

UNIVERSITÄT
BAYREUTH

INTERNATIONAL OFFICE

General Overview of English-taught courses at the University of Bayreuth

Available during the Summer Semester 2023

An overview for the winter semester 2023/24 is expected to be available as of 01.10.2023



Biology, Chemistry and Earth Sciences

Number	Course Title	Type	ECTS / Credits	Duration	Module Description
73	Non-coding RNA and Epigenetics	L	9	2	The lecture will cover the following topics: Introduction to eukaryotic transcription and translation, History of the discovery of microRNAs, microRNAs and cancer, piRNAs and transposon silencing, RNAi and heterochromatin in <i>S.pombe</i> , Histones and their modifications, Histone-modifying enzymes and remodelers, Inheritance of epigenetic information, Epigenetics in plants, Epigenetic reprogramming and induced pluripotency, Regulation of eukaryotic transcription, Long non-coding RNAs, therapeutic options using oligonucleotides (PD Dr.Kreutzer, Axolabs GmbH, Kulmbach)
74	Non-coding RNA and Epigenetics (block practical training)	PT	9	5	This two-week block lab introduces students to the foundations of recombinant eukaryotic protein expression, purification, and various techniques of RNA biochemistry. The topic of the lab is the central occurrence of human RNA interference, the cutting of an mRNA molecule by a microRNA bound to Argonaute-2. Students express the human enzyme Argonaute-2 recombinantly in insect cells. Argonaute-2 and a catalytically inactive Argonaute mutant are then purified using modern chromatography techniques on an ÄKTA FPLC system. Purification steps will be documented via SDS-PAGE and Western blot, and RNAs bound to Argonaute-2 will be extracted and visualized. RNAs are prepared using plasmid and PCR-based in vitro transcription and purified via urea gels. The activity of human Argonaute-2 towards mRNA molecules will be measured in a slicer assay.
75	Non-coding RNA and Epigenetics (seminar on practical training and lecture)	S	9	2	
578	Basics of inorganic chemistry for electrochemical energy storage systems	L	5	2	
749	Battery Materials I	L	5	2	
751	Battery Materials I	E	5	2	
763	Methods in Dynamic Vegetation Ecology, Module Dynamic Vegetation Ecology	E	5-9	5	This lecture introduces the ecological processes most important to Earth's vegetation. The lecture conveys that both biophysical laws and the evolutionary history of individual sites are necessary to understand vegetation patterns. Topics include leaf carbon budgets, plant canopies and vegetation stands, carbon allocation, birth and mortality, and plant community and ecosystem structure. The seminar examines case studies from the application of dynamic global vegetation models (DGVMs) using original papers. The exercise teaches how to use non-destructive methods to estimate net primary production (NPP). Field exercises measure photosynthesis, transpiration, respiration, and leaf area and use the programming language R to estimate NPP. Additional computer-based lessons teach how to retrieve and use public Earth Observation data useful for vegetation ecology to analyse NPP trends. Exercises will use the Geographic Information System functionality of the R computer language. Findings will be summarised in a project report in the style of a scientific publication.
764	Dynamic Vegetation Ecology, Module Dynamic Vegetation Ecology	L	3-9	2	This lecture introduces the ecological processes most important to Earth's vegetation. The lecture conveys that both biophysical laws and the evolutionary history of individual sites are necessary to understand vegetation patterns. Topics include, for example, leaf carbon budgets, plant canopies and vegetation stands, carbon allocation, birth and mortality, and plant community and ecosystem structure. The seminar examines case studies from the application of dynamic global vegetation models (DGVMs) using original papers. The exercise teaches how to use non-destructive methods to estimate net primary production (NPP). Field exercises measure photosynthesis, transpiration, respiration, and leaf area and use the programming language R to estimate NPP. Additional computer-based lessons teach how to retrieve and use public Earth Observation data useful for vegetation ecology to analyse NPP trends. Exercises will use the Geographic Information System functionality of the R computer language. Findings will be summarised in a project report in the style of a scientific publication.
765	Foundations of Dynamic Vegetation Ecology, Module Dynamic Vegetation Ecology	S	5-9	2	This lecture introduces the ecological processes most important to Earth's vegetation. The lecture conveys that both biophysical laws and the evolutionary history of individual sites are necessary to understand vegetation patterns. Topics include, for example, leaf carbon budgets, plant canopies and vegetation stands, carbon allocation, birth and mortality, and plant community and ecosystem structure. The seminar examines case studies from the application of dynamic global vegetation models (DGVMs) using original papers. The exercise teaches how to use non-destructive methods to estimate net primary production (NPP). Field exercises measure photosynthesis, transpiration, respiration, and leaf area and use the programming language R to estimate NPP. Additional computer-based lessons teach how to retrieve and use public Earth Observation data useful for vegetation ecology to analyse NPP trends. Exercises will use the Geographic Information System functionality of the R computer language. Findings will be summarised in a project report in the style of a scientific publication.
1005	Research Frontiers in Disturbance Ecology	L & E	5-12	2	

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Number	Course Title	Type	ECTS / Credits	Duration	Module Description
20080	Geo-Informationssysteme II (Introduction to statistical methods for spatial data analysis)	L & E	6	4	After an introduction to the spatiotemporal data analysis, we will focus on several fundamental statistics and machine learning concepts in regression and classification problems. The course concludes with an overview of the frontiers in spatial analysis and we will see that a large portion of state-of-the-art Geoscientific data science methods are rooted in the methods introduced in this course. The programming language Python will be introduced and exercises will be given. With the exercises, the students will learn Python programming and how to use it for spatial data exploration and analysis in both simulated and real-life applications.
20207	Introduction to reactive transport	L & E	5-10	2	The fate of contaminants in aquatic systems is closely linked with the transport of water. The goal of this module therefore is to introduce the principles of reactive transport with a special emphasis on groundwater, to consider the physical-chemical properties of the substances, and to discuss this with case studies. The lecture Introduction to reactive transport; (2 WHS) teaches the theoretical foundations of reactive transport (Advection-dispersions-equation, diffusion, reaction kinetics, Monod kinetics, Peclet- and Damköhler numbers). In the tutorial: Problems in reactive transport (2 WHS) the students will work on tasks covering the material of the lecture and learn how to use the computer code PhreeqC to quantitatively solve transport problems in combination with retention of chemical substances (e. g. application of filterbeds to remove contaminants)
20527	Research Module	P	3 / 5 ECTS	8	The students acquire detailed and differentiated knowledge about the research process in the social sciences with a specific focus on qualitative research methods. Based on this knowledge, they are able to choose the appropriate method of data collection for a range of research questions. Furthermore, they are able to develop designs for qualitative studies on nutrition by defining the appropriate approaches for data collection and conducting their own research. Finally, students acquire a basic understanding of qualitative data analysis. Based on this knowledge, they are able to perform basic data analysis tasks.
20553	Dynamic ecosystem modeling	L & E	5	4	Complex dynamic ecosystem models are crucial to understand the mechanisms that shape ecosystems, project their fate under different scenarios and communicate ecosystem functioning and the consequences of human-ecosystem interactions. This course covers the basic tools that are necessary to apply such models, e.g., chose the right model structure and complexity, run sensitivity analyses, calibrate the parameters, and quantify model uncertainty and performance. In addition to the theoretical instruction, all methods are applied in hands-on examples and further developed by the participants within the framework of a final project.
20556	Atmospheric Chemistry II	S	3-10	2	
20564	Problems in reactive transport	E	5-10	2	The fate of contaminants in aquatic systems is closely linked with the transport of water. The goal of this module therefore is to introduce the principles of reactive transport with a special emphasis on groundwater, to consider the physical-chemical properties of the substances, and to discuss this with case studies. The lecture Introduction to reactive transport; (2 WHS) teaches the theoretical foundations of reactive transport (Advection-dispersions-equation, diffusion, reaction kinetics, Monod kinetics, Peclet- and Damköhler numbers). In the tutorial: Problems in reactive transport (2 WHS) the students will work on tasks covering the material of the lecture and learn how to use the computer code PhreeqC to quantitatively solve transport problems in combination with retention of chemical substances (e. g. application of filterbeds to remove contaminants)
20574	Atmospheric Chemistry II	Cs	5-6	2	
20576	Introduction to Environmental Analytical Chemistry	L & E	5-10	2	The lecture Introduction to Environmental Analytical Chemistry provides basic knowledge for water, gas, soil sampling and stabilisation, for determination and critical evaluation of simple chemical parameters by means of electrochemistry, photometry and titrimetry. All these methods will be applied in practice on topics already known from Module C1 (e.g. calcite-carbonic acid equilibrium or Fe-Sulfide redox reactions). Planning, preparing, and conducting a field sampling trip and practicing laboratory routines such as preparing standards from salts or concentrated solutions, doing calibrations, standard additions and other quality control are part of the course. Basic information on determination of major and trace elements with chromatography and spectrometry will be given in the lecture.
20621	Principles of Remote Sensing	Cs	5-10	2	In this course, students will learn about the principles and applications of remote sensing. First, they will learn the basic concepts within lectures, and then they will learn how to process satellite images and generate maps in a practical way. They will be provided with various exercises with clear user-guides and manuals for practical sessions and will do some assignments for the final evaluation.
20659	Modelling Soil-Plant-Atmosphere Systems	L & E	5-10	2	The course is aimed at master's students who want to specialize in the modeling of agro-hydrological systems and quantitative agro-ecological systems analysis. Systems and quantitative agro-ecological systems analysis. A mechanistic understanding of the various physical, chemical, and biological processes in the soil-plant-atmosphere system along with their interactions, is provided. The topics that will also be covered are: the flow of water in the soil; solute transport (with focus on nitrates and pesticides); heat transport soil organic matter turnover; soil vegetation atmosphere transfer of water and energy; increase of crop yield/ production; management practices; During the course, the Daisy model is the main modeling tool used. However, other modeling options will also be presented. The event will include a series of short theoretical presentations, followed by group exercises during which students learn how to use Daisy and how to analyze a predefined, simple system. In particular, students will learn how to convert measured data into files, how Daisy data into files, how to keep Daisy running, and how to extract, analyze, and evaluate the data output. In the second part of the course, the acquired knowledge is implemented in the analysis of more realistic agro-ecological analyses. The students have the opportunity to select a case study from given studies based on Current problems in research. Students will work in groups and hypothesize based on the selected case study. Daisy will be used to test the hypotheses. test the hypotheses. During this phase there will be no lecture, only consultations with the the lecturers. The students' work will be documented in the form of an individual report.

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Number	Course Title	Type	ECTS / Credits	Duration	Module Description
20658	Statistical data analysis with R	L & E	3	2	Topics covered in the course include: using R and RStudio, descriptive statistics and visualization, hypothesis testing, linear models, generalized linear Models, mixed models, confounders, causality and Directed Acyclic Graphs (DAGs), data management and experimental design.
20788	M3 Research Plan – Designing and Presenting a Research Plan	S	5	2	For the paper seminar, the student attends the group seminar of the group they do their thesis with, presents the scientific content of a current research paper, and evaluates critically the quality of research and presentation. Feedback will be given from other members of the group seminar. In the seminar „research plan“ the students learn in the respective work groups based on literature research how to define and limit their upcoming M.Sc. thesis, how to draft precise work hypotheses that can be verified/falsified, how to identify required instrumentation and how to establish a realistic schedule for the project that can be controlled via well-defined milestones.
20817	Trends in quantitative ecosystem research	S	2	2	Ecological publications with a focus on methodological advancements.
20853	Lecture Integrative biomolecular structure modelling	L	9	2	During the beginning of this lecture series, we will discuss structural biology in general followed by lectures about contributing methods (structure predictions, NMR spectroscopy, X-ray crystallography, cryo-EM, small-angle scattering, EPR, FRET, cross-linking mass spectrometry). To avoid redundancy we will focus on which restraints are useful for integrative approaches. This will be followed by explanations about how to combine restraints from these methods in an efficient way, depending on what complexes are investigated (protein-protein, protein-nucleic acids). Later, computational tools and platforms will be introduced and how to best apply them for certain complexes. Lastly, we will discuss the problem of how to handle dynamic molecules, like intrinsically disordered proteins and RNA. Obtaining models of these kind of complexes are challenging and ensemble modelling is therefore a major focus. The lecture, seminar and practical will be generally in English. In the seminar, we will discuss new and relevant literature, which is in relation to the lecture and practical, which helps to deepen the students' understanding of the topic and it will be discussed in the group. Here, we will also focus on assessing the articles critically. In the practical, we will try to provide insights into the difficulties of integrative modelling and how to find solutions. Hands-on experience on computational tools with existing data will be taught.
20921	M2 Research Module	P	5	8	Content depend on current research projects of the selected research group. M2 is usually performed on a research group of one of the lecturers of the study programme Environmental Chemistry. Other research modules inside or outside the University of Bayreuth can only be taken after prior approval by the board of examiners. In agreement with the respective supervisor, the M2 module may include experimental work in the field or laboratory, a literature review, attending seminars of the research group, workshops or conferences with an own presentation and/or the compilation of a research report.
20976	Current topics in microbiology	S		3	
20977	Ecological microbiology: literature seminar	S	5	2	
21008	Population ecology advanced seminar for B.Sc. and M.Sc. students, state examination candidates and doctoral students	S		2	
21207	M3 Paper Seminar	Cs	5	2	For the paper seminar, the student attends the group seminar of the group they do their thesis with, presents the scientific content of a current research paper, and evaluates critically the quality of research and presentation. Feedback will be given from other members of the group seminar. In the seminar „research plan“ the students learn in the respective work groups based on literature research how to define and limit their upcoming M.Sc. thesis, how to draft precise work hypotheses that can be verified/falsified, how to identify required instrumentation and how to establish a realistic schedule for the project that can be controlled via well-defined milestones.
21525	Environmental Microbiology Project	E	5-10	2	
21658	Seminar on Human Geography (Geographies of Global Capitalism)	S	5-7	2	
22524	Introduction to Environmental Microbiology	L	2-10	2	
24008	Ecological Climatology	S	5-10	2	Climate is a major determinant of the distribution of global terrestrial ecosystems. Simultaneously, these ecosystems are agents of the climate system as they cycle energy, water, nutrients and trace gases. Ecological Climatology is hence a framework to address the coupling of climate and ecosystems and understand their dynamics in space and time.
24009	Ecological Climatology	E	5-12	2	In addition to the seminar, this course covers practical contents of the Ecological Climatology module.

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Number	Course Title	Type	ECTS / Credits	Duration	Module Description
24022	Experimental Ecology	E	5	2	General concepts of experimental ecology will be introduced initially using ongoing field experiments as model ecosystems. Here, the focus of interest are effects of global change drivers on biodiversity and ecosystem functions. Guided by instructors, students will develop their own hypothesis within an ongoing research activity, collect and evaluate their own data. In doing so, students will learn about the potential and limitation of experimental approaches. Thus, students will become familiar with different methods of collecting and evaluating data in experimental ecology.
24050	Vegetation Science	L	2-12	2	Contents of the module are current approaches in vegetation science, in vegetation mapping and in monitoring changes in vegetation pattern and dynamics. Student will develop an understanding of the functional characterization of habitats and of scale dependence in vegetation ecology. They will develop the ability to recognize the role of disturbance regimes for vegetation dynamics and develop an understanding of data processing requirements for linking vegetation ground data with remote sensing derived information. Overall, students will thus, students will become familiar with different theories and methods of collecting and evaluating data in plant ecology.
24059	Scientific writing in biogeography and disturbance ecology	S	5	2	Different trans-disciplinary manuscripts, both in content and methods, are offered, reviewed and discussed in small groups.
24075	Field course Vegetation Science	PT	2-10	2	Based on theoretical knowledge about different approaches in vegetation science, various methods of data recording are applied to in the complex terrain of the European Alps that offers a large diversity of habitats and vegetation structures. Site conditions and ecosystem processes are related to key plant functional traits and vegetation pattern. Methods including floristic relevés, vegetation transects, systematic trait data recording, biometry, biomass harvests, and spatial assessments (mapping, remote sensing).
25180	Trends in Biogeography	S	1-5	1	Different trans-disciplinary publications, both in content and methods, are offered and discussed in small groups.
26352	Lecture Experimental Plant Ecology	L	5	2	Lectures cover the fundamentals of scientific research methodology, principles of experimental designs, different types of experimental designs in ecology, commonly used statistical approaches in experiments, plant functional traits and measurement tools used in experiments, and the structure of scientific publications to disseminate empirical findings. Labs offer scientific experience for students in designing and performing an experiment to test a research question or hypothesis under the lecturer's supervision. In the practicums, students introduce their research idea and experimental design, measure plant traits, harvest plants, collect and analyze data, and present their findings through a presentation and a written report.
26353	Practical course Experimental Plant Ecology	PT	5	2	
28004	Micrometeorological and Atmospheric Chemistry Seminar (Geoecology T1 / M2 for Theses in Micrometeorology)	S	5	2	
28041	Basic Laboratory and Field Method Training (C2)	E	5	2	
28051	Inorganic Pollutants and Nutrients (C3)	L	5	2	The lecture on inorganic pollutants focuses on geochemical and biological influences on biogeochemical cycles of selected metal(oid)'s, rare earth elements, and radionuclides. In addition to classical pollutants (As, Sr, Cs, Cd, U) elements are considered, which also serve as nutrients (Mn, Fe, Co, Cu, Zn). The influence of the availability of certain elements on important ecosystem functions, such as biomass production, will be presented. In the seminar environmental forensics a historical or current case of contamination will be discussed. Students will form teams that represent contrasting and potentially conflicting interests. They will gather scientific expertise to create a causal chain from contamination event to its cause and will present and defend their findings e.g. in the form of a court hearing.
28061	Environmental Forensics (C3)	S	5	2	The lecture on inorganic pollutants focuses on geochemical and biological influences on biogeochemical cycles of selected metal(oid)'s, rare earth elements, and radionuclides. In addition to classical pollutants (As, Sr, Cs, Cd, U) elements are considered, which also serve as nutrients (Mn, Fe, Co, Cu, Zn). The influence of the availability of certain elements on important ecosystem functions, such as biomass production, will be presented. In the seminar environmental forensics a historical or current case of contamination will be discussed. Students will form teams that represent contrasting and potentially conflicting interests. They will gather scientific expertise to create a causal chain from contamination event to its cause and will present and defend their findings e.g. in the form of a court hearing.
28123	Spatial Statistics and Visualization with R	E	3-10	2	Spatial data require specific methods of analysis. Different methodological approaches will be presented and practically implemented with the statistical software R. An exemplary selection of covered topics are: Visualization of spatial data, spatial point pattern analysis, variograms, and the modeling of areal data.
28368	Modeling Ecosystem Functions with the Soil and Water Assessment Tool	L & E	5-9	2	The Soil and Water Assessment Tool (SWAT) is a widely used simulation model to predict the impacts of land use and climate change on ecosystem functions of small watersheds and large river basins. This course will introduce the major principles of the SWAT model and its subroutines from climate and hydrology to nutrient cycles and plant growth. We will explore how to set up the model for a watershed, learn about model calibration with observation data, and we will evaluate potential environmental impacts of land use or climate change with respect to ecosystem services.

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Number	Course Title	Type	ECTS / Credits	Duration	Module Description
28530	Geographies of Environment and Development	S	5	2	The concept Development or Under-development has been considered 'perspectived' after dependency theories and alternative approaches failed to offer 'one-cap-fits all' explanation for the trajectory of development process in different geographies. Impacts of human-environment-society interrelations are context-specific too. Despite this latest progress in development studies research, knowledge about causes, nature and effects of environmental change and development practices are continually framed, legitimised and communicated via myths, grand narratives, and discourses based on a series of 'accepted' conclusions, global standards or blueprints. The framing of interventions by development actors/agencies purported to produce 'desirable' outcomes takes similar forms. It becomes thus crucial to uncover 'taken-for-granted' representations and vested interests that underpin mainstream environmental and development policy interventions. This module introduces students to theories, current trends/patterns of events and scientific methods to understand the nexus of environment, society and development in the global south from a cross-disciplinary perspective of human, political and environmental geography. Students will learn concepts for the study of physical, political and socio-economic dimensions of environmental change. Thus, students can locate environmental trends/change, environmental control, development discourses, and development practices. At the end of this module, students are expected to gain rich insights into theoretical and conceptual approaches of the geographical-society-environment research in the development context in the global south and employ such critical perspectives in their respective research projects.
28588	Statistics with R	E	2-9	2	
28630	Geographies of Environment and Development	S	5	2	The concept Development or Under-development has been considered "perspectived" after dependency theories and alternative approaches failed to offer 'one-cap-fits all' explanation for the trajectory of development process in different geographies. Impacts of human-environment-society interrelations are context-specific too. Despite this latest progress in development studies research, knowledge about causes, nature and effects of environmental change and development practices are continually framed, legitimised and communicated via myths, grand narratives, and discourses based on a series of 'accepted' conclusions, global standards or blueprints. The framing of interventions by development actors/agencies purported to produce 'desirable' outcomes takes similar forms. It becomes thus crucial to uncover 'taken-for-granted' representations and vested interests that underpin mainstream environmental and development policy interventions. This module introduces students to theories, current trends/patterns of events and scientific methods to understand the nexus of environment, society and development in the global south from a cross-disciplinary perspective of human, political and environmental geography. Students will learn concepts for the study of physical, political and socio-economic dimensions of environmental change. Thus, students can locate environmental trends/change, environmental control, development discourses, and development practices. At the end of this module, students are expected to gain rich insights into theoretical and conceptual approaches of the geographical-society-environment research in the development context in the global south and employ such critical perspectives in their respective research projects.
28800	A10: Land Use Change and Microclimate	L	5	2	Land use and land cover (LULC) change from local to global scales is an important aspect of global change and acts as both a responder to social-economic demands and as a driver of societal development. At the heart of this feedback processes is the biogeochemical cycling of heat, water, carbon, and reactive species creating specific microclimates between the land surface and the near-surface air, both of which comprise the 'critical zone' containing almost all terrestrial life including human activities. The microclimate and thus the state of the critical zone is important for identifying sustainable solutions in a rapidly changing world impacted by urbanization, agricultural expansion, afforestation, and desertification. Students will first develop a conceptual problem- and process-oriented understanding of how LULC changes impact the microclimatic cycling of heat, water, carbon, and other trace gases in a classroom setting. Next, they will apply their skills by designing, conducting, analyzing, and interpreting field measurements of heat, water, and radiative fluxes across the soil-air-plant continuum across contrasting land use types (grassland, urban land cover) to understand the urban heat island and agricultural cool islands. Methods include commonly applied micrometeorological experimental techniques and models including the Bowen-ratio, Penman-Monteith evapotranspiration, and Soil-Vegetation-Atmosphere Transfer (SVAT) models.
74004	Excursion	Exc	4-6	2	Global Change Ecology Overview
74005	Jour fixe	S	5	2	First, an overview of the information about current and expected global development is given. Not only climate change but also land-use changes and the loss of biodiversity is included. In the advanced seminar, current research results are presented and analysed.
74011	Extreme Events	S	5-10	2	
74013	Water resources in a quickly changing world – impacts and challenges	S	5	2	The module is divided into a lecture/exercise about fundamental hydrological processes and a seminar with interactive content. The focus of the lecture are the hydrological cycle and the water balance equation. Processes of water movement through the compartments of the atmosphere, biosphere and geosphere and their interactions are discussed in detail. Furthermore, aspects of chemical and ecological water quality and strategies for protecting surface- and groundwater are presented. In the seminar, we discuss current risks for and impacts on water resources in a global context. Students select a topic and present the results of their literature review to their fellow students, with the aim to stimulate a critical discussion also of potential mitigation strategies. The student presentations may be complemented by presentations of external experts.

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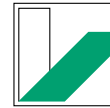
Number	Course Title	Type	ECTS / Credits	Duration	Module Description
74027	Global Change Impacts on Species Distributions	L & E	5	2	Species occurrence data wrangling, environmental covariates, species distribution modelling (single SDM), joint species distribution modelling (JSDM), anthropogenic influences on species distributions, machine learning algorithms, SDM-ensembles.
74028	Global Change Impacts on Species Distributions	E	5	2	Species occurrence data wrangling, environmental covariates, species distribution modelling (single SDM), joint species distribution modelling (JSDM), anthropogenic influences on species distributions, machine learning algorithms, SDM-ensembles.
74038	Globalization of Economies and the Environment	S	2-6	2	The seminar discusses what effects global trade, particularly of raw materials, induces due to the use of terrestrial and marine ecosystems. In order to reduce negative effects, environmental policy measures such as environmental standards play a special role. However, national environmental policies and different environmental policy standards between trading partners can also distort competition. Global market changes, environmental impacts and policy measures are critically reflected.
74040	Global change Policy, Contracts and Administrative Strategies (CBD and IPBES)	S	5	2	The seminar "International Risk and Conflict Management" analyzes human-environment relations from the perspective of political ecology. Possible points of conflict are access to natural resources, the distribution of environmental risks or the definition of environmental rights and duties. Environmental conflicts often span different spatial and social scales from the local neighborhood to international relations. The goal of the seminar "Global Change Policy, Contracts and Administrative Strategies" is to provide an overview of the history and theory of international agreements. The students should understand the difficulties that current agreements face in achieving the goals they set, or even to define the right goals in the first place.
74041	Economics of Global Environmental Change	S	5-9	2	
74047	Methodology of social sciences	S	3	2	This module provides a general and broadly understood introduction to problems, approaches, and debates in social science methodologies. The main aim is to make MSc scholars familiar with prominent 'epistemological schools', methodological angles and language(s), to provide a solid grounding in the key issues and a critical understanding of them. The method course is divided into two parts: (1.) Philosophy of social science, epistemology and ontology and (2.) Introduction into understanding and applying relevant geographical methodological approaches (with some prominent methods to be addressed).
74058	Life Cycle Assessment of Products	E	2-9	2	
74062	Advanced Geostatistical Methods	L	3	2	Principal Component Analysis • Multiple Regression Analysis • Canonical Correlation Analysis • Cluster Analysis • Discriminant Analysis, Random Forests.
74063	Advanced Geostatistical Methods	E	3	2	Principal Component Analysis • Multiple Regression Analysis • Canonical Correlation Analysis • Cluster Analysis • Discriminant Analysis, Random Forests.
74090	In-situ Field Data Recording	E	5	2	Results of biological assessments and records from applied sciences such as forestry, nature conservation, agriculture in the field (Basal area, forest successional stages, species, drought impact, tree mortality etc.) are linked with remote sensing data (hyperspectral data, results from remotely sensed field data and products such as FAO land cover classification system LCCS or Global Land Cover – Sentinel 2; LAI records and hemispheric measuring). With selected examples, the potential and limitations of using aircraft- and satellite-based missions for the collection of biodiversity patterns will be shown. Processing steps like dimension reduction, index calculation as well as spatial filters and measures to determine heterogeneity of habitats and ecosystems will be taught.
74098	Health implications of Global Change	L	5	2	The lecture synthesizes information on the most important interlinkages between biodiversity, climate change and health. It covers the concepts of one health, and planetary health and includes an overview of related Sustainable Development Goals, and reports.
74099	Current Research in Health implications of Global Change	S	5	2	In the seminar we review and discuss current contributions which cover the biodiversity - climate change - health nexus especially for zoonotic infectious diseases and use this knowledge to articulate future research priorities.

Key/Abbreviations:

Cs	Course	L	Lecture
E	Exercise	P	Project
Exc	Excursion	PT	Practical Training
ECTS	Credit Points	S	Seminar

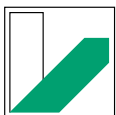
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