Environmental Sciences: Specialisation in Environmental Monitoring and Pollution Assessment (M.Sc., Master Degree Programme)

Study plan | Start in winter term

Version: 20.10.2022

Note: The following overview offers a non-binding overview of the structure and composition of the modules. The legally binding criteria is available in the examination regulations.

Module code	*Module title (Compulsory/Elective)*	*Sem.*	*CP*	*Type*	*hours*	*Course title*	*Assessment*	*Module Convenor*	*Comment/ Language*
1. Semester (Wi)									
MA6ES001	Environmental System Analysis (P)	Wi	5	V+S	2	Environmental Systems Analysis		Bierl, Schütz	English
				Ü	2	Environmental Systems Modelling			
							Exam (120 min.)		
MA6ES002	Multivariate Statistics (P)	Wi	5	V	2	Multivariate Statistics		Udelhoven	English
				S	2	Multivariate Statistics			
							Exam (120 min.)		
	Optional Modules I (WP)	Wi	20	*A total of 20 CP from the Optional Modules I are to be chosen.*					

2. Semester (Su)									
■ MA6ES010	Environmental Chemistry and Risk Assessment (P)	Su	5	V	2	Environmental Fate and Reactions of Pollutants		Fischer	English
				S	2	Environmental Risk Assessment			
				LAB	2	Laboratory research course			
				Exam (90 min.)					
■ MA6ES012	Aquatic Pollution Assessment (P)	Su	5	V+S	2	Aquatic ecology and impact of pollution		Bierl, Schütz	English
				LAB +GK	2	Case studies in river catchments			
				Term paper					
■ MA6ES011	Environmental Analytical Chemistry (P)	Su	5	V+Ü	2	Environmental Monitoring and Trace Analysis		Bierl, Thiele-Bruhn	English
				LAB	4	Instrumental Analytical Techniques			
				Oral exam (30 min.)					
■ MA6ES019	Regional Biomonitoring Project (P)	Su	5	S	1	Research concept and data analysis		Werner	English
				GK +LAB	3	Field and Laboratory Course			
				Term paper					
■	Optional Modules II (WP)	Su	10	*A total of 10 CP from the Optional Modules II are to be chosen.*					

3. Semester (Wi)									
■ **MA6ES014**	Ecotoxicological Effects of Environmental Pollutants (P)	Wi	5	V	2	Principles of Molecular Environmental Toxicology		Thiele-Bruhn, Blömeke	English
				V	1	Toxicant Effects in the Environment			
				LAB	1	Experiments on selected Endpoints			
				Presentation (15 min.)					
■ **MA6ES003**	Research Project (P)	Wi	10	S	1	Advanced Aspects in Environmental Sciences		Thiele-Bruhn	English
				Ü	3	Research methods in Environmental Sciences			
				Term paper *and* presentation					
■	Optional Modules III (WP)	Wi	15	*A total of 15 CP from the Optional Modules III are to be chosen.*					
4. Semester (So)									
■ **MA6ES004**	Master's Thesis (P)	Su	30	KOL	2	Master colloquium			
						Master's Thesis			
				Master's Thesis					

Optional Modules I (20 CP to be chosen)									
■ MA6ES006	Fundamentals of Environmental Remote Sensing (WP)	Wi	5	V	2	Fundamentals of Environmental Remote Sensing		Udelhoven, Röder	English
				Ü	2	Fundamentals of Environmental Remote Sensing			
				Exam (60 min)					
■ MA6ES007	Atmospheric Boundary Layer (WP)	Wi	5	V	2	Atmospheric Boundary Layer		Heinemann Drüe	English
				Ü	2	Atmospheric Boundary Layer			
				Exam (120 min.)					
■ MA6ES008	Geological Hazards, Risk Assessment and Management (WP)	Wi	5	V	2	Lecture		Wagner	English
				S	1	Seminar			
				Ü	1	Exercise			
				Exam (90 min.) *or* portfolio examination.					
■ MA6ES009	Advanced Aspects of Environmental Soil Science (WP)	Wi	5	V	2	Environmental Soil Science		Thiele-Bruhn, Schneider	English
				Ü	2	Advanced Methods in Soil Science			
				Oral exam (30 min.)					
■ MA6E013	Introduction to Geoinformatics (WP)	Wi	5	Ü	2	Introduction to Geoinformatics		Udelhoven, Röder	English
				Ü	1	E-Learning Introduction to Geoinformatics			
				Exam (60 min.)					

Optional Modules II (10 CP to be chosen)									
■ MA6ES028	Soil Biology and Soil Functioning (WP)	Su	5	V	2	Biology and Ecology of Soil Organisms		Emmerling	English
				Ü	2	Field and Laboratory Course in Soil Biology			
							Term paper		
■ MA6ES029	Interdisciplinary Excursion or Field Project (WP)	Su	5	S	2	Seminar		Werner	English
				EX	5,5	10-day-Field-Trip			
							Term paper		
■ MA6ES025	Polluted Site Remediation (WP)	Su	5	V	2	Lecture		Wagner	English
				S	1	Seminar			
				GK	1	Field course			
							Exam (90 min.) *or* portfolio examination		
■ MA6ES031	Vegetation Ecology (WP)	Su	5	S	1	Research concept and data analysis		Werner	English
				GK +LAB	3	Field and Laboratory Course			
							Term paper		
■ MA6ES036	Global Climate Change and Energy Resources (WP)	Su	5	V	2	Global Climate Change		Bruns	English
				V	2	Energy Resources and renewable Energy			
							Term paper		
■ MA6ES016	Advanced RS Data Processing and Analysis (WP)	Su	5	Ü	3	Practical course		Udelhoven, Röder	English
				GK	1	Field course			
							Term paper		
■ MA6ES030	Physical Monitoring of Litho- and Hydrosphere (WP)	Su	5	V	1	Lectures on basics and introductions		Urrea	English
				Ü	2	Geophysical systems, data processing and presentation			
				S	2	Tutorial-based seminar on selected topics			
							Exam (90 min.)		

■ MA6ES022	Landsurface Atmosphere Interactions (WP)	Su	5	V	2	Introduction to Land-Surface-Atmosphere-Interactions		Drüe, Thomas	English
				Ü	4	Micro-meteorological and ecophysiological measurements			
							Presentation (30 min.)		
■ MA6ES032	Sustainable Chemistry (WP)	Su	5	V	2	Principles of Sustainable Chemistry		Fischer	English
				Ü	1	Chemical Exploitation of Renewable Resources			
				LAB	2	Laboratory Exercises			
							Term paper		
■ MA6ES018	Ecosystem Remote Sensing and Modelling Concepts (WP)	Su+ Wi	5	Ü	2	Ecosystem Remote Sensing and Modelling Concepts		Udelhoven, Röder	English
				EX	2	Field Course			
							Term paper		
■ MA6ES021	Monitoring and Remote Sensing in Meteorology (WP)	Su	5	V	2	Systems and Algorithms		Drüe, Willmes	English
				Ü	2	Practical Applications			
							Term paper		

Optional Modules III (15 CP to be chosen)									
■ MA6ES033	Geostatistics (WP)	Wi	5	V	2	Geostatistics		Udelhoven	English
				Ü	2	Geostatistics			
				Portfolio examination					
■ MA6ES027	Soil Use and Sustainable Management (WP)	Wi	5	V	2	Soil Use in Agriculture		Emmerling, Schüler	English
				S	1	Forest Site Assessment			
				S	1	Waste Management			
				Exam (90 min.)					
■ MA6ES005	Environmental Monitoring Strategies (WP)	Wi	5	V+S	2	Monitoring in ecological research		Bierl	English
				S	2	Advanced environmental monitoring			
				Oral exam (20 min.)					
■ MA6ES045	Fluvial Hydrology (WP)	Wi	5	V+S	2	Particulate Transport in River Catchments		Bierl	English
				S	2	Water Quality Modelling			
				Oral exam (20 min.)					
■ MA6ES035	Paleoclimate and Paleoenvironmental Changes (WP)	Wi	5	V	1	Geological time scales, age determinations, climate archives		Klaes	English
				Ü	2	Climate archives, data processing and presentation			
				S	2	Seminar			
				Exam (90 min.)					
■ MA6ES041	Socio Hydrology (WP)	Wi	5	V+S	2	Socio Hydrology		Bruns	English
				S	2	Socio Hydrology			
				Graded term paper					

List of abbreviations

Compulsory attendance courses

EX	Field trip/Day Field trip	LAB	Lab/lab course	PRS	Practice-oriented seminar
GÜ	Field exercise	PRA	Internship	PRÜ	Practical course
KOS	Colloquium seminar	PRO	Project seminar	SPÜ	Language course

Non-compulsory attendance courses

EL	E-Learning-Course	LK	Reading course	TUT	Tutorium
FK	Specialized Course	OS	Advanced seminar	Ü	Practical course
HS	Master's-level seminar	PRP	Preparatory course	V	Lecture
KOL	Colloquium	PS	Bachelor's-level seminar	V+Ü	Lecture with practical course
K	Course	S	Seminar		

Other abbreviations

LP	Credit Points	SWS	Hours	WP	Elective module or course
P	Compulsory module	So	Summer term		
Sem	Semester	Wi	Winter term		