

Angewandte Geowissenschaften / Applied Geosciences (M.Sc.)

Studienverlaufsplan SPO 2019 - 5. Änderungsordnung (ab Wintersemester 2023/24) / Course Curriculum SPO 2019 - 5th change of rules (starting in winter term 2023/24)

Auswahl von einer aus den drei folgenden Vertiefungsrichtungen / Choice of one of the following three specializations

Vertiefungsrichtung "Geoingenieurwissenschaften" (GIN) / Specialization "Geoengineering" (GIN)

Pflichtbereich (inkl. Masterarbeit) im Umfang von insgesamt 96 CP / Compulsory modules (incl. Master's Thesis) in the amount of 96 CP
- alle 13 Module müssen bestanden werden / all of the 13 modules have to be completed -

Fachsemester: Bei Studienbeginn im ...		Veranstaltung	Typ	SWS	Selbststudium	CP	Sprache	AP	Prüfung
SoSe	WiSe								
GIN-P01									
		Stofftransport im Grundwasser							
2	1	Grundlagen des Stofftransportes im Grundwasserraum	Ü	4	90 h	5	D	+	KL
GIN-P02									
		Strukturmodellierung mit geostatistischen Werkzeugen							
2	1	Einführung in die explizite geostatistische Modellierung	Ü	2	60 h	3	D	+	PR+MP
2	1	Structural Geological Models	VL/Ü	2	60 h	3	E	-	KL
GIN-P03									
		Geotechnik							
2	1	Geotechnik I	VL/Ü	4	90 h	5	D	-	HA+KL
GIN-P04									
		Underground Excavation							
2	1	Underground Excavation	VL/Ü	4	120 h	6	E	-	PR
GIN-P05									
		GIS-Methoden in den Geoingenieurwissenschaften							
2	1	GIS-Vertiefung	VL/Ü	2	60 h	3	D/E	+	PR
1	2	GIS-Anwendung in der Hydrogeologie	Ü	2	30 h	2	D	+	PR
GIN-P06									
		Geophysical Imaging and Monitoring Methods (start in summer term 2024)							
1	2	Geophysical Imaging and Monitoring Methods	VL/Ü	4	90 h	6	E	-	KL
GIN-P06									
		*Geophysics I: Theory of Geophysical Prospection Methods (cessation after summer term 2023)							
1	2	Geophysics I: Theory of Geophysical Prospection Methods	VL/Ü	4	90 h	6	E	-	KL
GIN-P08									
		Grundwassersanierung in Theorie und Praxis							
1	2	Grundwassersanierung	VL	2	60 h	3	D	-	KL
1	2	Dimensionierung von Grundwassersanierung in der Praxis	VL	2	60 h	3	D	-	KL
GIN-P09									
		Landslides and Rock Slope Analysis (incl. Field Course)							
1	2	Landslides and Rock Slope Analysis	VL/Ü	4	120 h	6	E	-	PR
GIN-P10									
		Bohrtechnik und Altlastenerkundung							
4	3	Bohrtechnik und Brunnenbau	VL	2	30 h	2	D	-	KL
1	2	Altlastenerkundung und -sanierung	VL	2	60 h	3	D	-	KL
GIN-P11									
		Inverse Methods for Geoscientists (start in winter term 2023/24)							
2	3	Inverse Methods for Geoscientists	VL/Ü	4	90 h	6	E	-	KL
GIN-P11									
		*Geophysics II: Application of Geophysical Prospection Methods in Earth and Environmental Science (cessation after winter term 2022/23)							
2	3	Geophysics II: Application of Geophysical Prospection Methods in Earth and Environmental Science	VL/Ü	4	90 h	6	E	-	KL
GIN-P12									
		Dams and Hydropower							
4	3	Dams and Hydropower	VL/Ü	4	120 h	6	E	-	KL
GIN-P13									
		Geländeausbildung in der Vertiefungsrichtung "Geoingenieurwissenschaften"							
1-4	1-4	Geländeseminare &- ü bungen in der Vertiefungsrichtung "Geoingenieurwissenschaften" (mind. 8 Tage)	GEL	6	30 h	4	D/E	+	ALT
GIN-P14									
		Masterarbeit							
3	4	Masterarbeit (Bearbeitungszeit: 6 Monate)	MSc	-	900 h	30	D/E	-	MSc

Wahlpflichtmodule im Umfang von insgesamt 24 CP / Elective modules in the amount of 24 CP
- 4 aus 12 Module müssen bestanden werden / 4 out of 12 modules have to be completed -

Fachsemester: Bei Studienbeginn im ...		Veranstaltung	Typ	SWS	Selbststudium	CP	Sprache	AP	Prüfung
SoSe	WiSe								
GIN-W01									
		Data Management							
1	2	Machine Learning in Geosciences	Ü	2	60 h	3	E	-	R
2	1	Data Analysis in Geosciences	VL/Ü	2	60 h	3	D/E	-	KL
GIN-W02									
		Feldexperiment in Geophysik und Hydrogeologie							
3	2	Feldkurs Geophysik und Hydrogeologie	GEL	4	90 h	6	D	+	MP
GIN-W03									
		Organic Geochemical Analysis							
2	1	Analytical Methods and Data Evaluation in Organic Geochemistry	VL/Ü	2	60 h	3	E	-	HA
2	1	Practical Course - Analytical Approaches in Organic Environmental Geochemistry	P	2	60 h	3	E	+	HA
GIN-W04									
		Geothermics							
1	2	Geothermics	VL/Ü	4	120 h	6	E	-	KL

		Geotechnik II		GIN-W05						
3	2	Geotechnik II		VL/U	4	120 h	6	D	-	HA+KL
		Geostatistical Modeling		GIN-W06						
1	2	Geostatistical Theories, Data and Models		VL	2	60 h	3	E	-	KL
1	2	Geostatistical Modeling		Ü	2	60 h	3	E	-	ML
		Grundwassermodellierung		GIN-W07						
4	3	Strömungs- und Transportmodellierung		VL/Ü	2	60 h	3	D	-	KL
4	3	Projektarbeit Numerische Modellierung mit Finiten Elementen		Ü	2	60 h	3	D	+	PR
		Hydrogeophysics and Engineering Geophysics		GIN-W08						
4	3	Hydrogeophysics		VL	2	60 h	3	E	-	KL+MP
4	3	Engineering Geophysics		VL	2	90 h	3	E	-	MP
		Scientific Research, Writing, and Integrity		GIN-W09						
2	3	Scientific Discussion Seminar		S	2	60 h	3	E	-	KQ
3	4	Bringing Ideas to Paper		S	2	60 h	3	E	-	
		Geophysical Logging and Log Interpretation		GIN-W10						
4	3	Geophysical Logging and Log Interpretation		VL	2	60 h	3	E	-	KL+HA
4	3	Geophysical Logging and Log Interpretation		Ü	2	60 h	3	E	-	
		Mobility Module 1		GIN-W11						
1-4	1-4	Im Falle eines Auslandssemesters können auf Antrag an den Prüfungsausschuss (Learning Agreement) bis zu 6 CP für dieses Mobilitätsmodul anerkannt werden. Die an der Gasthochschule gewählten Lehrveranstaltungen und Prüfungsleistungen müssen hierfür in einem sinnvollen Zusammenhang zu den Qualifikationszielen der Vertiefungsrichtung "Geotechnik" stehen. Das Mobilitätsmodul kann ein Wahlmodul der Vertiefungsrichtung "Angewandte Geowissenschaften" ersetzen.		Veranstaltungstyp, Prüfungsform, Sprache, SWS, Anwesenheitspflichten und CP richten sich nach den Bestimmungen der jeweiligen Gasthochschule. Es können maximal 6 CP für dieses Mobilitätsmodul anerkannt werden.						
		Mobility Module 2		GIN-W12						
1-4	1-4	Im Falle eines Auslandssemesters können auf Antrag an den Prüfungsausschuss (Learning Agreement) bis zu 6 CP für dieses Mobilitätsmodul anerkannt werden. Die an der Gasthochschule gewählten Lehrveranstaltungen und Prüfungsleistungen müssen hierfür in einem sinnvollen Zusammenhang zu den Qualifikationszielen der Vertiefungsrichtung "Geotechnik" des Masterstudiengangs "Angewandte Geowissenschaften" stehen. Das Mobilitätsmodul kann ein Wahlmodul der Vertiefungsrichtung "Geotechnik" ersetzen.		Veranstaltungstyp, Prüfungsform, Sprache, SWS, Anwesenheitspflichten und CP richten sich nach den Bestimmungen der jeweiligen Gasthochschule. Es können maximal 6 CP für dieses Mobilitätsmodul anerkannt werden.						

Specialization "Applied Mineralogy and Crystallography" (AMC)

Compulsory modules (incl. Master's Thesis) in the amount of 96 CP
- all of the modules have to be completed -

Semester according to start in ...		Name of the course	Type	Hours / week	Self-study time	CP	Language	AP	Exam	
summer	winter									
		Electron Microscopy and Microanalytics		AMC-P01						
2	1	Electron Microscopy	Ü	2	60 h	3	E	-	ML	
2	1	Microanalytical Lab Course	P	2	60 h	3	E	-		
		Inorganic Environmental Geochemistry (Incl. Lab Course)		AMC-P02						
2	1	Inorganic Environmental Geochemistry	VL	2	60 h	3	E	-	HA	
2	1	Seminar Inorganic Environmental Geochemistry	S	2	60 h	3	E	+	MP	
2	1	Practical Course Inorganic Environmental Geochemistry	P	2	60 h	3	E	+	PR	
		Scattering with X-rays and Neutrons in Material Research (Start of module in winter term 2022/23)		AMC-P03						
2	1	X-ray and Neutron Scattering in Material Research	VL/Ü	2	60 h	3	E	-	KL	
3	2	Modern Powder Diffraction	Ü	3	90 h	4	E	+	HA	
		*Scattering with X-rays, Neutrons and Electrons (Cessation of module after summer term 2022)		AMC-P03						
2	1	Scattering Methods for Condensed Matter Research	VL	2	60 h	3	E	-	KL	
3	2	Modern Powder Diffraction	Ü	3	90 h	4	E	+	HA	
		*Diffraction: Introduction and Powder Methods (Cessation of module after summer term 2021)		AMC-P03						
2	1	Introduction into X-ray, Neutron and Electron Diffractometry	VL	2	60 h	3	E	-	KL	
3	2	Modern Powder Diffraction	Ü	3	90 h	4	E	+	HA	
		Advanced Scattering Techniques (Start in winter term 2021/22)		AMC-P04						
2	1	Laboratory Course X-ray Scattering	Ü	2	60 h	3	E	+	ML	
3	2	Structure Analysis of Complex Mineral and Material Phases	Ü	2	60 h	3	E	+	ML	
		*Diffraction: Single Crystal Methods (Cessation of module after summer term 2021)		AMC-P04						
2	1	X-ray Course I	Ü	2	60 h	3	E	+	ML	
3	2	Structure Analysis of Complex Mineral- and Material Phases	Ü	2	60 h	3	E	+	ML	
		Volcanology and Practical Petrology (Start of module in summer term 2023)		AMC-05						
1	2	Volcanology	VL/Ü	2	60 h	3	E	-	KL	
1	2	Field Course Volcanology (minimum 4 days)	GEL	2,8	48 h	3	E	+	ALT	
1	2	Practical Petrology	Ü	1	45 h	2	E	-	HA	
		*Clay Mineralogy (Cessation of module after summer term 2022)		AMC-P05						
2	1	Clay Mineralogy	VL/Ü	2	60 h	3	E	-	KL	
3	2	Clay Preparation Techniques (incl. 1 day field course)	Ü/GEL	4	90 h	5	E	+	HA	

		Crystal Growth	AMC-P06						
1	2	Fundamentals of Crystal Growth	VL	2	90 h	4	E	-	HA
1	2	Methods of Crystal Growth	Ü	2	90 h	4	E	+	
		Organic Geochemical Analysis (incl. Field Course)	AMC-P07						
2	1	Analytical Methods and Data Evaluation in Organic Geochemistry	VL/Ü	2	90 h	3	E	-	HA
1	2	Field Course: Geochemistry (1 day)	GEL	0,7	20 h	1	E	+	ALT
2	1	Practical Course - Analytical Approaches in Organic Environmental Geochemistry	P	2	90 h	3	E	+	HA
		*Micro-scale Mineralogy of Siliciclastic Rocks (incl. Field Course) (Cessation of module after summer term 2022)	AMC-P07						
1	2	Mineralogy of Clastic Sedimentary Rocks	VL/Ü	2	60 h	3	E	-	HA+MP
1	2	Geochemistry of Fluid-Rock Interactions in Clastic Sedimentary Rocks	VL/Ü	2	60 h	3	E	-	HA+MP
1	2	Field Course: Hydrous Geochemistry of Iron	GEL	0,7	20 h	1	E	+	ALT
		Geomaterials in Environment and Technology (incl. Lab Course) (Start in winter term 2021/22)	AMC-P08						
4	3	Crystal Physics - Phenomena	P/S	2	30 h	2	E	+	HA+MP
4	3	Preparative and Analytical Methods in Crystallography	P	2	90 h	4	E	+	
4	3	Current Research Topics in Mineralogy and Crystallography	S	1	45 h	2	E	+	MP
		*Geomaterials Laboratory Course (Cessation of module after summer term 2021)	AMC-P08						
4	3	Crystal Physics - Phenomena	P/S	2	15 h	1,5	E	+	HA+MP
4	3	Preparative and Analytical Methods in Mineralogy	P	3	90 h	5	E	+	
4	3	Mineralogical-crystallographic Seminar	S	1	30 h	1,5	E	+	MP
		Applied Geochemistry and Mineral Deposits (incl. Field Course) (Start in summer term 2023)	AMC-W04						
1	2	Hydrothermal Systems	S	2	60 h	3	E	+	HA
1	2	Petrological and Geochemical Methods	S	1	75 h	3	E	+	
1-4	1-4	Field Course (minimum 1 day)	GEL	0,7	20 h	1	E	+	ALT
		*Aqueous Interface Mineralogy (Cessation of module after summer term 2022)	AMC-P09						
4	3	Aqueous Interface Mineralogy	VL/Ü	5	130 h	7	E	-	HA
		Master's Thesis	AMC-P10						
3-4	4	Master's Thesis (processing time: 6 month)	MSc	-	900 h	30	D/E	-	MSc

Elective Modules
- 4 out of 14 modules (= 24 CP) have to be completed -

Semester according to start in ...		Name of the course	Type	Hours / week	Self-study time	CP	Language	AP	Exam	
summer	winter									
		Mineral Materials I (Start of Module in winter term 2022/23)	AMC-W01							
	2	1	Mineral Materials I: Ceramics	VL/Ü	2	60 h	3	E	-	KL
	2	1	Mineral Materials I: Glass	VL/Ü	2	60 h	3	E	-	
		*Mineral Materials (Cessation of Module after summer term 2022)	AMC-W01							
	2	1	Mineral Materials: Glass	VL/Ü	2	60 h	3	E	-	KL
	2	1	Mineral Materials: Ceramics	VL/Ü	2	60 h	3	E	-	
		*Einführung in die Werkstofftechnik: Glas (Cessation of Module after winter term 2021/22)	AMC-W02							
	2	1	Einführung in die Werkstofftechnik: Glas	VL/Ü	3	105 h	6	D	-	KL
		*Einführung in die Werkstofftechnik: Keramik (Cessation of Module after winter term 2021/22)	AMC-W03							
	2	1	Einführung in die Werkstofftechnik: Keramik	VL/Ü	3	105 h	6	D	-	KL
		Data Management (Start of Module in winter term 2022/23)	AMC-W02							
	1	2	Machine Learning in Geosciences	Ü	2	60 h	3	E	-	R
	2	1	Data Analysis in Geosciences	VL/Ü	2	60 h	3	D/E	-	KL
		*Applied Geochemistry and Mineral Deposits (Cessation of Module after summer term 2022)	AMC-W04							
	1	2	Hydrothermal Systems	S	2	60 h	3	E	+	HA
	1	2	Petrological and Geochemical Methods	S	1	75 h	3	E	+	
		Werkstofftechnik Keramik	AMC-W03							
	1	2	Verarbeitungstechnik Keramik	VL/Ü	2	60 h	3	D	-	ALT
	1	2	Gefügeinterpretation	VL/Ü	2	60 h	3	D	-	
		*Organic Geochemical Analysis (Cessation of Module after summer term 2022)	AMC-W05							
	2	1	Analytical Methods and Data Evaluation in Organic Geochemistry	VL/Ü	2	90 h	3	E	-	HA
	2	1	Practical Course - Analytical Approaches in Organic Environmental Geochemistry	P	2	90 h	3	E	+	HA
		Surface Engineering for Corrosion Protection (Start of Module in summer term 2023)	AMC-W04							
	1	2	Principles of Corrosion Protection	VL/Ü	4	90 h	5	E	-	ALT
	1	2	Colloquium Principles of Corrosion Protection	KQ	1	15 h	1	E	+	
		Hochleistungskeramik	AMC-W05							
	1	2	Korrosion keramischer Werkstoffe	VL/Ü	2	60 h	3	D	-	ALT
	1	2	Keramische Verbundwerkstoffe	VL/Ü	2	60 h	3	D	-	
		Physikalische Chemie	AMC-W06							
	4	3	Physikalische Chemie I	VL	2	90 h	4	D	-	KL
	4	3	Spektroskopie und Kinetik	Ü	1	45 h	2	D	-	
		Texture Analysis	AMC-W07							
	4	3	Introduction to Texture Analysis	S	3	135 h	6	E	-	KL

		Grundlagen der Kernchemie		AMC-W08					
4	3	Grundlagen der Kernchemie	VL	2	60 h	3	D/E	-	KL
4	3	Kerntechnisches Messpraktikum	P	3	45 h	3	D/E	+	HA
		Ceramics in Energy Technology (Start of Module in winter term 2023/24)		AMC-W09					
4	3	Ceramics in Energy Technology	VL/U	4	60 h	4	E	-	ALT
4	3	Seminar Ceramic in Energy Technology	S	2	30 h	2	E	+	
		Zementtechnologie/Keramik I		AMC-W10					
4	3	Bruchmechanik, Verstärkung und Prüfung von Sonderkeramik	VL/U	2	60 h	3	D	-	ALT
4	3	Zementtechnologie	VL/U	2	60 h	3	D	-	
		Mineral Materials II (Start of Module in winter term 2022/23)		AMC-W11					
4	3	Mineral Materials II: Ceramics	VL/U	2	60 h	3	E	-	KL
4	3	Mineral Materials II: Glass	VL/U	2	60 h	3	E	-	
		Diffraction: Neutron Methods		AMC-W12					
3	4	Laboratory Course Neutron Scattering	S/P	3	135 h	6	E	+	KL
		Mobility Module 1		AMC-W13					
1-4	1-4	In case of spending a semester abroad it's possible to recognize up to 6 CP for this module via an application at the examination board (Learning Agreement). The condition for the recognition is that the chosen courses and exams of the host university are fitting in the qualification profile of the stream "Applied Mineralogy and Crystallography" of the Master's program "Applied Geosciences". It's possible to substitute an elective module of the stream "Applied Mineralogy and Crystallography" with this mobility module.				Type of course and exam, language of instruction, hours per week and attendance is subject to the regulations of the particular host university. It's possible to recognize up to 6 CP for this mobility module.			
		Mobility Module 2		AMC-W14					
1-4	1-4	In case of spending a semester abroad it's possible to recognize up to 6 CP for this module via an application at the examination board (Learning Agreement). The condition for the recognition is that the chosen courses and exams of the host university are fitting in the qualification profile of the stream "Applied Mineralogy and Crystallography" of the Master's program "Applied Geosciences". It's possible to substitute an elective module of the stream "Applied Mineralogy and Crystallography" with this mobility module.				Type of course and exam, language of instruction, hours per week and attendance is subject to the regulations of the particular host university. It's possible to recognize up to 6 CP for this mobility module.			

Specialization "Energy and Mineral Resources" (EMR)

Compulsory modules (incl. Master's Thesis) in the amount of 36 CP
- all of the modules have to be completed -

Semester according to start in ...		Name of the course	Type	Hours / week	Self-study time	CP	Language	AP	Exam
summer	winter								
1-4	1-4	Field School	EMR-P1						
		Field School (min. 12 days)	GEL	8	60 h	6	E	-	ALT
3	4	Master's Thesis	EMR-P2						
		Master's Thesis (processing time: 6 month)	MSc	-	900 h	30	E	-	MSc

Elective Modules
- 14 out of 24 modules (= 84 CP) have to be completed -

Semester according to start in ...		Name of the course	Type	Hours / week	Self-study time	CP	Language	AP	Exam
summer	winter								
2	1	Principles of Plate Tectonics	VL/U	2	60 h	3	E	-	KL
1	2	Geodynamic Modeling	VL/U	2	60 h	3	E	-	HA
2	1	Principles of Plate Tectonics	VL	2	60 h	3	E	-	KL
2	1	Plate Tectonics Seminar	S	2	60 h	3	E	+	HA+MP
2	1	X-ray and Neutron Scattering in Material Research	VL/U	3	60 h	4	E	-	KL
2	1	Current Research Topics in Mineralogy and Crystallography	S	1	30 h	2	E	+	MP
2	1	Applied Structural Geology	S	2	60 h	3	E	-	KL
2	1	Field Course Applied Structural Geology (5 days)	GEL	4	30 h	3	E	+	HA
2	1	Microtectonics	PS	2	60 h	3	E	+	PR+MP
2	1	Image Processing and Microstructural Analysis	PS	2	60 h	3	E	+	
2	1	Carbonates and Evaporites	P	2	60 h	3	E	-	KL
1	2	Depositional Environments and Sequence Stratigraphy	Ü	2	60 h	3	E	-	HA
2	1	Sedimentary Petrography/Diagenesis	P	2	60 h	3	E	-	KL
2	1	Carbonates and Evaporites	GEL	2	60 h	3	E	-	HA

		Sedimentology II (Start of module in summer term 2023)	EMR-W04						
3	2	Field Course Carbonates (minimum 3 days)	GEL	2	60 h	3	E	+	HA
3	2	Field Course Clastics (minimum 3 days)	GEL	2	60 h	3	E	+	
		*Seismic Interpretation, Sequence Stratigraphy and Well Log Analysis (Cessation of module after winter term 2021/22)	EMR-W04						
2	1	Seismic Interpretation and Sequence Stratigraphy	U	2	60 h	3	E	-	MP
2	1	Well Log Analysis in Exploration	U	2	60 h	3	E	-	
		Petrophysics and Fluid Transport and Storage in Rocks	EMR-W05						
2	1	Petrophysics	VL/U	2	60 h	3	E	-	KL
2	1	Fluid Transport and Storage in Rocks	P	2	60 h	3	E	+	PRA
		Mineral Exploration and Resource Estimation	EMR-W06						
2	1	Mineral Exploration	U	2	60 h	3	E	+	MP+HA
2	1	Modeling Techniques in Economic Geology	S	2	60 h	3	E	+	HA
		Portfolio Management and Seismic Interpretation (Start of Module in winter term 2022/23)	EMR-W07						
2	1	Portfolio Management and Prospect Evaluation	VL	2	60 h	3	E	-	KL
2	1	Seismic Interpretation and Well Integration	U	2	60 h	3	E	-	KL
		*Geodynamic Modelling (Cessation of module after summer term 2022)	EMR-W02						
1	2	Geodynamic Modelling: Theory	VL	2	60 h	3	E	-	KL+MP
1	2	Geodynamic Modelling: Practicals	PS	2	60 h	3	E	+	PR
		Geothermics	EMR-W08						
1	2	Geothermics	VL/U	4	120 h	6	E	-	KL
		Geology and Geochemistry of Fossil Fuels	EMR-W09						
1	2	Geology of Coal and Natural Gas	VL/U	2	60 h	3	E	-	KL
1	2	Petroleum Geology and Geochemistry	VL/U	2	60 h	3	E	-	
		Petroleum and Coal: Field and Lab Methods	EMR-W10						
1	2	Field Course Petroleum Geology (5 days)	GEL	4	60 h	3	E	+	HA+MP
2	1	Coal Petrology	P	2	60 h	3	E	+	HA
		Applied Geochemistry and Mineral Deposits	EMR-W11						
1	2	Hydrothermal Systems	S	2	60 h	3	E	+	HA
1	2	Petrological and Geochemical Methods	S	1	75 h	3	E	+	
		*Micro-scale Mineralogy of Siliciclastic Rocks (Cessation of module after summer term 2022)	EMR-W11						
1	2	Mineralogy of Clastic Sedimentary Rocks	VL/U	2	60 h	3	E	-	HA+MP
1	2	Geochemistry of Fluid-Rock Interactions in Clastic Sedimentary Rocks	VL/U	2	60 h	3	E	-	HA+MP
		Geostatistical Modeling	EMR-W12						
1	2	Geostatistical Theories, Data and Models	VL	2	60 h	3	E	-	KL
1	2	Geostatistical Modeling	U	2	60 h	3	E	-	ML
		Geophysical Imaging and Monitoring Methods (start in summer term 2024)	EMR-W13						
1	2	Geophysical Imaging and Monitoring Methods	VL/U	4	90 h	6	E	-	KL
		*Geophysics I: Theory of Geophysical Prospection Methods (cessation after summer term 2023)	EMR-W13						
1	2	Geophysics I: Theory of Geophysical Prospection Methods	VL/U	4	90 h	6	E	-	KL
		Reservoir Geology and Modeling	EMR-W14						
1	2	Reservoir Characterization	S	2	60 h	3	E	-	HA
Option in module: One of the following courses have to be passed to finish the module									
1	2	Option 1: Machine Learning in Geosciences	U	2	60 h	3	E	-	R
1	2	Option 2: Reservoir Modeling (Cessation of course after summer term 2021)	S	2	60 h	3	E	+	KQ
		Volcanology (Start of Module in summer term 2023)	EMR-W23						
1	2	Volcanology	VL/U	2	60 h	3	E	-	KL
1	2	Field Course Volcanology (minimum 4 days)	GEL	2,8	48 h	3	E	+	ALT
		Repository Design and Processes	EMR-W24						
1	2	Repository Design and Operational Safety	VL/U	2	60 h	3	E	-	KL or ML
1	2	Simulation of Repository Related Processes	VL/U	2	60 h	3	E	-	KL or ML
		Advanced Methods in Economic Geology	EMR-W15						
2	3	Advanced Economic Geology	S	2	60 h	3	E	+	HA
1	2	Ore Microscopy	S	1	75 h	3	E	+	HA
		Methods in Remote Sensing and GeoModeling	EMR-W16						
2	3	Remote Sensing of Sedimentary Basins	U	2	60 h	3	E	-	KL
2	3	Structural Geological Models	VL/U	2	60 h	3	E	-	KL
		Research Module Operations in Energy Exploration & Infrastructures (Start of Module in summer term 2023)	EMR-W17						
3 or 4	3 or 4	Operations in Energy Exploration & Infrastructures	PS/GEL	2	150 h	6	E	-	PR
		Inverse Methods for Geoscientists (start in winter term 2023/24)	EMR-W18						
2	3	Inverse Methods for Geoscientists	VL/U	4	90 h	6	E	-	KL
		*Geophysics II: Application of Geophysical Prospection Methods in Earth and Environmental Science (cessation after winter term 2022/23)	EMR-W18						
2	3	Geophysics II: Application of Geophysical Prospection Methods in Earth and Environmental Science	VL/U	4	90 h	6	E	-	KL

		Petroleum Systems (Cessation of Module after winter term 2023/24)	EMR-W19						
4	3	Sedimentary Basin Dynamics	Ü	2	60 h	3	E	-	HA+MP
4	3	Petroleum System Modeling	Ü	2	60 h	3	E	+	
		*Geological Planning and Development and Operations Geology (Cessation of Module after winter term 2022/23)	EMR-W19						
4	3	Portfolio Management and Prospect Evaluation	VL	2	60 h	3	E	-	KL
4	3	Operations Geology	VL	2	60 h	3	E	-	MP
		Inorganic Environmental Geochemistry	EMR-W20						
4	3	Inorganic Environmental Geochemistry	VL	2	60 h	3	E	-	HA
4	3	Seminar Inorganic Environmental Geochemistry	S	2	60 h	3	E	-	MP
		Mobility Module 1	EMR-W21						
1-4	1-4	In case of spending a semester abroad it's possible to recognize up to 6 CP for this module via an application at the examination board (Learning Agreement). The condition for the recognition is that the chosen courses and exams of the host university are fitting in the qualification profile of the stream "Energy and Mineral Resources" of the Master's program "Applied Geosciences". It's possible to substitute an elective module of the stream "Energy and Mineral Resources" with this mobility module.	Type of course and exam, language of instruction, hours per week and attendance is subject to the regulations of the particular host university. It's possible to recognize up to 6 CP for this mobility module.						
		Mobility Module 2	EMR-W22						
1-4	1-4	In case of spending a semester abroad it's possible to recognize up to 6 CP for this module via an application at the examination board (Learning Agreement). The condition for the recognition is that the chosen courses and exams of the host university are fitting in the qualification profile of the stream "Energy and Mineral Resources" of the Master's program "Applied Geosciences". It's possible to substitute an elective module of the stream "Energy and Mineral Resources" with this mobility module.	Type of course and exam, language of instruction, hours per week and attendance is subject to the regulations of the particular host university. It's possible to recognize up to 6 CP for this mobility module.						

Prüfungsformen / Type of examination

KL	Klausur nach / Written examination according to § 7 Abs. 3-5 ÜPO & § 7 Abs. 3 SPO
ML	Mündliche Prüfung nach / Oral examination according to § 7 Abs. 6 ÜPO & § 7 Abs. 4 SPO
PR	Projektarbeit nach / Project work according to § 7 Abs. 9 ÜPO & § 7 Abs. 6 SPO
MP	Mündliche Präsentation nach / Oral presentation according to § 7 Abs. 2 SPO
HA	Hausarbeit nach nach / Report according to § 7 Abs. 8 ÜPO & § 7 Abs. 5 SPO
R	Referat nach / Presentation according to § 7 Abs. 11 ÜPO & § 7 Abs. 7 SPO
KQ	Kolloquium nach / Colloquium according to § 7 Abs. 12 ÜPO & § 7 Abs. 8 SPO
ALT	Alternative Prüfungsform nach / Alternative examination according to § 7 Abs. 2 ÜPO
PRA	Praktikum nach / Practicals according to § 7 Abs. 14 ÜPO
MSc	Masterarbeit nach / Master's Thesis according to §§ 17-18 ÜPO & §§ 13-14 SPO

Legende / Explanation

SWS	Semesterwochenstunden / Hours per week
CP	Leistungspunkte (ECTS) / Credit Points (ECTS)
AP	Anwesenheitspflicht / Obligatory attendance
	+ = ja/yes - = nein/no
VL	Vorlesung / Lecture
Ü	Übung / Exercise
S	Seminar / Seminar
P	Praktikum / Laboratory course
GEL	Geländeseminar bzw. -übung / Field Course
PS	Projektseminar / Project seminar

Sprache / Language of instruction

D	Deutsch / German
E	Englisch / English
D/E	Lehrveranstaltung wird auf Deutsch oder Englisch gemäß Ankündigung zu Vorlesungsbeginn gehalten Language of instruction (German or English) will be announced at the beginning of the particular course

* Eingestellte Module sind im Studienverlaufsplan vollständig in grau hinterlegt. Nach letztmaligem Angebot der Lehrveranstaltung im auslaufenden Modul finden gemäß § 6 Abs. 13 ÜPO noch 3 Prüfungstermine im alten Modulzuschnitt statt. Insbesondere im Pflichtbereich werden die eingestellten sowie die sie ersetzenden Module unter derselben Modulnummer untereinander in zusammenhängender Form dargestellt. / * Discontinued modules are completely highlighted in gray in the course curriculum. After the course has been offered for the last time in the discontinued module, 3 examination dates will still take place in the old module structure in accordance with § 6 para. 13 ÜPO. Especially in the compulsory area, the discontinued modules as well as the modules replacing them are shown under the same module identifier among each other in a coherent form.