

Ecosystem Dynamics and Global Change

Master – Summer Term (Sommersemester)

The course will be given in English

Modul MSc4: Ecosystem Dynamics and Global Change (Pflicht)			Study Points (SP): 10
<p>Students attained profound knowledge base of theory and concepts related to ecosystem ecology, and a deep understanding of complex human-environment systems. Students know and have practiced methods and tools to analyze and model the feedbacks between biotic and abiotic components of such systems, and to explore the spatiotemporal dynamics, stability, and resilience of human-environment systems with a focus on ecological processes. Moreover, students attained a methodological basis to quantify and assess ecosystem services, to analyze trade-offs and synergies between in human-environment systems across scales. Course participants have deepened their skills in critically evaluating, summarizing, and discussing primary research literature.</p>			
Prerequisites: none			
Type	SWS	Workload (SP)	Topics
SE (Seminar)	2	<u>120 hours (4 SP)</u> 25 hours in the classroom, 95 hours preparation, exercises and readings	Topics include <ul style="list-style-type: none"> - Foundations of ecosystem ecology: abiotic and biotic components of ecosystems, ecosystem functioning, energy, water, and nutrient cycling, trophic dynamics - Spatial and temporal dynamics in ecosystems across scales - Non-linearity, thresholds and tipping points, resilience in human-environment systems - Ecosystem services (concepts, quantification, evaluation) - Trade-offs and synergies - Ecosystem management (conservation planning, landscape design, restoration ecology, prioritization and optimization)
SE (Computer Seminar)	2	<u>120 hours (4 SP)</u> 25 hours in the classroom, 95 hours preparation, exercises and readings	Training in and application of analytical, computer-based tools to, e.g.,: <ul style="list-style-type: none"> - Analyze and model spatiotemporal dynamics in coupled human-natural systems (e.g., habitat models, population models, nutrient cycling, vegetation modelling) - Quantifying, mapping, and assessing ecosystem services - Optimization and prioritization to analyze synergies and trade-offs between multiple goals - Scenarios and model uncertainty Teaching will primarily carried out via project- and problem-oriented learning in small groups.
Final exam		<u>60 Stunden (2 SP)</u>	The final examination (written exam of 90mins OR oral exam of 30min OR report of about 10 pages) will be based on the content of the seminar.
Duration	<input type="checkbox"/> 1 term <input checked="" type="checkbox"/> 2 term		
Start	<input type="checkbox"/> Wintersemester <input checked="" type="checkbox"/> Sommersemester		