Module Name	1.8 Identifying Chemical Key Processes in Ecosystems
Identification code	AEF285, EM1.8, AE-CAU403 **(QIS-registration for examination) 72300**
Subtitle	
Courses embedded	
Term	Winter
Coordinator	Dr. C. Schimming
Teachers	Dr. C.Schimming
Tuition language	English
Programme involvement	Elective MSc Environmental Management Elective MSc European Master in Applied Ecology
Teaching form, contact time per week class size	Lecture: 30h/90h Practice: 30h/90h 25
Workload overall Contact time	180 60
ECTS credit points	6
Preconditions prescribed	
Prerequisites recommended	
Learning outcomes	Deeper understanding of interactions of processes, the ecosystem and biogeochemical cycles in view of application of sustainable land management and environmental political measures of special concern. Examination of human activities like agriculture, mining and urbanindustrial fields.
Content	Analysis of spatial and temporal structures as well as boundary conditions of the ecosystem. Study of transfers and important paths of elements relevant for the ecosystem and environment. Examination of the chemical character of the atmosphere, the water systems and the oceans in the context of anthropogenic climate and other biospherical changes. The compilation of data from environmental monitoring and models allow the study of the key processes relevant for environmental changes; critical value concepts in environmental protection, landscape management and critical load concepts in environmental politics
Assessment	Written exam 100%
Teaching media	Presentations & discussions
References	- Fränzle O. (1993): Contaminants in Terrestrial Environment. Springer, Berlin. - Reible D.D. (1999): Fundamentals of environmental engineering. Springer, Boca Raton. - Schimming C.-G., Schrautzer J., Reiche E.W. , Munch J.-C. (2001): Nitrogen Retention and Loss from Ecosystems of the Bornhöved Lake District. In: Tenhunen J., Lenz R. & Hantschel, R.: Ecosystem approaches to landscape management in Central Europe. Ecological studies 147. - Schlesinger, W.H. (1997): Biogeochemistry. An Analysis of Global Change. Academic Press, San Diego. - Schnoor, J.L. (1996): Environmental Modelling – Fate and transport of pollutants in water, air and soil. John Wiley & Sons, New York. - Schnoor, J.L. (1984): Modelling of total acid deposition impacts. Butterworth, Boston. - Sparks D.L., Suarez D.L. (Eds.) (1991): Rates of Soil Chemical Processes. SSSA Special Publication No. 27. Soil Science of America, Inc. Madison, Wisc. - Stumm W. (1992): Chemistry of the Solid-Water-Interface. Processes at the Mineral-Water and Particle-Water Interface in Natural Systems. Wiley, New York - Stumm W., Morgan J.J. (1996): Aquatic chemistry. Chemical equilibria and rates in natural waters. Wiley, New York. - UNECE (2003): International Cooperative Programme on Modelling and Mapping of Critical Loads & Levels and Air

	Pollution Effects, Risks and Trends. Manual on Methodologies and Criteria for Mapping Critical Levels/Loads and geographical Areas where they are exceeded. Oekodata, Straussberg - Wainwright J., Mulligan M. (2004): Environmental Modelling. John Wiley and Sons, Chichester. - Warfvinge P., Sverdrup H. (1995): Critical Loads of Acidity to Swedish Forest Soils. Reports in ecology and environmental engineering. Report 5:1995
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