

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Human wellbeing and development as result of ecological and social processes and services	M.01.0137
Semester	1	
Module coordinator	Prof. Dr. Martin Welp	Martin.Welp@hnee.de
Status	Mandatory	
Goal	Students are enabled to understand and analyse dimensions of and factors contributing to human wellbeing. They elaborate a framework for the analysis of development goals and challenges going beyond a strict dichotomy between factual and value judgments.	
Examination form	Project presentation	
ECTS-Credits	8	
SWH	6	
Module component	Human wellbeing and development as result of ecological and social processes and services	K.01.0171.V.PL
Coordinator	Prof. Dr. Martin Welp	
Lecturer	Prof. Dr. Martin Welp, Prof. Dr. Hartmut Ihne, Prof. Dr. Pierre Ibisch	
ECTS-Credits	8	
SWH	6	workload: 240h / semester
Max. study places		
Teaching form	Lecture (40h), Seminar (20h), Practical exercise (30h), Self-study (150h)	Module type
Language	English	<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked
Examination form	Project presentation	
Entry requirements		
Goal	Students are enabled to understand and analyse dimensions of and factors contributing to human wellbeing. They elaborate a framework for the analysis of development goals and challenges going beyond a strict dichotomy between factual and value judgments.	
Content	<p>This module represents the starting point of inter and transdisciplinary analysis of the current situation of human society, its existential basis and future challenges. From an anthropocentric perspective human wellbeing is taken as ultimate goal of (sustainable) development. Based on an understanding of different approaches to human wellbeing as well as historical and philosophical perspectives, the underlying values, goals and strategies of development are critically reflected (e.g. Sustainable Development Goals).</p> <p>Multidimensional human wellbeing is introduced in line with the OECD framework differentiating material living conditions, quality of life and sustainability of wellbeing over time, from the individual to the societal level (OECD 2013).</p> <p>Human wellbeing is provided both by ecological and social systems. Ecosystem services (as classified according to the Common International Classification of Ecosystem Services - CICES) represent ecological functions that are fundamental to humans in terms of provisioning, regulating and cultural support. Social system services are relevant by organizing access and distribution to ecosystem services, as well as by guaranteeing human and civil rights and providing safety and good societal conditions for individual development.</p> <p>The course provides an introduction to Ecosynomics, covering both ecological and social services which contribute to human wellbeing. The module furthermore provides an overview of how to measure human wellbeing. Students conduct the Harmonic Vibrancy survey and group reflections of results are analysed in view of larger empirical data using this approach.</p>	
Recommended related elective modules		
Competences	Technical competence (40%), Methodological competence (10%), Social competence (20%),	

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

	Personnel competence (20%), Media competence (10%)
Literature	<ul style="list-style-type: none">• CICES (Common International Classification of Ecosystem Services) (http://cices.eu/)• OECD 2013. Measuring Well-Being for Development (http://www.oecd.org/site/oecdgfd/Session%203.1%20-%20GFD%20Background%20Paper.pdf)• Putnam, H. 2004. The Collapse of the Fact/Value Dichotomy and other essays. Harvard University Press, Cambridge, Massachusetts• WHO Millennium Ecosystem Assessment report 2005. Ecosystems and Human Well-Being. Health Synthesis (http://www.who.int/globalchange/ecosystems/ecosys.pdf)

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Fundamentals of systems functionality and change	M.01.0100		
Semester	1			
Module coordinator	Prof. Dr. Pierre Ibisch	Pierre.Ibisch@hnee.de		
Status	Mandatory			
Goal	Students are enabled to understand emergent properties and unpredictable dynamics of complex systems (including both natural and social systems and their interactions) and the key attributes required for sustainable functioning. They can conduct exemplary analyses of selected systems' components and functionality and critically discuss analogies and homologies of social and ecological systems.			
Examination form	Project presentation			
ECTS-Credits	8			
SWH	6			
Module component	Fundamentals of systems functionality and change	K.01.0130.V		
Coordinator	Prof. Dr. Pierre Ibisch			
Lecturer	Prof. Dr. Pierre Ibisch, Prof. Dr. Manfred Stock (PIK), Prof. Dr. Martin Welp, Prof. Dr. Andreas Bolte (TI), Prof. Dr. Andreas Linde			
ECTS-Credits	8			
SWH	6	workload: 240h / semester		
Max. study places				
Teaching form	Lecture (10h), Seminar (20h), Project (60h), Self-study (150h)	Module type		
Language	English	<input type="checkbox"/> continuous	<input type="checkbox"/> partly blocked	<input checked="" type="checkbox"/> blocked
Examination form	Project presentation			
Entry requirements				
Goal	Students are enabled to understand emergent properties and unpredictable dynamics of complex systems (including both natural and social systems and their interactions) and the key attributes required for sustainable functioning. They can conduct exemplary analyses of selected systems' components and functionality and critically discuss analogies and homologies of social and ecological systems.			
Content	After having analysed the fundamentals of human wellbeing as result of services provided by ecological and social systems, in this module it is investigated what systems actually are and how they function. Systemics is introduced as way of inquiry and model for understanding more or less complex, nested and interacting entities that make up our known world. System science is used for bridging historically induced gaps between social and natural sciences. The homology of social and 'natural' systems is discussed, as well as the question if it is possible to derive lessons from ecosystems for the functioning and sustainable development of social systems (concept of econics). The concept of sustainable development itself is discussed as emergent property of complex systems, which might exist beyond normative ideas and integrates system properties and drivers related to efficiency and resilience. The role of energy (and exergy) in systems function, development and evolution is studied. Selected systems are analysed in greater depth. Approaches to visualisation and analysis of complex systems are introduced as tools for knowledge mapping and modelling (e.g., MARISCO conceptual model, Vensim software). The students elaborate a framework of key attributes, which are required for systems' functionality. This is the basis for elucidating stresses of dysfunctional systems and examining system vulnerabilities to disturbance and change. This concept is applied to the anthroposystem, ecosystems and the climate system.			
Recommended related elective modules				

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Competences	Technical competence (30%), Methodological competence (30%), Social competence (20%), Personnel competence (10%), Media competence (10%)
Literature	<ul style="list-style-type: none">• Bunge, M., 2000. Systemism: the alternative to individualism and holism. The Journal of Socio-Economics 29, 147--157. (http://ceses.cuni.cz/CESES-137-version1-1B_BUNGE_Systemism.pdf)• Ibisch, P.L., L. Geiger & F. Cybulla (eds.) 2012. Global change management: knowledge gaps, blindspots and unknowables. Nomos, Sinzheim.• Ibisch, P.L. & P.R. Hobson (eds.) 2014. The MARISCO method: Adaptive Management of vulnerability and RISK at CONservation sites. A guidebook for risk-robust, adaptive, and ecosystem-based conservation of biodiversity. Centre for Economics and Ecosystem Management, Eberswalde (ISBN 978-3-00-043244-6). 195 pp.• Ibisch, P.L., A. Vega E. & T.M. Herrmann (eds.) 2010. Interdependence of biodiversity and development under global change. Technical Series No. 54. Secretariat of the Convention on Biological Diversity, Montreal, 224 pp. (ISBN 92-9225-279-8) (online http://www.cbd.int/doc/publications/cbd-ts-54-en.pdf). Especially:<ul style="list-style-type: none">○ Ibisch, P.L., P. Hobson, & A. Vega: Mutual mainstreaming of biodiversity conservation and human development: towards a more radical Ecosystem Approach. 15-34.○ Hobson, P. & P.L. Ibisch: An alternative conceptual framework for sustainability: systemics and thermodynamics. 126-147.○ Ibisch, P.L. & P. Hobson: The integrated anthroposystem: globalizing human evolution and development within the global ecosystem. 148-182.○ Hobson, P. & P.L. Ibisch: Strategic sustainable development: a synthesis towards thermodynamically efficient systems and post-normal complex system management. 183-195.• Jorgensen SE An integrated ecosystem theory. (http://www.eurasc.org/annals/docs/Jorgensen_TeamR_f(15).pdf)• Jorgensen, S.E. 2012. Introduction to Systems Ecology (Applied Ecology and Environmental Management) Crc Pr Inc• Kay JJ, Boyle M 2008. Self-Organizing, Holarchic, Open Systems (SOHOs) In: The ecosystem approach. Complexity, uncertainty, and managing for sustainability, ed. Waltner-Toews D (Columbia Univ. Press, New York), 51-78.• Laszlo, A. / Krippner, S. 1998. Systems theories: their origins, foundations, and development. In: J.S. Jordan (ed.): Systems theories and a priori aspects of perception. Elsevier Science, 47-74.• Luhmann, N. 1987. Soziale Systeme. Grundriß einer allgemeinen Theorie (Suhrkamp, Frankfurt/Main).• Meadows, D.H., Meadows, G., Randers, J., and Behrens, W.W. III. 1972. The Limits to Growth. New York: Universe Books.• Mobus, G.E. & M. C. Kalton 2014. Principles of Systems Science (Understanding Complex Systems)• Vester, F. 2008. The Art of interconnected thinking: Tools and concepts for a new approach to tackling complexity; Munich, MCB.• Von Bertalanffy, L. 1972. The History and Status of General Systems Theory The Academy of Management Journal, Vol. 15, No. 4, General Systems Theory (Dec., 1972), 407-426. (http://systemotechnica.ucoz.com/_fr/1/Bertalanffy_L.V.pdf)

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Threats & risks to systems functionality and contributing factors	M.01.0100
Semester	1	
Module coordinator	Prof. Dr. Pierre Ibisch	Pierre.Ibisch@hnee.de
Status	Mandatory	
Goal	<p>Students are enabled to systemically inventory and analyse factors that lead to threats for the functionality of ecological and social systems and therefore for human wellbeing. These embrace, among others, factors from biophysical, socioeconomic and governance domains. The students apply basic knowledge about risk management to the development of future scenarios and identification of risks and blindspots related to the dynamics of the identified threats and their causal factors. They have practiced the assessment of criticality and strategic relevance of stresses, threats and their contributing factors, which make up global change and pose relevant challenges to ecosystem functionality and human wellbeing.</p>	
Examination form	Project report (50%), Project presentation (50%)	
ECTS-Credits	8	
SWH	6	
Module component	Threats & risks to systems functionality and contributing factors	K.01.0130.V
Coordinator	Prof. Dr. Pierre Ibisch	
Lecturer	Prof. Dr. Pierre Ibisch, Prof. Dr. Martin Welp	
ECTS-Credits	8	
SWH	6	workload: 240h / semester
Max. study places		
Teaching form	Lecture (30h), Seminar (20h), Practical exercise (40h), Self-study (150h)	Module type
Language	English	<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked
Examination form	Project report (50%), Project presentation (50%)	
Entry requirements		
Goal	<p>Students are enabled to systemically inventory and analyse factors that lead to threats for the functionality of ecological and social systems and therefore for human wellbeing. These embrace, among others, factors from biophysical, socioeconomic and governance domains. The students apply basic knowledge about risk management to the development of future scenarios and identification of risks and blindspots related to the dynamics of the identified threats and their causal factors. They have practiced the assessment of criticality and strategic relevance of stresses, threats and their contributing factors, which make up global change and pose relevant challenges to ecosystem functionality and human wellbeing.</p>	
Content	<p>Having understood the fundamentals of systems functionality, in this module students learn about mechanisms and dynamics of threats to social and ecological systems' functioning that are result of local, regional and/or global change processes. Threats are drivers of stress by negatively altering the state of systems' key attributes required for functionality. Existing threats as well future risks are discussed by applying the concept of vulnerability. The module comprises fundamentals of risk management, including the relevance of cognitive bias in ignoring or misinterpreting relevant threats and risks. Threats and risks are classified according to their sources, and the vulnerability of selected ecological and social systems is assessed.</p>	
Recommended related elective modules		
Competences	<p>Technical competence (30%), Methodological competence (30%), Social competence (20%), Personnel competence (10%), Media competence (10%)</p>	

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Literature	<ul style="list-style-type: none">• Ibisch, P.L., L. Geiger & F. Cybulla (eds.) 2012. Global change management: knowledge gaps, blindspots and unknowables. Nomos, Sinzheim.• Ibisch, P.L. & P.R. Hobson (eds.) 2014. The MARISCO method: Adaptive Management of vulnerability and RiSk at COnservation sites. A guidebook for risk-robust, adaptive, and ecosystem-based conservation of biodiversity. Centre for Econics and Ecosystem Management, Eberswalde (ISBN 978-3-00-043244-6). 195 pp.• Salafsky, N., Salzer, D., Stattersfield, A. J., Hilton-Taylor, C., Neugarten, R., Butchart, S. H. M., Collen, B., Cox, N., Master, L. L., O'Connor, S. and Wilkie, D. 2008. A Standard Lexicon for Biodiversity Conservation: Unified Classifications of Threats and Actions. <i>Conservation Biology</i>, 22: 897–911. doi: 10.1111/j.1523-1739.2008.00937.x
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Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Ecosystem Diagnostics Analysis	M.01.0100
Semester	2	
Module coordinator	Prof. Dr. Pierre Ibisch	Pierre.Ibisch@hnee.de
Status	Mandatory	
Goal	Students detect and document patterns and processes of anthropogenic ecosystem changes as basis for conceptual modelling, planning and management. The analysis embraces the investigation both the study of ecological as well as socioeconomic phenomena and their cause-effect relationship.	
Examination form	Project Report	
ECTS-Credits	4	
SWH	3	
Module component	Ecosystem Diagnostics Analysis	K.01.0130.V
Coordinator	Prof. Dr. Pierre Ibisch	
Lecturer	Prof. Dr. Pierre Ibisch, Prof. Dr. Martin Welp	
ECTS-Credits	4	
SWH	3	workload: 120h / semester
Max. study places		
Teaching form	Lecture (15h), Seminar (10h), Practical exercise (20h), Self-study (75h)	Module type
Language	English	<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked
Examination form	Project Report	
Entry requirements		
Goal	Students detect and document patterns and processes of anthropogenic ecosystem changes as basis for conceptual modelling, planning and management. The analysis embraces the investigation both the study of ecological as well as socioeconomic phenomena and their cause-effect relationship.	
Content	Based on an ecosystemic understanding of landscape and its change, Ecosystem Diagnostics Analysis (EDA) is a holistic way of inquiry searching for signs of stress in the ecosystem and detecting cause-effect relationships between observed phenomena and potential (root) causes. It starts with an assessment of structures and patterns. EDA is designed as a rapid assessment technique that can be applied in an environment where there is limited knowledge and poor access to hi-tech facilities. There are three main objectives to EDA: 1. To provide a description of the character of the landscape in and around a (potential) management site. 2. To support the delimitation of boundaries adequate for further analysis and management. 3. To provide a provisional evaluation of the existing and potential risks and threats to the conservation interests of the project site. EDA combines elements of a landscape character assessment with those of an environment impact assessment.	
Recommended related elective modules		
Competences	Technical competence (40%), Methodological competence (40%), Social competence (20%)	
Literature	<ul style="list-style-type: none"> • Glasson, J., R. Therivel & A. Chadwick 2011. Introduction to Environmental Impact Assessment (Natural and Built Environment), 4th ed., Routledge Chapman & Hall. • Ibisch, P.L. & P.R. Hobson (eds.) 2014. The MARISCO method: Adaptive Management of vulnerability and RiSk at COnservation sites. A guidebook for risk-robust, adaptive, and ecosystem-based conservation of biodiversity. Centre for Ecnics and Ecosystem Management, Eberswalde (ISBN 978-3-00-043244-6). 195 pp. • Tudor, C. 2012. An Approach to landscape character assessment. Natural England. (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/361624/An_Approach_to_Landscape_Character_Assessment_requires_re_formatting_3_.pdf) 	

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Strategies for change and transformation	M.01.0100
Semester	2	
Module coordinator	Prof. Dr. Martin Welp	Martin.Welp@hnee.de
Status	Mandatory	
Goal	Students adopt relevant principles of proactive strategic thinking for complex systems management; they understand past and present societal transitions, their underlying patterns and key actors. Furthermore the goal is to evaluate different strategies of transformation governance on different levels and to provide tools to identify high leverage points in different kinds of complex systems.	
Examination form	Oral Report (33%), Project presentation (33%), Technical discussion (33%)	
ECTS-Credits	8	
SWH	6	
Module component	Strategies for change and transformation	K.01.0130.V
Coordinator	Prof. Dr. Martin Welp	
Lecturer	Prof. Dr. Martin Welp, Prof. Dr. Pierre Ibisch, Prof. Dr. Hartmut Ihne, Christoph Bals & Dr. Gerold Kier et al. (Germanwatch), Thomas Loster & Prof. Dr. Peter Höppe et al. (Munich Re)	
ECTS-Credits	8	
SWH	6	workload: 240h / semester
Max. study places		
Teaching form	Lecture (40h), Seminar (20h), Practical Exercise (30h), Self-study (150h)	Module type
Language	English	<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked
Examination form	Oral Report (33%), Project presentation (33%), Technical discussion (33%)	
Entry requirements		
Goal	Students adopt relevant principles of proactive strategic thinking for complex systems management; they understand past and present societal transitions, their underlying patterns and key actors. Furthermore the goal is to evaluate different strategies of transformation governance on different levels and to provide tools to identify high leverage points in different kinds of complex systems.	
Content	<p>Strategies are conceptualized as goal-oriented interventions in complex systems. Based on the understanding of complex systems theory and practice of strategic thinking and planning is critically reflected. Meta-systemic vs. object-systemic approaches are discussed as well as proactive, non-knowledge-based vs. evidence-based strategies. Exemplary societal transitions with global relevance are analysed in terms of their underlying drivers, dynamics, and actors. Managing from clarity strategies are analysed and discussed.</p> <p>Necessary sustainability transitions are discussed with a special focus on climate change related issues. The needs for a transition as well as a feeling for the different perspectives in the North and the South are given through a computer-aided role play simulation tool on climate negotiations. Germanwatch provides contents related to applied climate policy, covering different topical issues around the UN Climate Convention. If feasible students participate in the international climate negotiations to get first hand impressions on negotiation practice.</p> <p>Forest based mitigation options are analysed as one example in the broad portfolio of technological, geo-engineering and lifestyle based climate mitigation. The principles of adaptive management are introduced by using practical examples related to forests and natural resources.</p>	
Recommended related elective modules		

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Competences	Technical competence (30%), Methodological competence (20%), Social competence (20%), Personnel competence (20%), Media competence (10%)
Literature	<ul style="list-style-type: none">• James Richie Dunham. Ecosynomics. The science of Abundance• Ibisch, P.L. & P.R. Hobson (eds.) 2014. The MARISCO method: Adaptive Management of vulnerability and RISK at COnservation sites. A guidebook for risk-robust, adaptive, and ecosystem-based conservation of biodiversity. Centre for Econics and Ecosystem Management, Eberswalde.• Krause, G. and Welp, M. 2012. Systems Thinking in Social Learning for Sustainability. In: Glaser, M., Krause, G., Ratter, B., and Welp, M. (eds.) Human-Nature Interactions in the Anthropocene: Potentials of Social-Ecological Systems Analysis. Routledge. 232 p. 13-33.• Malik, F. 2013. Strategy: Navigating the Complexity of the New World. Campus Verlag.• Senge et al. 2008. The necessary revolution: How individuals and organizations are working together to create a sustainable world• WBGU 2011. World in Transition – A Social Contract for Sustainability• Wigboldus, S. 2009. A list of websites and reading materials on strategy & complexity. Wageningen UR Centre for Development Innovation (http://edepot.wur.nl/245644).

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Implementation of change management	M.01.0100
Semester	2	
Module coordinator	Prof. Dr. Martin Welp	Martin.Welp@hnee.de
Status	Mandatory	
Goal	Students acquire skills for the initiation and implementation of transitional change. The course aims at laying a foundation for global leadership for purposes of a sustainability transition.	
Examination form	Term paper	
ECTS-Credits	6	
SWH	4	
Module component	Implementation of change management	K.01.0130.V
Coordinator	Prof. Dr. Martin Welp	
Lecturer	Prof. Dr. Martin Welp, Dr. Eick von Ruschkowski & Kristian Klöckner et al. (NABU)	
ECTS-Credits	6	
SWH	4	workload: 180h / semester
Max. study places		
Teaching form	Lecture (30h), practical exercise (30h), seminar (20h), self-study (100h)	Module type
Language	English	<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked
Examination form	Term paper	
Entry requirements		
Goal	Students acquire skills for the initiation and implementation of transitional change. The course aims at laying a foundation for global leadership for purposes of a sustainability transition.	
Content	<p>The module gives an overview of main approaches to Organisational learning and related tools of change management, including knowledge and non-knowledge management. In particular students focus on deepening their understanding of Ecosynomics and Econics from a sustainability perspective. Learning processes and tools to accelerate transformation of organisations are evaluated and tested by analysing exemplary social systems in view of their explicit or implicit agreements. The role of NGOs in transformation processes is analysed through close engagement with an exemplary environmental and nature conservation NGO (NABU).</p> <p>The module lays foundations of skills for Global Leaders. Broadening Innovative leadership skills for transformation and deepening practical approaches that can be adopted by leaders to lead and build thriving global organizations are at the focus of the module.</p>	
Recommended related elective modules		
Competences	Technical competence (30%), Methodological competence (10%), Social competence (20%), Personnel competence (20%), Media competence (20%)	
Literature	<ul style="list-style-type: none"> • Benn, S, Dunphy, D. & Griffiths, A. 2014. Organizational change for corporate sustainability. • Dunham, J.R. Ecosynomics. The science of Abundance. (Part 2) • Metcalf, M. (forthcoming). Leadership workbook for Global Leaders • Stoll-Kleemann, S. and Welp, M. (eds.) 2006. Stakeholder Dialogues in Natural Resources Management · Theory and Practice. Springer Environmental Sciences, Berlin, Heidelberg. 386 p. (ISBN-10: 3-540-36916-3). • Welp, M. and Frost, I. 2012. Non-knowledge and organisational learning. In: Ibsich, P., Geiger, L. and Cybulla, F. (eds.) Global Change Management: Knowledge Gaps, Blindspots and Unknowables. Nomos. 250 p. 213-222 (ISBN-10: 3832967141). 	

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Research project - Implementation of change management	M.01.0151
Semester	3	
Module coordinator	Prof. Dr. Martin Welp	Martin.Welp@hnee.de
Status	Mandatory	
Goal	The students are enabled to plan and accomplish a research project of moderate size related to the study programme's content.	
Examination form	Project report	
ECTS-Credits	24	
SWH	20	
Module component	Research project - Implementation of change management	K.01.0184
Coordinator	Prof. Dr. Martin Welp	
Lecturer	Prof. Dr. Martin Welp, Christoph Nowicki et al.	
ECTS-Credits	24	
SWH	20	workload: 720h / semester
Max. study places		
Teaching form	Project (300h), self-study (420h)	Module type
Language	-	<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked
Examination form	Project report	
Entry requirements		
Goal	The students are enabled to plan and accomplish a research project of moderate size related to the study programme's content	
Content	<p>Students design a scientific project related to global change management in cooperation with an organisation within the field of research, management, consulting or business. While doing so, selected, topics of the curriculum are deepened both in terms of contents and methods. Students demonstrate their topical knowledge about the selected research problem, but also show their abilities to present it in a convincing manner. Students are requested to give reasons for and to defend positions and to deal with feedback and critics.</p> <p>Students use a template and pre-tested methods provided in mandatory modules to analyse their specifics of the involved organisation, such as explicit or implicit agreements, work flows, learning culture, strategies, etc.</p> <p>Conclusions concerning further working steps should be derived. The research results and results of the inquiry of the organisation are presented in a final report. The report should show that details and interrelationships are elaborated and understood on a wide base of sources.</p>	
Recommended related elective modules		
Competences	Technical competence (20%), Methodological competence (20%), Social competence (20%), Personnel competence (20%), Media competence (20%)	
Literature	<ul style="list-style-type: none"> • Ibisch, P.L. & P.R. Hobson (eds.) 2014. The MARISCO method: Adaptive Management of vulnerability and Risk at Conservation sites. A guidebook for risk-robust, adaptive, and ecosystem-based conservation of biodiversity. Centre for Economics and Ecosystem Management, Eberswalde. • MK Linnenluecke, A Griffiths 2010. Corporate sustainability and organizational culture. Journal of world business, Elsevier • Punch, K.F. 2005. Introduction to Social Research—Quantitative & Qualitative Approaches. London: Sage 	

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Internet Based Research Colloquium	M.01.0152
Semester	3	
Module coordinator	Prof. Dr. Martin Welp	Martin.Welp@hnee.de
Status	Mandatory	
Goal	Students are able to discuss and present current research topics, accompanying the research projects of the third semester students.	
Examination form	Term paper	
ECTS-Credits	6	
SWH	2	
Module component	Internet Based Research Colloquium	K.01.0185
Coordinator	Prof. Dr. Martin Welp	
Lecturer	Prof. Dr. Martin Welp	
ECTS-Credits	6	
SWH	2	workload: 180h / semester
Max. study places		
Teaching form	Seminar (30h), self-study (150h)	Module type
Language	English	<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked
Examination form	Term paper	
Entry requirements		
Goal	Students are able to discuss and present current research topics, accompanying the research projects of the third semester students.	
Content	<p>The course provides an online- platform for the presentation and discussion of the diverse research projects selected by the third semester students. At the beginning of the module, each student will present her/his pretended research project to the semester and module instructor by posting an exposé (one page, not more than 800 words) on the online-platform. The exposé will be discussed and scientifically analyzed by the students and module instructor, who will furthermore moderate the e-discussion. Questions and problems occurring during the research project will be discussed. By the end of the project, a scientific project report (written as a scientific paper, max. 5-8 pages) will be posted on the platform (as a pdf-document)</p>	
Recommended related elective modules		
Competences	Technical competence (20%), Methodological competence (30%), Personnel competence (30%), Media competence (30%)	
Literature	-	

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Master thesis colloquium - Implementation of change management	M.01.0153
Semester	4	
Module coordinator	Prof. Dr. Martin Welp	Martin.Welp@hnee.de
Status	Mandatory	
Goal	Students acquire further skills in interdisciplinary scientific work. They are able to evaluate research projects and to communicate results to expert and lay audience.	
Examination form	Project presentation	
ECTS-Credits	4	
SWH	2	
Module component	Master thesis colloquium - Implementation of change management	K.01.0186
Coordinator	Prof. Dr. Martin Welp	
Lecturer	Prof. Dr. Martin Welp, Christoph Nowicki et al.	
ECTS-Credits	4	
SWH	2	workload: 120h / semester
Max. study places		
Teaching form	Seminar (30h), self-study (90h)	Module type
Language	English	<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked
Examination form	Project presentation	
Entry requirements		
Goal	Students acquire further skills in interdisciplinary scientific work. They are able to evaluate research projects and to communicate results to expert and lay audience.	
Content	<p>The course provides a platform for academic seminar-style discussion of the diverse master thesis research projects conducted by the fourth semester students. Each student will present her/his masters project by giving a 20 minute presentation. Students give reflections on theoretical/conceptual frameworks, research design and methods and relation to the state-of-the-art research in the respective field of research. The presentation will be discussed and scientifically debated by a predefined opponent (fellow students) and thereafter by the whole semester and the module instructor. Questions and problems occurring during the research project will be discussed.</p>	
Recommended related elective modules		
Competences	Technical competence (40%), Methodological competence (20%), Social competence (20%), Personnel competence (20%)	
Literature	-	

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Master thesis & defence - Implementation of change management	M.01.0153
Semester	4	
Module coordinator	Prof. Dr. Martin Welp	Martin.Welp@hnee.de
Status	Mandatory	
Goal	Students obtain own research results while solving and discussing a scientific problem. Students present the research results of their master thesis and are able to defend its underlying assumptions, methodologies, and robustness of the key findings.	
Examination form	Project report (70%), Project presentation (30%)	
ECTS-Credits	26	
SWH	20	
Module component	Master thesis & defence	K.01.0186
Coordinator	Prof. Dr. Martin Welp	
Lecturer	Prof. Dr. Martin Welp, Christoph Nowicki, et al.	
ECTS-Credits	26	
SWH	20	
Max. study places		
Teaching form	Project	Module type
Language	English / German (tbd)	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input type="checkbox"/> blocked
Examination form	Project report (70%), project presentation (30%)	
Entry requirements		
Goal	Students obtain own research results while solving and discussing a scientific problem. Students present the research results of their master thesis and are able to defend its underlying assumptions, methodologies, and robustness of the key findings.	
Content	<p>The students conduct a scientific analysis and report on a specific topic related to the study programme's content. The topic of the scientific analysis relates broadly to contents of GCM, and can range from natural scientific to social scientific research questions and apply various quantitative and qualitative research methods. Students show their ability to apply recent scientific results and to derive new consolidated findings on the basis of their topical and methodological knowledge. Main parts of the thesis are the motivation and practical definition of the topic, the formulation of research targets and questions, the annotated representation of the state-of-the-art including prevailing theories, as well as the own contribution for reaching the assumed targets. The social and political relevance of the research topic should be pronounced. For this reason cooperation with companies, NGOs and public administrative bodies is encouraged and supported. Students are furthermore encouraged to conduct projects with an inter- or transdisciplinary research approach.</p> <p>In a public master thesis defence, students present their individual research results as academic personalities. The disputation takes 45 minutes and consists of a 20 minutes presentation targeted at an academic audience, covering the scientific, social and political relevance of the research questions, selected theoretical and conceptual frameworks, research design and methods, results and a critical reflection of the results and the research process. In the following discussion (25min), questions concerning the thesis as well as its social/political and methodological context will be asked, showing also the systemic comprehension of the analysis.</p>	
Recommended related elective modules		
Competences	Technical competence (30%), Methodological competence (30%), Social competence (10%), Personnel competence (30%)	
Literature	-	

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Carbon sequestration and accounting	M.01.0140
Semester	1	
Module coordinator	Prof. Dr. Martin Guericke	Martin.Guericke@hnee.de
Status	Elective	
Goal	Students understand the carbon cycle with special reference to forests, soils and forest products. They are qualified to develop and critically reflect forest growth scenarios and have acquired basic knowledge of the purpose and the implementation of life cycle analysis (LCA), product carbon footprints (PCF) and corporate carbon footprints (CCF).	
Examination form	Work report	
ECTS-Credits	6	
SWH	4	
Module component	Carbon Sequestration and accounting	K.01.0174.V.PL
Coordinator	Prof. Dr. Martin Guericke	
Lecturer	Prof. Dr. Martin Guericke, Prof. Dr. Tobias Cremer, Prof. Dr. Winfried Riek	
ECTS-Credits	6	
SWH	4	workload: 180h / semester
Max. study places	25	
Teaching form	Lecture (30h), Project (30h), self-study (120h)	Module type
Language	English	<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked
Examination form	Work report	
Entry requirements		
Goal	Students understand the carbon cycle with special reference to forests, soils and forest products. They are qualified to develop and critically reflect forest growth scenarios and have acquired basic knowledge of the purpose and the implementation of life cycle analysis (LCA), product carbon footprints (PCF) and corporate carbon footprints (CCF).	
Content	<p>The interactions among vegetation, climate, soil organisms and soil properties as main factors influencing soil carbon storage will be explained. In terms of carbon sequestration the current EU-wide programs for observing and monitoring the element budget in forest ecosystems are presented. An overview of global threats to soils in particular by loss of humus and measures for soil protection will be given.</p> <p>Secondly rules for the development of LCA (life cycle analysis), layout, structure and boundaries of LCA; PCF (product carbon footprints) and CCF (corporate carbon footprints) will be presented. Basic knowledge of the purpose and the implementation of life cycle analysis (LCA), product carbon footprints (PCF) and corporate carbon footprints (CCF) will be given. Moreover it will be discussed which data are needed to develop a LCA, how such data are collected and how the calculation is done. In this context important tools and software for the calculation of LCA will be explained.</p> <p>Forest yield and growth is modelled according to common, traditional approaches as well as to new tools like statistical computer growth models (BWinPro).. In this context current trends and available tools in forest growth modelling are presented. Students carry out self-selected and self-defined case studies focused on carbon sequestration. Additionally the participants learn about the problems and challenges to include the dynamic change of management strategies, effects of climate change and the general change of site conditions in growth modeling and to evaluate the results of growth scenarios.</p>	
Recommended related elective modules		

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Competences	Technical competence (50%), Methodological competence (20%), Social competence (10%), Personnel competence (20%)
Literature	<ul style="list-style-type: none">• V. Gadow, K., Pukkala, T. A., Tome, M., 2000. Sustainable Forest Management. Kluwer Academic Publishers.• Jandl, R., Rodeghiero, M., Olsson, M. 2011. Soil carbon in Sensitive European Ecosystems: From Science to Land Management, John Wiley & Sons. Ltd.• Olsthoorn et al. 1999. Management of mixed-species forest: silviculture and economics. IBN Scientific Contributions 15, Wageningen.• Pommerening, A. a. Murphy, S.T., 2004. A review of the history, definitions and methods of continuous cover forestry with special attention to afforestation and restocking. Forestry, Vol. 77, No. 1, 27-44.• Vanclay, J.K., 1994. Modelling Forest Growth and Yield. Applications to Mixed Tropical Forests. Cab International. ISBN: 0 85198 913 6.

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Ecosystem models and concepts under global change	M.01.0129
Semester	1	
Module coordinator	Prof. Dr. Jan-Peter Mund	Jan-Peter.Mund@hnee.de
Status	Elective	
Goal	Students know the practical application areas of monitoring global phenomena using remote sensing products and spatial data repositories and are able to evaluate and implement such data and information in the context of global change. Remote sensing products are applied for exemplary cases in ecosystem modeling. Students are enabled to develop and apply basic ecosystem models.	
Examination form	Project report (50%), Technical discussion 20 min (50%)	
ECTS-Credits	6	
SWH	4	
Module component	Monitoring of Global Phenomena (GIS & RS)	K.01.0163.V.PL
Coordinator	Prof. Dr. Jan-Peter Mund	
Lecturer	Prof. Dr. Jan-Peter Mund	
ECTS-Credits	3	
SWH	2	workload: 90h / semester
Max. study places	25	
Teaching form	Lecture (8h), Seminar (22h), self-study (60h)	Module type
Language	English	<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked
Examination form	Project report (50%)	
Entry requirements		
Goal	Students are able to select main fields and apply possible practical application of remote sensing techniques with a landscape ecological approach.	
Content	This module offers an introduction to selected monitoring methods of global phenomena and recent trends in earth observation of the environment. The module focuses on standardized remote sensing products and sensor networks for earth observation Global monitoring and standardized earth observation products will be discussed and students will critically evaluate existing NASA and ESA–GMES sentinel products and discuss recent trends and challenges in multi-temporal earth observation especially land cover land-use topics. In addition students will learn about typical earth observation services like Marine services, Soil and Water services; Crop monitoring, Atmosphere services or Emergency response and Security services.	
Recommended related elective modules	Elective module (as specialisation module) from FIT-Curriculum: “Advanced remote sensing and forest change detection” or “Remote sensing for environmental monitoring”	
Competences	Technical competence (50%), Methodological competence (40%), Personnel competence (10%)	
Literature	<ul style="list-style-type: none"> Aschbacher; J & Pilar Milagro-Pérez; M. 2012. The European Earth monitoring (GMES) programme: Status and perspectives. In: Remote Sensing of Environment 120 (2012) 3–8. Donlon, C. et al 2012. The Global Monitoring for Environment and Security (GMES) Sentinel-3 mission. In: Remote Sensing of Environment 120 (2012) 37– 57. Elsharkawy, A., et al. 2012. Improvement in the Detection of Land Cover Classes Using the Worldview-2 Imagery ASPRS Sacramento, CA. Jensen 2006. Remote Sensing of the Environment: An Earth Resource Perspective (2nd Edition) Jones & Vaughan 2010. Remote Sensing of Vegetation: Principles, Techniques, and Applications Wulder, M.A., S.E. Franklin 2003. Remote Sensing of Forest Environments. Kluwer Academic Publishers. 	

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module component	Ecosystem modelling	K.01.0388
Coordinator	Prof. Dr. Alfred Schultz	
Lecturer	Prof. Dr. Alfred Schultz, Oskar Dietterle	
ECTS-Credits	3	
SWH	2	workload: 90h / semester
Max. study places	25	
Teaching form	Lecture (15h), Practical Exercise (7h), Seminar (8h), self-study (60h)	Module type
Language	English	<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked
Examination form	Technical discussion 20 min (50%)	
Entry requirements		
Goal	Students have a principal understanding of notion and approach of ecosystem modelling and have basic practical skills to plan, develop and apply models of ecosystem related target areas.	
Content	The course gives an overview of and refreshes fundamental, frequently used mathematical methods in ecosystem modelling including vectors and matrices (matrix operations, determinants, eigenvalues and eigenvectors) as well as infinitesimal calculus (differential calculus, difference and differential equations, ordinary differential equations, numerical solvers). The notion of ecological compartment and the compartment approach are especially introduced considering forest insect models and models for carbon and biomass. The use of ecosystem models in information and management systems is demonstrated and discussed. The methods are trained and practiced with examples of population and growth modelling (Leslie matrices, growth kinetics and curves, habitat models).	
Recommended related elective modules		
Competences	Technical competence (50%), Methodological competence (30%), Personnel competence (10%), Media competence (10%)	
Literature	<ul style="list-style-type: none"> • Imboden, D. & S. Koch 2003. Systemanalyse. Einführung in die mathematische Modellierung natürlicher Systeme. Springer. • Jörgensen, S.E. & G. Bendoricchio 2001. Fundamentals of Ecological Modelling. Elsevier. • Seppelt, R. 2003. Computer-based Environmental Management. Wiley-VCH. 	

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Specialisation module I	M.01.0039
Semester	1	
Module coordinator	Prof. Dr. Martin Welp	Martin.Welp@hnee.de
Status	Elective	
Goal	Students deepen their professional knowledge and skills in a specific area, that is of special interest for them. Students can identify their personal interests in the field of studies and expand their horizon to approaches in related study programmes.	
Examination form		
ECTS-Credits	6	
SWH	4	
Module component	Specialisation module I	K. 01.0039
Coordinator	NN	
Lecturer	NN	
ECTS-Credits	6	
SWH	4	workload: 180h / semester
Max. study places		
Teaching form		Module type
Language		<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked

Examination form

Entry requirements		
Goal	Students deepen their professional knowledge and skills in an specific area, that is of special interest for them. Students can identify their personal interests in the field of studies and expand their horizon to approaches in related study programmes.	
Content	The content of the module differs and depends on the individual choice. Chosen can be case by case between: Modules, which are offered additionally once or repeated from tutors of the faculty of forest and environment after a separate announcement from the head of the study programme Modules, which are offered in other faculty of the university of applied science Eberswalde and accessible for students from the faculty of forest and environment Modules, which are offered from other universities and accessible for students from the faculty of forest and environment It is possible to choose modules in the language of German as well as other languages.	
Recommended related elective modules		
Competences		
Literature		

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Global change - research and scientific outreach	M.01.0102
Semester	1&2	
Module coordinator	Prof. Dr. Martin Welp	Martin.Welp@hnee.de
Status	Elective	
Goal	Students are enabled to apply interdisciplinary approaches in global change research and to communicate results effectively to both academic and non-academic audiences.	
Examination form	Term paper, Oral report	
ECTS-Credits	6	
SWH	4	
Module component	Scientific Writing and Presenting	K.01.0132.Ü.PL
Semester	1	
Coordinator	Prof. Dr. Martin Welp	
Lecturer	Prof. Dr. Martin Welp, Prof. Dr. Alfred Schultz	
ECTS-Credits	3	
SWH	2	workload: 90h / semester
Max. study places	25	
Teaching form	Lecture (10h), Practical Exercise (10h), Seminar (10h), self-study (60h)	Module type
Language	English	<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked
Examination form	Term paper (25%), Oral report (25%)	
Entry requirements		
Goal	Students are enabled to apply the fundamentals of effective scientific writing, visualisation of scientific results as well as oral presenting.	
Content	<p>This course imparts the fundamentals of scientific information and communication of scientific information and especially handles the differences between oral presentations and written texts. The course is given in two segments: 1. students learn how to prepare an oral presentation including substance and structure of text components, design and creation of illustrations, use of visual media; 2. students learn to prepare an actual scientific manuscript including adjustment of text to target group, pre- and post-processing of data/illustrations, terminology and language of text, layout, rules for submitting, dealing with reviewer comments. Students taking the module will complete some short writing and editing exercises and will additionally develop an oral presentation/manuscript of their individual choice.</p>	
Recommended related elective modules		
Competences	Technical competence (25%), Methodological competence (25%), Personnel competence (25%), Media competence (25%)	
Literature	<ul style="list-style-type: none"> • Alley, M. 1996. The Craft of Scientific Writing. Springer. • Forsyth, P. 2006. How to Write Reports and Proposals. Kogan Page. • Munter, M. & L. Russell 2007. Guide to Presentations. Prentice Hall. 	
Module component	Global Change - concepts, modelling, and impacts	K.01.0177.V.PL
Semester	2	
Coordinator	Prof. Dr. Manfred Stock	
Lecturer	Prof. Dr. Manfred Stock (PIK)	

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

ECTS-Credits	3	
SWH	2	workload: 90h / semester
Max. study places		
Teaching form	Lecture (20h), Practical Exercise (5h), Seminar (5h), self-study (60h)	Module type
Language	English	<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked
Examination form	Oral report (50%)	
Entry requirements		
Goal	Students are able to apply interdisciplinary approaches and methods in climate change impact research and acquire skills essential for global change modelling and its interpretation.	
Content	Climate impact research combines a number of scientific disciplines from natural as well as from economic and social sciences. Integrating methods are developed and used in addition to the various disciplinary ones. New results are acquired about climate relevant interactions within the Earth system, which includes also the anthroposphere. Progress, potentials and limits of actual climate impact research are presented based on regional and sectoral case studies. In addition, recent approaches and tools of global change modeling as well as problems related to data availability, scenarios and uncertainty are discussed.	
Recommended related elective modules		
Competences	Technical competence (50%), Methodological competence (30%), Personnel competence (10%), Media competence (10%)	
Literature	<ul style="list-style-type: none"> • Field, C.B., et al. 2014. "Climate change 2014: impacts, adaptation, and vulnerability." Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (2014). http://www.ipcc.ch/ • IPCC, 2014. Climate Change 2014: "Mitigation of Climate Change." Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. http://www.ipcc.ch/ • Millennium Assessment Reports, 2005. (http://www.millenniumassessment.org/en/index.aspx) • PIK Reports, Books, and Broshures; (http://www.pikpotsdam.de/research/publications/) • Schröter, D. et al. 2004. Advanced Terrestrial Ecosystem Analysis and Modelling (ATEAM); Final Report. (http://www.pik-potsdam.de/ateam/) • Stocker, T.F. et al. "Climate change 2013: The physical science basis." Intergovernmental Panel on Climate Change, Working Group I Contribution to the IPCC Fifth Assessment Report (AR5)(Cambridge Univ Press, New York) (2013).; http://www.ipcc.ch/ • WBGU REPORTS World in Transition: German Advisory Council on Global Change (WBGU), Berlin, (http://www.wbgu.de/en/home/) 	

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Global change and development	M.01.0000
Semester	2	
Module coordinator	Christoph Nowicki	Christoph.Nowicki@hnee.de
Status	Elective	
Goal	The students apply knowledge on the effects of global change on development cooperation to an exemplary project (GIZ). On the basis of project documents and personal interaction with development practitioners they are enabled to critically analyse project strategies in the context of mitigation of and adaptation to global change.	
Examination form	Project Presentation	
ECTS-Credits	6	
SWH	4	
Module component	Global change and development	K.01.0000
Coordinator	Christoph Nowicki	
Lecturer	Christoph Nowicki, Prof. Dr. Pierre Ibisch	
ECTS-Credits	6	
SWH	4	workload: 180h / semester
Max. study places	16	
Teaching form	Lecture (10h), Seminar (20h), Project (30h), self-study (120h)	Module type
Language	English	<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked
Examination form	Project Presentation	
Entry requirements		
Goal	The students apply knowledge on the effects of global change on development cooperation to an exemplary project (GIZ). On the basis of project documents and personal interaction with development practitioners they are enabled to critically analyse project strategies in the context of mitigation of and adaptation to global change.	
Content	Employees of the German Development Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit - GIZ) report on their experience on the challenges of international cooperation and help establish contacts with global projects of technical cooperation for development, which deal broadly with the promotion of sustainable resource use. After selecting a suitable project, self-chosen questions are formulated regarding the strategies of the project. According to specific criteria, students (two per project) will work on these questions, ideally under (possibly virtual) participation of project staff. Particular attention will be paid regarding possible strategies to integrate aspects of global change. Students prepare a concluding poster (also as application requirement for the later GIZ contest) and a presentation summarizing the issues encountered and own recommendations (poster-presentation). The course is conducted in the context of the contest by the GIZ initiative "Between Lecture Hall and Project work (HuP)". The performance of the students is judged by an independent jury of the GIZ symposium and possibly rewarded at an awards ceremony. The prizes will be internships at GIZ projects. The module grading is unaffected by the competition and will be conducted by the module instructors.	
Recommended related elective modules		
Competences	Technical competence (40%), Social competence (20%), Personnel competence (20%), Media competence (20%)	
Literature	<ul style="list-style-type: none"> Burton, I., & M. van Aalst 2004. Look before you leap: a risk management approach for incorporating climate change adaptation into World Bank operations. Draft. The World Bank, Washington, D.C. (download under: 	

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

(<http://www.climatevarg.org/essd/env/varg.nsf/42ec25f6537f5eff85256dab0048d8e9/b603b3c185bee77485256dab0059aca8?OpenDocument>), here you will find many more relevant papers!)

- Domínguez Salinas, E. 2007. Climate change and development cooperation. (<http://www.fride.org/publication/203/climate-change-and-developmentcooperation>)
- EU Commission to the Council and the European Parliament 2003. Climate change in the context of development cooperation. Communication from the Commission to the Council and the European Parliament - Climate change in the context of development cooperation [COM (2003) 85 final -Official Journal C/2004/76]. (<http://europa.eu/scadplus/leg/en/lvb/r12542.htm>)
- Germanwatch papers on climate change and development (<http://www.germanwatch.org/klima/>) (e.g. Adaptation to climate change in Africa and the European Union's development cooperation; (<http://www.germanwatch.org/klima/euaf07e.htm>))
- Hopkin M. 2007. Climate takes aim. Nature 2007, 446: 706-707.
- UNDP. Reducing Disaster Risk: A Challenge to Development (<http://www.undp.org/bcpr/disred/rdr.htm>)
- USAID 2007. Adapting to climate variability and change: a guidance manual for development planning (http://www.usaid.gov/our_work/environment/climate/docs/reports/cc_vamanual.pdf)

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Natural resource management in transformation countries	M.01.0145
Semester	2	
Module coordinator	Prof. Dr. Pierre Ibisch	Pierre.Ibisch@hnee.de
Status	Elective	
Goal	Students acquire a critical understanding of the challenges for sustainable development in transformation countries and are able to propose strategic elements for addressing challenges identified in a concrete case-study region.	
Examination form	Project report (50%), Project Presentation (50%)	
ECTS-Credits	6	
SWH	4	
Module component	Natural resource management in transformation countries	K.01.0178
Coordinator	Prof. Dr. Pierre Ibisch	
Lecturer	Prof. Dr. Pierre Ibisch, Prof. Dr. Martin Welp	
ECTS-Credits	6	
SWH	4	workload: 180h / semester
Max. study places	10	
Teaching form	Lecture (10h), Seminar (20h), Practical Exercise (30h), self-study (120h)	Module type
Language	English	<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked
Examination form	Project report (50%), Project Presentation (50%)	
Entry requirements		
Goal	Students acquire a critical understanding of the challenges for sustainable development in transformation countries and are able to propose strategic elements for addressing challenges identified in a concrete case-study region.	
Content	Transition countries are countries such as for example the successor states of the former Soviet Union who are in transition (transformation) from the centrally planned economy to a market economy system and are often marked by the fundamental change or replacement of the political regime. The transition countries are sometimes counted among the developing countries. Many former transformation countries today are already part of the OECD or EU countries. The framework and challenges for natural resource protection are influenced by economic and political upheaval, while worsening as well as improving the environmental situation in relation to selected parameters. During the visit of a selected region in a transformation country, students will perform a situation analysis with the use of literature and conducting interviews or small empirical social studies. This analysis includes plausible scenarios of local, regional and global change. Based on this analysis, practical management and development proposals will be developed.	
Recommended related elective modules		
Competences	Technical competence (40%), Methodological competence (30%), Social competence (20%), Personnel competence (10%)	
Literature		

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Advanced Ecosynomics & Global Leadership	M.01.0143
Semester	2	
Module coordinator	Prof. Dr. Martin Welp	Martin.Welp@hnee.de
Status	Elective	
Goal	To enable students to understand the theoretical and methodological fundamentals of ecosynomics and to acquire leadership skills for sustainability transitions.	
Examination form	Project presentation	
ECTS-Credits	6	
SWH	4	
Module component	Advanced Ecosynomics & Global Leadership	K.01.0176
Coordinator	Prof. Dr. Martin Welp	
Lecturer	Prof. Dr. Martin Welp	
ECTS-Credits	6	
SWH	4	workload: 180h / semester
Max. study places	/	
Teaching form	Lecture (20h), Practical Exercise (20h), Seminar (20h), self-study (120h)	Module type
Language	English	<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked

Entry requirements	
Goal	To enable students to understand the theoretical and methodological fundamentals of ecosynomics and to acquire leadership skills for sustainability transitions.
Content	<p>The focus of the module will be on Ecosynomics measurements system and the mathematics of ecosynomics. The empirical foundations of the approach will be analysed in detail.</p> <p>Advanced leadership will focus on how individuals act in various organisations and take leadership roles. The global leadership perspective puts emphasis on cross-cultural aspects of leadership. Exercises and various forms of self-reflection will be conducted as well as case studies analysed to learn about key leadership skills.</p>
Recommended related elective modules	
Competences	Technical competence (50%), Methodological competence (30%), Personnel competence (10%), Media competence (10%)
Literature	<ul style="list-style-type: none"> • Dunham, J.R. Ecosynomics. The science of Abundance • Metcalf, M. (forthcoming). Leadership workbook for Global Leaders

Module catalogue – Global Change Management (M.Sc.)

effective from winter term 2016/17

Module	Specialisation module II	M.01.0051
Semester	2	
Module coordinator	Prof. Dr. Martin Welp	Martin.Welp@hnee.de
Status	Elective	
Goal	Students deepen their professional knowledge and skills in an specific area relevant to global change management. Students identify their specific personal interests in the field of global change management and broaden their technical and scientific horizon.	
Examination form		
ECTS-Credits	6	
SWH	4	
Module component	Specialisation module II	K. 01.0051
Coordinator	NN	
Lecturer	NN	
ECTS-Credits	6	
SWH	4	workload: 180h / semester
Max. study places		
Teaching form		Module type
Language		<input type="checkbox"/> continuous <input type="checkbox"/> partly blocked <input checked="" type="checkbox"/> blocked
Examination form		
Entry requirements		
Goal	Students deepen their professional knowledge and skills in an specific area relevant to global change management. Students identify their specific personal interests in the field of global change management and broaden their technical and scientific horizon.	
Content	The content of the module differs and depends on the individual choice. Chosen can be case by case between: Modules, which are offered additionally once or repeated from tutors of the faculty of forest and environment after a separate announcement from the head of the study programme Modules, which are offered in other faculty of the university of applied science Eberswalde and accessible for students from the faculty of forest and environment Modules, which are offered from other universities and accessible for students from the faculty of forest and environment It is possible to choose modules in the language of German as well as other languages.	
Recommended related elective modules		
Competences		
Literature		