

Module Name	Module Code
Ecological Indicators	AEF-EM022
Module Coordinator	
Dr. rer. nat. Felix Müller	
Organizer	
Institute for Natural Resource Conservation - Ecosystem Management	
Faculty	
Faculty of Agricultural and Nutritional Sciences	
Examination Office	
Faculty of Agricultural and Nutritional Sciences - Examination Office	

ECTS Credits	6
Evaluation	Graded
Duration	one semester
Frequency	Only takes place during summer semesters
Workload per ECTS Credit	30 hours
Total Workload	180 hours
Contact Time	60 hours
Independent Study	120 hours
Teaching Language	English

Recommended Requirements			
Basic knowledge in ecological processes and structures			
Module Courses			
Course Type	Course Name	Compulsory/Optional	SWS
Lecture	Development and Application of Ecological Indicators	Compulsory	2
Seminar	Development and Application of Ecological Indicators	Compulsory	2
Prerequisites for Admission to the Examination(s)			
.			

Examination(s)				
Examination Name	Type of Examination	Evaluation	Compulsory / Optional	Weighting
Protocol: Ecological Indicators	Protocol	Graded	Compulsory	100
Further Information on the Examination(s)				
<u>Will take place for the last time in summer semester 2019.1.+2. period in summersemester.</u>				
1. period in wintersemester				
examiner: Prof. Dr. Müller				
QIS: 75600 with number of Examination 75610				

Course Content
<p>The first part of the course is related to the elaboration of theoretical framework conditions and to learning indicator methodologies. In a second phase different indicator sets are presented by the students and discussed, and in a final period students are developing new indicator systems and methods referring to relevant environmental problems.</p> <p>Due to the modified time table in this semester the three elements will be temporally mixed, and the focus will be put on practical works. For this purpose around 7 student projects will be elaborated. The students will work on these projects throughout the whole semester, produce a presentation and write a scientific paper about the results.</p> <p>The following topics for the projects are proposed:</p> <ul style="list-style-type: none"> - An analysis of the state-of-the-art in ecological indication – a literature review in the journal “Ecological Indicators” - Indicating ecological integrity - Indicating ecosystem services # potentials of quantification - Producing an indicator map on ecosystem services (Region I.) - Producing an indicator map on ecosystem services (Region II.) - International comparison of national sustainability indicators - Indicating development on different scales and in different contexts - Worldwide indicator applications concerning the interactions of environmental and socio-economic features (Happy Planet index,...) - Comparing footprint calculations and emergy analyses - Creating a management schedule to indicate Drivers, Pressures, States, Impacts and Responses within the DPSIR framework - Reviewing indicators of landscape quality - Indicating resilience (e.g. of urban systems)
Learning Outcome
<p>Indicators are focal tools of environmental management on several spatial, temporal and administrative levels. To get prepared for the usage of these instruments theoretical and applied items of indication in a human-environmental surrounding are elaborated in the course. The fundamental conceptual knowledge i.e. referring to the requirements for good indicator sets is applied in several case studies, and in the end the participants develop an own index on the base of international data sets. Hence, the students will be prepared for creating and applying indicator sets and for bundling information in order to support decision making processes in their future field of work.</p>

Reading List

Commission on Geosciences, Environment and Resources - CGER - (2000): Ecological Indicators for the Nation. National Academy Press, Washington DC

Jackson, L., J. Kurtz and W. Fisher (eds. 2000): Evaluation Guidelines for Ecological Indicators, U.S. Environmental Protection Agency, Office of Research and Development, Research Triangle Park, NC

Joergensen, S.E., R. Costanza and Xu, Fu-Liu (eds., 2005): Handbook of Ecological Indicators for Assessment of Ecosystem Health. CRC Press, Boca Raton

Wiggering, H. & F. Müller (eds.) (2003): Umweltziele und Indikatoren. Springer - Verlag, Berlin, Heidelberg, New York.

Wong, C. (2006): Indicators for Urban and Regional Planning: The interplay of policy and methods. Routledge Taylor & Francis Group, London, New York

Additional Information

Will take place for the last time in summer semester 2019.1.+2. period in summersemester.

Prof. Dr. rer. nat. Felix Müller

Fon:+49 431 880-3251

Fax:+49 431 880-4083

E-Mail: fmueLLer@ecology.uni-kiel.de

<http://www.ecosystem-management.uni-kiel.de/mitarbeiter/fmueller>

Use	Compulsory / Optional	Semester
Master, 1-Subject, Agricultural Sciences, Specialisation Agricultural Economics, (Version 2017)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Agricultural Economics, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Agribusiness, (Version 2017)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Agribusiness, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Crop Sciences, (Version 2017)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Crop Sciences, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Animal Sciences, (Version 2017)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Animal Sciences, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Environmental Sciences, (Version 2017)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Environmental Sciences, (Version 2013)	Optional	-
Master, 1-Subject, Applied Ecology, (Version 2016)	Optional	-
Master, 1-Subject, Applied Ecology, (Version 2015)	Optional	-
Master, 1-Subject, Applied Ecology, (Version 2010)	Optional	-
Master, 1-Subject, Dairy Science, (Version 2017)	Optional	-
Master, 1-Subject, Environmental and Resource Economics, (Version 2014)	Optional	-
Master, 1-Subject, Environmental Management, (Version 2017)	Optional	-
Master, 1-Subject, Environmental Management, (Version 2013)	Optional	-
Master, 1-Subject, Environmental Management - Management of Natural Resources, (Version 2010)	Optional	-
Master, 1-Subject, Nutritional and Food Science, (Version 2013)	Optional	-
Master, 1-Subject, Nutritional and Consumer Economics, (Version 2017)	Optional	-
Master, 1-Subject, Nutritional and Consumer Economics, (Version 2013)	Optional	-
Master, 1-Subject, Sustainability, Society and the Environment, (Version 2013)	Optional	-