Sustainable Chemistry] (Ma-NaWi-1c) *Advanced-level of Perspectives of Natural Sciences (Elective Compulsory Module)*	the field of distribution and fate of substances in the environment and sustainable chemistry (including use of computer models).				
Sustainability Communication [Sustainability Communication] (Ma-NaWi-2a) Advanced-level of Perspectives of Natural Sciences / Humanities *(Elective Compulsory Module)*	The module focuses on the fundamentals of communication science of sustainability communication. The theoretical aspects are applied to current implementation strategies of sustainability communication. The aim is, furthermore, to merge theory and practice in one independent research task.	1 Seminar (4 AHWS)	1 written academic assignment	5	As a rule in the English language
Market-oriented Sustainability Management [Market-oriented Sustainability Management] (Ma-NaWi-2b) Advanced-level of Perspectives of Natural Sciences / Humanities *(Elective Compulsory Module)*	This module treats advanced theories and methods of market-oriented sustainability management, sustainable marketing, business practices and case studies. The fundamentals are taught by e-learning.	1 Seminar (4 AHWS)	1 Combined academic assignment	5	As a rule in the English language
Sustainability Governance [Sustainability Governance] (Ma-NaWi-2c) Advanced-level of Perspectives of Natural Sciences / Humanities *(Elective Compulsory Module)*	The focus of the module is provided by the sciences of jurisprudence, economics, the science of social policy, as well as the fundamentals of scientific planning in environmental and sustainability governance. Principally, theories, notions, and methods are introduced and parallels drawn with practical examples.	1 Seminar (2 AHWS) and 1 Seminar (2 AHWS)	1 written academic assignment	5	As a rule 2 of 4 seminars in English

Modules in the first year of study Global Sustainability Science in Lüneburg – 2. Semester

Module	Content	Type of tuition (number, type and AHWS)	Type and number of examinations pursuant to § 8 ER	CP	Commentary
Research Methods in Sustainability Sciences [Research Methods in Sustainability Sciences] (Ma-NaWi-7) *Master's* Forum/ *Research perspectives* *(compulsory module)*	Modelling and simulation methods in the sciences of sustainability as applied to nature as well as humanities, the focus being on formal specifications and calculation methods (solvers for linear and non-linear algebraic equations systems, continuous simulation as approach on dealing with systems of ordinary differential equations).	1 Seminar (2 AHWS)	1 Combined academic assignment	5	As a rule in the English language
Sustainability, Governance and Law [Sustainability, Governance and Law] (Ma-NaWi-5e) *Advanced level* *Humanities* *(compulsory module)*	Reflection on the political and legal prerequisites, conditions and formulation approaches of a sustainable society: theoretical and empirical perspectives of environmental law and environmental and sustainability policy - especially at international level; latest developments in sustainability-oriented research in law, social studies and politics	1 Seminar (2 AHWS) and 1 Seminar (2 AHWS)	1 Combined academic assignment	5	As a rule in the English language
Transdisciplinary Research Project 1 [Transdisciplinary Research Project 1] (Ma-NaWi-6) *Integration* *(compulsory module)*	Students elaborate sustainable development strategies on the basis of a socially relevant challenge in cooperation with practitioner players. On the basis of the theoretical and methodological principles of transdisciplinary research, as well as the thematic priority, they define the research issue and elaborate a research plan.	1 Project (4 AHWS) or 1 Lecture (1 AHWS) and 1 Project (3 AHWS)	1 written academic assignment or 1 Combined academic assignment	10	As a rule 1 Project in the English language
Conservation Biology [Conservation Biology] (Ma-NaWi-4a) *Advanced level* *Natural Sciences* *(Elective Compulsory Module)*	Conservation Biology deals with the causes of biodiversity loss, as well as protection measures. This course provides theoretical foundations to various subject areas, such as habitat loss, fragmentation, climate change and invasive species. Relevant theory is taught in combination with practical exercises.	1 Lecture (1 AHWS) and 1 Exercise (3 AHWS)	1 written academic assignment or 1 Combined academic assignment	5	As a rule in the English language
Ecosystem processes: a biogeochemical perspective [Ecosystem processes: a biogeochemical perspective] (Ma-NaWi-4b) *Advanced level* *Natural Sciences* *(Elective Compulsory Module)*	The lecture, the field course or lab sessions will elaborate the following subjects: Definition of ecosystem processes Energy and material flows, biogeochemical and soil ecology processes within ecosystems Nutrient fluxes and equilibria in soil, soil-structure and classification, soil conservation and management Anthoropogenic impacts on biogeochemical cycles	1 Lecture (1 AHWS) and 1 Exercise (3 AHWS)	1 written academic assignment or 1 written examination (90 Min.)	5	As a rule in the English language
Sustainability Performance Measurement, Management and Communication [Messung, Management und Kommunikation von Nachhaltigkeitsleistung] (Ma-NaWi-5b) *Advanced level* *Humanities* *(Elective Compulsory Module)*	This module deals with measurement methods of sustainability performance, sustainability accounting and controlling and the management of sustainability information, reporting and communication.	1 Lecture (2 AHWS) and 1 Exercise (2 AHWS)	1 Combined academic assignment) or 1 written examination (90 Min.)	5	As a rule in the English language
Sustainability Economics [Sustainability Economics] (Ma-NaWi-5c) *Advanced level* *Humanities (Elective compulsory module)*	In this module, students learn advanced theories and methods of economics sustainability research (sustainable economy). They also learn to apply them independently and research-oriented to the analysis of current economic sustainability issues.	1 Lecture (2 AHWS) and 1 Exercise (2 AHWS)	1 written examination (90 Min.) or 1 written academic assignment	5	As a rule in the English language
Environmental fate and design of chemical products [Environmental fate and design of chemical products]	The lecture and practical sessions handle the theory and the practical use of modern analytical tools and analysis techniques of earth sciences, environmental chemistry and sustainable chemistry	1 Exercise (4 AHWS) and 1 Lecture (2 AHWS)	1 Practical Assign-	5	

Module	Content	Type of tuition (number, type and AHWS)	Type and number of examinations pursuant to § 8 ER	CP	Commentary
(Ma-NaWi-4d) *Advanced level* *Natural Sciences* *(Elective Compulsory Module)*			ment		
Theories and Perspectives of Sustainability Communication [Theories and Perspectives of Sustainability Communication] (Ma-NaWi-5a) *Advanced level* *Humanities* *(Elective Compulsory Module)*	Current state of research on theories and conditions for success of participation, cooperation and communication in the context of governance for sustainable development, also with regard to global socio-ecological systems; reflection of empirical research results based on current international publications. Academic Research Project	1 Seminar (4 AHWS)	1 Combined academic assignment	5	As a rule in the English language
Geochemical parameters and sampling strategies [Geochemical parameters and sampling strategies] (Ma-NaWi-4c) *Advanced level* *Natural Sciences* *(Elective Compulsory Module)*	The seminars and laboratory practice cover: - Chemical, physical and biological soil characteristics - Focus on soil water content, coil contaminants and biogeochemical cycles (role of soil in relation to GHG emissions and storage, particularly carbon and nitrogen cycle) - Climate-appropriate sustainable soil and land use. - Scenario-based planning and implementation of sample-taking at a groundwater monitoring well - Sample storage - Development of scenarios and subsequent presentation based of on the results of investigation results of the samples investigated in research carried outside the framework of the module	1 Seminar (0.5 AHWS) and 1 Exercise (1.5 AHWS) and 1 Seminar (1 AHWS) and 1 Exercise (2 AHWS)	1 Practical Assignment	5	
Sustainability, Digital Media and Information Society [Sustainability, Digital Media and Information Society] (Ma-NaWi-5d) *Advanced level* *Humanities* *(Elective Compulsory Module)*	Interactions between computing systems and society, as well as their implications for sustainable development from different perspectives: 1. Information Systems in Organizations 2. 2. Personalized or Individualized Computer Systems; 3. Digital Media; 4. Ambient Computing; Methods of Computing Systems Development	1 Lecture (2 AHWS) and 1 Seminar (2 AHWS)	1 Combined academic assignment	5	

Modules in the second year of study in Global Sustainability Science at Arizona State University – 3rd Semester

The components of the course, which must be completed in the second year at Arizona State University shall be governed by the Examination Regulations of that university. The relevant modalities will be announced in good time via the university internet system.

Modules in the first year of study in Global Sustainability Science in Lüneburg – 4. Semester

Module	Content	Type of tuition (number, type and AHWS)	Type and number of examinations pursuant to § 8 ER)	CP	Commentary
Masterforum Sustainability Sciences [Masters Forum Sustainability Sciences] (Ma-NaWi-12) *Master*'s Forum/ *Research perspectives* *(compulsory module)*	Technical supervision and support of the design, organization and realization of individual Master's Theses; Development, presentation, discussion and re-flexion of issues, concepts and synopsis for the Master's Thesis	1 Colloquium (2 AHWS)	1 Combined academic assignment	5	As a rule in the English language
Master Thesis [MA-Thesis] (Ma-NaWi-13) *Master*'s Forum/ *Research perspectives* *(compulsory module)*	Preparation of the Master's Thesis	none	1 Master Thesis	25	As a rule in the English language

With regard § 8 of Examination Regulation

The Master's thesis shall be completed within five months. The extent of the Master's Thesis shall be determined by the Examiners. A *viva voce* examination held in Lüneburg (§ 7 ER), during which the Examinee presents the results of the Master's thesis and answers questions by the Examiner, is integral part of the Master's thesis. The grade of the *viva voce* examination is assessed as an examination performance. The grade is included at the rate of one fifth of the total grade for the Master's thesis.

Entry into Force

This amended Subject-specific Schedule shall enter into force following approval by the Governing Body of Leuphana University of Lüneburg, following its publication in the Official Gazette of Leuphana University of Lüneburg for Winter Semester 2015/16.

AHWS = Academic Hour per Week per Semester