



Mitteilungen der Justus-Liebig-Universität Gießen

Ausgabe vom
24.01.2019

7.36.08 Nr. 4

Spezielle Ordnung für den Masterstudiengang
„Global Change – Ecosystem Science and Policy“

Siebter Beschluss zur Änderung der Speziellen Ordnung für den Masterstudiengang „Global Change – Ecosystem Science and Policy“ des Fachbereichs 08 – Biologie und Chemie – der Justus-Liebig-Universität Gießen und der School of Biology and Environmental Science des University College Dublin

Aufgrund von § 44 Abs. 1 des Hessischen Hochschulgesetzes vom 14. Dezember 2009 hat der Fachbereichsrat des Fachbereichs 08 – Biologie und Chemie – am 31.10.2018 die nachstehenden Änderungen beschlossen

Art. 1 Änderungen

Die Spezielle Ordnung für Masterstudiengang „Global Change – Ecosystem Science and Policy“ vom 27.07.2012, zuletzt geändert durch Beschluss vom 23.11.2017, wird wie folgt geändert:

1. Die Anlage 2 – Modulbeschreibungen – wird wie folgt geändert:

a) Das Modul LAW30440 wird wie folgt geändert:

LAW30440	Environmental Law and Policy	1.Sem.	5 CP
Title of module	Environmental Law and Policy		
Code of module	LAW30440		
Faculty / study program / Institution	UCD, Sutherland School of Law		
used in StG / Sem.	1 Sem., MSc Global Change		
Person in charge	Prof Suzanne Kingston & Dr Andrew Jackson		
Prerequisites	None		
Course aims	On completion of this module, diligent students should: 1. Have a good overview of the principles, techniques and regulatory framework of environmental law at national, European and international levels;		

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	<p>2. Have an in-depth knowledge of current principal challenges in environmental law and be able to engage in a high level of debate on these challenges;</p> <p>3. Be able to critically assess potential ways in which environmental law might be changed to improve environmental protection;</p> <p>4. Have a good understanding of environmental law in practice.</p>					
Course content	<p>Environmental law forms a fundamental part of how our society interacts with its natural surroundings. This course comprises a practical, in-depth examination of environmental law, with a focus on European and international perspectives. It will trace the development of EU and international environmental law to date and will analyse the legal principles applied to environmental protection.</p> <p>Students are introduced to various theoretical bases for environmental regulation, including rights-based approaches, justice-based approaches, as well as the ‘law and economics’ movement.</p> <p>Having taken this module, students have a good grounding in understanding that law frames, constrains, and delivers policy. The rule of law acts as a check on power, whilst fully respecting the separation of powers. Students will understand that much policy is delivered by the law, and will be aware that a good understanding of the law is essential to understanding environmental policy fully in any given area.</p> <p>This module will have a strong emphasis on environmental law in practice</p>					
Class format	Seminar					
Workload	120 h		Credit Points: 5 CP			
containing:		A Course		B Self-study	C examination	total
		a presence	b preparation/post processing, LN			
	Seminar	24	96			120
	Total	24	96			120
Examination format Grading Repetition	Essay (60 %), Presentation (30 %), Participation in class during presentation weeks (10 %)					
Availability Duration	Winter, each year one semester					
Acceptance capacity	None					
Language of instruction	English					
Literature						
Notes						

b) Das Modul BIOL40140 wird wie folgt geändert:

BIOL40140	Science and Policy	1.Sem.	5 CP
Title of module	Science and Policy		
Code of module	BIOL40140		
Faculty / study program / Institution	UCD, School Of Biology & Environment Science		
used in StG / Sem.	1 Sem., MSc Global Change		

Person in charge	Dr Tamara Hochstrasser & Dr Adam Kane					
Prerequisites	None					
Course aims	<p>On completion of this module students should be able to:</p> <ul style="list-style-type: none"> • Give an outline of how scientific knowledge is acquired • Understand how a multitude of questions can be asked about a complex system reflecting the different perspectives of experts and non-experts on an environmental problem • Identify relevant knowledge and use an integrative approach to show connections between perspectives and to formulate a conceptual framework for deciding on action • Have experienced how a simulation model (in particular agent-based simulation models) implemented in the open source software Netlogo can help to anticipate outcomes once a conceptual framework has been defined. 					
Course content	<p>The complexity of addressing global environmental problems such that more sustainable paths of development can be identified demands that a new approach to learning about our environment is taken. The foundation of this new approach “often called a transdisciplinary approach” is dialogue between experts and non-experts. However, scientists are not trained to enter such a dialogue and their effective participation in the dialogue is hampered by a lack of reflection on underlying values and disciplinary frameworks within which scientists conduct their work. In this module, we are going to reflect on the work of scientists so as to learn about our own values and disciplinary frameworks. Being able to articulate more clearly what the scientific method involves and how scientific knowledge about the world is gained will help to establish a dialogue with other experts and non-experts who bring a multitude of perspectives to bear on the problem at hand. Through the integration of these different perspectives, the transdisciplinary approach allows everybody involved in the dialogue to develop a shared, more holistic understanding of the problem and anticipate long-term consequences of addressing the problem in a particular way. This should clarify options and ease the decision making. Furthermore, the dialogue can be used to communicate uncertainties about the anticipated outcomes, and develop adaptive capacity through a framework for learning over time.</p> <ul style="list-style-type: none"> • Reflection on communication and values influencing communication • Introduction of the notion of a mental framework (or mental model) and its importance in interdisciplinary communication and stakeholder dialogues • Discussion of the scientific method and scientific facts and disciplinary frameworks • Discussion of the properties of complex systems and how to anticipate dynamics of these systems in the future (f.i. deep uncertainty and its implications for evidence-based decision-making) • Use of the open-source software Netlogo as a modelling tool for knowledge integration at the science-policy interface (modelling exercise) • Implementation of the transdisciplinary approach in practice 					
Class format	Lecture and practice					
Workload	125 h			Credit-Points: 5 CP		
containing:		A Course		B Self-study	C examination	total
		a presence	b preparation/post processing, LN			
	conversation class	12		43		55
	on-line learning			20		20

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	Specified Learning Activities	50				50
	Total	62		63		125
Examination format	Oral examination (25 %), Continuous assessment: 3 short essays and modelling project (65 %), Attendance and engagement (10 %)					
Grading						
Repetition						
Availability	Winter, each year					
Duration	one semester					
Acceptance capacity	20					
Language of instruction	English					
Literature						
Notes						

c) Das Modul ENVB40040 wird wie folgt geändert:

ENVB40040	Environmental Impact Assessment	1.Sem.	5 CP
Title of module	Environmental Impact Assessment		
Code of module	ENVB40040		
Faculty / study program / Institution	UCD, School of Biology and Environmental Science		
used in StG / Sem.	1 Sem., MSc Global Change		
Person in charge	Dr Florence Renou-Wilson		
Prerequisites	None		
Course aims	<p>Students should gain an intellectual feel for the rationale, legal and procedural approaches to environmental impact assessment procedures and decision-making – plus practically orientated exposure to the ‘real-world’ approaches used in assessing environmental impacts. Specifically, the module was developed for the students to achieve the following learning objectives:</p> <ol style="list-style-type: none"> 1) Background context is provided on the philosophy and development of the Environmental Impact Assessment (EIA) process in North America, Europe and Ireland and place it in a broader framework of approaches to environmental management. 2) The general legal framework for EIA is presented for European countries and Ireland in particular; critically appraising the relative merits and flaws of EIA systems in different countries. 3) The general stages of assessment are identified and explored with reference to appropriate tools and methodologies: screening, scoping, impact identification; mitigation, monitoring, follow-up and process audit. 4) Critical discussions on the difficulties of assessing ‘significance’ of impacts as well as designing appropriate monitoring surveys. 5) The procedures appropriate to each level in the conceptual planning hierarchy are compared and contrasted. At policy assessment level: Strategic Environmental Assessment (SEA) of plans and programmes; At project assessment level: Environmental Impact Assessment (EIA) and Appropriate Assessment (AA); At company level: Environmental Management Systems (EMS); Life Cycle Analysis (LCA); Integrated Pollution Prevention and Control (IPPC). 		

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Course content	This module outlines the development and philosophy of Impact Assessment Procedure (IAP) framework as well as legal and planning framework in which EIA, SEA and AA is used in Ireland, UK and European Union in particular. We then focus on the practicalities of preparing an Environmental Impact Statement, including scoping and the collection, synthesis and dissemination of relevant information. We compare IAP processes in a range of countries and discuss the pros and cons of different approaches. The course includes a practical mock scoping EIA exercise where methodologies (especially used for biological disciplines) to assess and monitor environmental changes are reviewed. Throughout the course, we consider the different careers available in the field of impact assessment procedures in general and their spheres of influence. Case studies and simulation exercises will be utilised. One lecture is given by current ecologists from RPS, one of the largest consultancies in Ireland.					
Class format	Lecture and practice					
Workload	125h		Credit-Points: 5 CP			
containing:		A Course		B Self-study	C examination	total
		A presence	b preparation/post processing, LN			
	Lectures	9		86		95
	Seminar	3				3
	Workshop	5				5
	Specified Learning Activities	22				22
	Total	39		86		125
Examination format	Simulation exercise (30 %) and exam (70 %)					
Grading						
Repetition	In-semester assessment					
Availability	Winter, each year					
Duration	one semester					
Acceptance capacity	None					
Language of instruction	English					
Literature						
Notes						

d) Das Modul M-GC-PCE wird wie folgt geändert:

M-GC-PCE	Political Consulting – Environmental Policy and Development Cooperation	2.Sem.	6 CP
Title of module	Political Consulting – Environmental Policy and Development Cooperation		
Code of module	M-GC-PCE		
Faculty / study program / Institution	08/ Biology/ Department of Plant Ecology		
used in StG / Sem.	2 Sem., MSc Global Change		
Person in charge	Prof. Dr. Christoph Müller		
Lecturers	N.N.		
Prerequisites	None		

Course aims	<p>Political consulting is of growing importance in nowadays fast changing societies. Current challenges arise in the fields of environmental policy and development cooperation according to climate change, globalisation, migration, poverty, north-south divide etc. On successful completion of this module, students will have a broad understanding of political consulting issues relating to these topics. They gain an insight into practical work of political consultants by experts from academia, public and private organisations, and third sector. Students</p> <ul style="list-style-type: none"> - become aware of political approaches, processes, fields and actors, - understand key concepts in political consulting, - learn about possibilities to influence decision-making processes, - analyse political advisers' ways of professional and methodical performance. 					
Course content	<p>The module includes a series of lectures given by guest speakers with background in political science, biodiversity and climate research, conflict research etc., a seminar and a workshop.</p> <p>In the framework of the lecture series speakers from development cooperation and environmental policy present where they do "political consulting" at the interface between science and politics. The invited scientists, consultants, administrative staff etc. present their field of working or single projects and bring up their specific experience. They reflect on their consulting processes and on how they communicate their messages to different target groups and balance different roles and interests.</p> <p>The seminar aims at dealing with policy consulting issues systematically. In presentations and written papers students work on following topics:</p> <ul style="list-style-type: none"> – Policy consulting as a field of work: conceptual definition, history, actors and institutions; – Governance ; context and structures of political processes; – Forms and actors: policy advise by science, think tanks, lobbying, citizens, media, NGOs/bottom-up initiatives; – Fields of policy consulting; examples from Climate Change, Development Cooperation, Food Security, Sustainability Research, Energy Transition, Sustainable Mobility, Technology Assessment etc. <p>The 1-day workshop is organised in form of a role-play: a practical task/problem in development cooperation in a given context is simulated. The students have to support and manage a process that involves different political and administrative actors as well as citizens. Several instructions for consulting and project management are provided, tested "in the field", and jointly evaluated.</p>					
Class format	Lecture, Seminar, practice					
Workload	180 h		Credit-Points: 6			
containing:		A Course		B self-study	C examination	total
		a presence	b preparation /post processing, LN			
	Lecture	30	30			60
	Seminar	20	20	20	40	100
	Practice	8	12			20
	Total	58	62	20	40	180
Examination format	Written report (65%), oral presentation (35%)					

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Grading, Repetition	
Availability, Duration	Summer, each year, one semester
Acceptance capacity	None
Language of instruction	English
Literature	
Notes	Information concerning modules and literature: see board of information / Date: see university calendar

e) Das Modul STAT40690 entfällt. Dafür wird das Modul ENVB40370 neu aufgenommen:

ENVB40370	Data Analysis and Interpretation	1.Sem.	5 CP		
Title of module	Data Analysis and Interpretation				
Code of module	ENVB40370				
Faculty / study program / Institution	UCD, School of Biology and Environmental Science				
used in StG / Sem.	1 Sem., MSc Global Change				
Person in charge	Dr Jon Yearsley				
Prerequisites	None				
Course aims	<p>This module aims to equip you with the skills to professionally synthesize and communicate technical information in the field of biology and environmental science.</p> <p>Learning Outcomes:</p> <ul style="list-style-type: none"> • Design a biological / environmental experiment, taking due account of independence, allocation of replicates and controls; • Organise and manipulate data on a computer; • Fit and validate a statistical model to biological data; • Test a null-hypothesis using fitted statistical models • Accurately communicate data using graphs, tables and written text; • Answer research questions and draw strong, defensible conclusions using modern statistical data analysis methods 				
Course content	<p>The module blends online lessons, computer practicals and self-test problem sheets. Topics covered include the reporting of data, data management, design and analysis of biological and environmental experiments, hypothesis testing and the use of the R statistical software.</p> <p>For this module, you will require access to a computer that will run the R statistical software (available for Windows, Mac or Linux operating systems at https://www.r-project.org/) and RStudio (freely available at https://www.rstudio.com/products/rstudio/#Desktop).</p>				
Class format	On-line learning				
Workload	125 h	Credit-Points: 5 CP			
containing:	A Course		B Self-study	C examination	total
	A presence	b preparation/post processing, LN			
	On-line learning				125
	Total				125
Examination format Grading Repetition	<p>Continuous Assessment: Online data analysis test 1 (20 %), Online data analysis test 2 (20 %), R script to accompany online test 1 (5 %), R script to accompany online test 2 (5 %)</p> <p>Examination: End of semester exam (2 h) (50 %)</p>				

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Availability	Winter, each year
Duration	one semester
Acceptance capacity	None
Language of instruction	English
Literature	
Notes	

f) Das Modul BOTN40180 entfällt. Dafür wird das Modul BOTN40240 neu aufgenommen:

BOTN40240	Future crops and food security	1.Sem.	5 CP
Title of module	Future crops and food security		
Code of module	BOTN40240		
Faculty / study program / Institution	UCD, School of Biology and Environmental Science		
used in StG / Sem.	1 Sem., MSc Global Change		
Person in charge	Prof. Bruce Osborne		
Prerequisites	None		
Course aims	<p>Food production faces arguably unprecedented challenges in the future from a combination of an ever increasing global population, the projected constraints associated with climate change. Not only do we have to produce more food in a sustainable way, with low inputs and minimal environmental impacts, but we also have to ensure that the food is nutritious, safe and affordable. This challenge is particularly daunting as there is already evidence of declining or stagnating crop yields and, because of increased diversification of agricultural production systems, increased competition between food production and the production of bioenergy and other biomaterials.</p> <p>The learning objectives of this course are to:</p> <ol style="list-style-type: none"> 1. Provide an evaluation of the constraints on future food production; 2. Describe the main features of climate change and how they may impact on crops; 3. Evaluate the ways in which crops/plants might be modified to enhance productivity and yield; 4. Recognise the importance of enhancing combined abiotic/biotic stress for realising potential yield increases under field situations; 5. Evaluate the environmental impact of crop production systems and the concept of sustainability; 6. Evaluate how some aspects of climate change, particularly elevated carbon dioxide concentrations, may be used to our advantage; 7. Evaluate how management interventions interact with climate change. 		
Course content	<p>This module will examine the threats to agricultural production caused by climate change, agricultural diversification and environmental/legislative constraints. It will also examine how increased photosynthetic productivity might be achieved, as well as the potential for producing crops that are more resistant to combined abiotic/biotic factors. We will also examine how the dual objectives of enhancing food production whilst increasing the diversity of agricultural products, may be met, including the introduction of new/novel crops and the utilization of wild plant genetic resources and land races. Finally, whilst climate change is almost always thought to have negative consequences we</p>		

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	will also examine how some aspects of our future climate might be used to our advantage for enhancing crop yields.				
Class format	Lectures, specified learning activities				
Workload	125 h		Credit-Points: 5 CP		
containing:	A Course		B Self-study	C examination	total
	A presence	b preparation/post processing, LN			
	lectures	12			12
	specified learning activities	14			14
	Autonomous Student Learning		99		99
Total				125	
Examination format	Essay (50%), End of semester essay style examination (2 h) (50%)				
Grading					
Repetition					
Availability	Winter, each year				
Duration	one semester				
Acceptance capacity	None				
Language of instruction	English				
Literature					
Notes					

g) Das Modul MP 155 entfällt. Dafür wird das Modul MK 96 neu aufgenommen:

MK 96	Sustainable Agroecosystems	2.Sem.	6 CP
Title of module	Sustainable Agroecosystems		
Code of module	MK 96		
Faculty / study program / Institution	UCD, School of Biology and Environmental Science		
used in StG / Sem.	2 Sem., MSc Global Change		
Person in charge	Prof. Dr. Andreas Gattinger		
Prerequisites	None		
Course aims	<p>The students</p> <ul style="list-style-type: none"> • Get insight knowledge in to the complexity of temperate and tropical agroecosystems under integrated, organic and agro-ecological production • Learn and understand the biophysical factors, processes and interactions that control the functioning of agroecosystems. • Are guided to critically examine agricultural practices and management strategies to increase/stabilize productivity and resource use efficiency, while minimizing negative impacts on the environment and ensuring socio-economic viability. • Practice scientific observation in the field • Practically apply agroecologic principles • broaden their understanding of environmental and socio-economic challenges of farming enterprises • deepen their ability to access a topic by means of scientific methodologies 		

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Course content	<ul style="list-style-type: none"> • Agriculture from a systems perspective • Principles of agricultural sustainability • Principles of integrated production, organic farming and agroecology • Sustainability impacts of temperate and tropical agroecosystems covering the main crop commodities and land use systems (Arable, grassland, horticulture) • Farming system innovations (e.g. agroforestry, relay cropping, push-pull systems) • Introduction to action research • Practical work in an experimental garden • Writing and presenting own contributions to the given topics • How to access a topic scientifically? Evaluation of various media sources (from brochure to scientific paper) for further successful communication and dissemination of climate change issues. • Excursions to research and private farms 				
Class format	Seminar, field trip				
Workload	180 h		Credit-Points: 6 CP		
containing:	A Course		B Self-study	C examination	total
	A presence	b preparation/post processing, LN			
	seminar	50	50		100
	Field trip	10			10
	Total	60	50	40	180
Examination format Grading Repetition	a) Seminar work (Presentations, exercises, discussions; assessment scheme can be requested from module coordinator) and oral examination and or b) other examinations conducted by the teaching staff Seminar work (50%), oral examination (50%)				
Availability Duration	Winter, each year one semester				
Acceptance capacity	None				
Language of instruction	English				
Literature					
Notes					

h) Das Modul M-GC-REM "Resource Economics and Environmental Management" erhält den Titel: "Resource Economics, Sustainability and Environmental Management"

i) In Modul M-GC-REM wird unter "Course content" der folgende Satz ergänzt:

"The module combines a lecture and a seminar where students work on issues of resource use, its optimisation of consumption as well as on political intervention and planning tools."

2. § 32 wird wie folgt neu gefasst:

„Diese Ordnung in der Fassung des 7. Änderungsbeschlusses gilt für alle Studierenden, die ab Wintersemester 2018/2019 das Studium beginnen.“

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Art. 2
Inkrafttreten

Dieser Beschluss tritt am Tage nach seiner Verkündung in Kraft. Der neue Wortlaut der geänderten Ordnung wird in den Mitteilungen der Universität Gießen bekannt gemacht.

Gießen, den 27.11.2018
Prof. Dr. Joybrato Mukherjee
Präsident der Justus-Liebig-Universität Gießen