

**Modulhandbuch
für den
Masterstudiengang
Advanced Mineral Resources Development**

Content

Environmental Geotechnics

Human Resource Management and Organizational Behavior

Introduction to Quaternary Geology

Licensing, Stakeholder Involvement and Expectation Management

Mine Water I - Formation and Treatment

Radioactivity

Reclamation

Abbreviations

KA: schriftliche Klausur / written exam

MP: mündliche Prüfung / oral examination

AP: alternative Prüfungsleistung / alternative examination

PVL: Prüfungsvorleistung / prerequisite

MP/KA: mündliche oder schriftliche Prüfungsleistung (abhängig von Teilnehmerzahl) / written or oral examination (dependent on number of students)

SS, SoSe: Sommersemester / sommer semester

WS, WiSe: Wintersemester / winter semester

SX: Lehrveranstaltung in Semester X des Moduls / lecture in module semester x

SWS: Semesterwochenstunden

Data:	SUSBFR. MA. Nr. 090 / Examination number: 35706	Version: 26.03.2021 	Start Year: SoSe 2021
Module Name: (English):	Environmental Geotechnics		
Responsible:	Butscher, Christoph / Prof. Dr.		
Lecturer(s):	Butscher, Christoph / Prof. Dr.		
Institute(s):	Institute of Geotechnics		
Duration:	1 Semester(s)		
Competencies:	Students become familiar with topics of environmental geotechnics. They know the relevance and consequences of abandoned contaminated sites, waste disposal and old mining. They understand the respective processes and can discuss and plan mitigation measures.		
Contents:	<p><u>Waste disposal</u>: scientific fundamentals; legal framework; geological-hydrogeological aspects of construction and operation of landfills, industrial sedimentation basins and deep geological repositories; computer-aided stability analysis; preparation of a geotechnical report.</p> <p><u>Old mining</u>: legal framework; exploration methods; methods of assessment, remediation and securing; regional topics in Saxony (lignite open pits, uranium mining); water management of flooded underground mines; international case studies.</p>		
Literature:	Price, D.G.: Engineering Geology, Principles and Practice, Springer-Verlag, Berlin-Heidelberg, 2009 Suthersan et al. (2017): Remediation Engineering. CRC Press, Boca Raton Daniel (ed.) (1993): Geotechnical Practice for Waste Disposal. Chapman & Hall, London		
Types of Teaching:	S1 (SS): Waste disposal - Waste disposal / Lectures (1 SWS) S1 (SS): Old mining - Old mining / Lectures (1 SWS)		
Pre-requisites:	Recommendations: B.Sc. in Geosciences or Geo-Engineering; Basic Knowledge of Geosystems		
Frequency:	each semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA: Environmental Geotechnics [120 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA: Umweltgeotechnik [120 min]		
Credit Points:	3		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA: Environmental Geotechnics [w: 1]		
Workload:	The workload is 90h. It is the result of 30h attendance and 60h self-studies. Latter includes the review of the teached materials and exam preparation.		

Data:	HRMOB. MA. Nr. 3203 / Examination number: 61008	Version: 14.02.2017	Start Year: SoSe 2011
Module Name: (English):	Human Resource Management and Organizational Behavior		
Responsible:	Stumpf-Wollersheim, Jutta / Prof. Dr. rer. pol.		
Lecturer(s):	Stumpf-Wollersheim, Jutta / Prof. Dr. rer. pol.		
Institute(s):	International Management and Strategy		
Duration:	1 Semester(s)		
Competencies:	<p>The primary objective of this course is to help you learn to diagnose management situations so that you will be able to transfer this skill to your working world. Specific objectives of the course include:</p> <ol style="list-style-type: none"> 1. Understanding the relevance of human resources for organizations and the key concepts of human behavior in organizations. 2. Appreciating how the human side of management is an essential complement to the technical skills you are learning in other courses. 3. Learning concepts and approaches that will enable you to analyze HR- and organizational problems and to develop appropriate solutions. 4. Developing the knowledge and skills you need to be a successful manager of yourself and others. 		
Contents:	<ol style="list-style-type: none"> 1. Introduction 2. Organizational Behavior (OB) <ol style="list-style-type: none"> 2.1 Individual level (foundations of individual behavior; impacts of individual characteristics; impact of situational factors) 2.2 Group level (foundations of group behavior, understanding work teams; group processes e.g., learning in teams) 2.3 Leadership 3. Human Resource Management (HRM) <ol style="list-style-type: none"> 3.1 Changing Nature of HRM 3.2 HRM Planning 3.3 Human Resource Adjustments 3.4 Training and Developing HR 3.5 Compensating HR Presentations and Conclusions		
Literature:	Mathis, R.L.; Jackson, J.H.: „Human Resource Management“, South Western College Publishing: Cincinnati 2006 Judge, T.A.; Robbins, S.P.: „Organizational Behavior“, Pearson Prentice Hall: Upper Saddle River, N.J. 2016		
Types of Teaching:	S1 (SS): Lectures (2 SWS)		
Pre-requisites:	Recommendations: None		
Frequency:	yearly in the summer semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA: Final test [90 min]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA: Abschlussklausur [90 min]		
Credit Points:	3		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA: Final test [w: 1]		
Workload:	The workload is 90h. It is the result of 30h attendance and 60h self-studies.		

	<p>der Modulprüfung. Die Modulprüfung umfasst: KA* [90 min] AP*: Aufgaben</p> <p>* Bei Modulen mit mehreren Prüfungsleistungen muss diese Prüfungsleistung bestanden bzw. mit mindestens "ausreichend" (4,0) bewertet sein.</p>
Credit Points:	6
Grade:	<p>The Grade is generated from the examination result(s) with the following weights (w): KA* [w: 4] AP*: Assignment [w: 1]</p> <p>* In modules requiring more than one exam, this exam has to be passed or completed with at least "ausreichend" (4,0), respectively.</p>
Workload:	<p>The workload is 180h. It is the result of 60h attendance and 120h self-studies. Self-study includes preparation and follow-up work for in-class instruction as well as preparation for the written exam, i.e. "Klausur," and the written assignment of the tutorial.</p>

Data:	QUAGEO. MA. Nr. 3223 / Examination number: 30308	Version: 15.07.2014	Start Year: SoSe 2012
Module Name:	Introduction to Quaternary Geology		
(English):			
Responsible:	Meinhold, Guido / Prof. Dr.		
Lecturer(s):	Meinhold, Guido / Prof. Dr.		
Institute(s):	Institute of Geology		
Duration:	1 Semester(s)		
Competencies:	Students will gain knowledge and the ability to understand the basic processes and techniques in the field of Quaternary Geology, and in particular in the field of paleoclimatic variation.		
Contents:	Proxies for paleoclimatic variation in the last 2.5 Million years; chronostratigraphic and other tools for stratigraphic correlation of the Quaternary; important archives: lake- and marine sediments, ice cores; glacial and periglacial processes and glacial sedimentology		
Literature:	Ehlers, J. (1995): Quaternary and glacial geology.- Wiley & Son, New York, 578S. Elias, S.A. (Ed.)(2007): Encyclopedia of Quaternary science.- Elsevier, 4 volumes, 3365 pp.		
Types of Teaching:	S1 (SS): Lectures (2 SWS) S1 (SS): Field trip / Practical Application (1 d)		
Pre-requisites:	Recommendations: Grundlagen der Geowissenschaften für Nebenhörer, 2014-02-03 Grundlagen der Geowissenschaften I, 2014-09-10 Principles of Geoscience (Secondary Subject) or equivalent moduls; for example one of the both above		
Frequency:	yearly in the summer semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [90 min] PVL: Successful participation in the field trip PVL have to be satisfied before the examination. Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min] PVL: Erfolgreiche Teilnahme an der Exkursion PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.		
Credit Points:	3		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]		
Workload:	The workload is 90h. It is the result of 38h attendance and 52h self-studies. Self-studies include assignments, preparation and wrapping up of lectures as well as preparation of examinations.		

Data:	SUSLSE. MA. Nr. 088 / Examination number: 60217	Version: 01.01.2014 	Start Year: SoSe 2014
Module Name:	Licensing, Stakeholder Involvement and Expectation Management		
(English):			
Responsible:	Drebenstedt, Carsten / Prof. Dr. Bongaerts, Jan C. / Prof. Dr.		
Lecturer(s):	Bongaerts, Jan C. / Prof. Dr.		
Institute(s):	Professor of Environmental & Resource Management Institute of Mining and Special Civil Engineering		
Duration:	1 Month(s)		
Competencies:	<p>Upon completion of industrial activity at a given site (e.g., mining, chemical production), liabilities must be investigated, assessed, and removed/remediated with respect to safe usage in the future. This is an iterative decision process involving many parties, often with conflicting interests and different ways to influence the outcome of this decision process. This module addresses the need to handle public inquiries, concerns, or conflicts on environmental and remediation issues. It shows environmental managers, regulators and public servants in this field, and consultants at industrial facilities how to identify the causes of environmental issues and concerns, create community relations programs to address issues or establish a proactive dialogue to prevent or minimise future environmental conflicts, and handle technical and risk communication in a highly efficient manner.</p> <p>The aspects which have to be observed within such a complex process include (but are not restricted to)</p> <ul style="list-style-type: none"> • legal requirements, • economic conditions, • environmental objectives and regional political aims, • communication, information management and negotiation methods. <p>The subjects will be presented using overview texts and summary texts, graphs, and case studies. Discussions among students and between tutors and students will be facilitated by electronic means of communication such as email and a web-based discussion platform. Special emphasis will be laid on presentation of selected cases and discussion of critical parameters like timing cost, communication problems, information handling. Students will be trained in groups and individually. This module will also feature checklists, forms and worksheets as tools for further reference in the daily work.</p>		
Contents:	Expectations by the various stakeholders are identified as driving forces within a remediation project. The management of expectations of all involved stakeholders as well as transparent assessment and decision procedures are a core ingredient of this module, and will be discussed using case studies from a great variety of real-world projects and experiences. Students will be encouraged to contribute their personal and professional experiences to the module in order to both focus the content to the specific needs of the audience and to demonstrate the great cultural variety of negotiation and management styles.		
Literature:	John D. Leshy: The Mining Law: A Study in Perpetual Motion, Resources for the Future, ISBN: 0915707268, ISBN-13: 9780915707263, 542pp, 1987;		

	Warren Richard Plunkett, Raymond F. Attner, Gemmy Allen: Management: Meeting and Exceeding Customer Expectations, Thomson – South Western, 2005, ISBN 0324259131, 742 pp
Types of Teaching:	S1 (SS): Lectures (4 d) S1 (SS): Seminar (1 d)
Pre-requisites:	Recommendations: No previous knowledge of management is required.
Frequency:	yearly in the summer semester
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [120 min] PVL: Preparation and presentation of a project on a practical case PVL have to be satisfied before the examination. Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [120 min] PVL: Ausarbeitung und Vorstellung eines Projekts zu einem Fallbeispiel PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.
Credit Points:	6
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]
Workload:	The workload is 180h. It is the result of 40h attendance and 140h self-studies.

Data:	MWFT. MA. Nr. 3633 / Examination number: 31727	Version: 04.07.2018 	Start Year: SoSe 2019
Module Name: (English):	Mine Water I - Formation and Treatment		
Responsible:	Drebenstedt, Carsten / Prof. Dr. Hoth, Nils / Dr.		
Lecturer(s):	Hoth, Nils / Dr.		
Institute(s):	Institute of Mining and Special Civil Engineering		
Duration:	1 Semester(s)		
Competencies:	The student will gain general knowledge about the formation of acidic mine waters and how to investigate the detailed behaviour. Furthermore he gets knowledge about treatment strategies. So in the end he is able to choose proper measures for partial avoiding of acidic mine water formation and he can choose suitable and site specific treatment strategies		
Contents:	<p>Lecture:</p> <ul style="list-style-type: none"> - Basics of sulphide weathering - Acid Mine and Acid Rock Drainage (AMD/ ARD) generation - Relevant buffer systems - General aspects of water treatment of different mine waters - Examples of special case site studies - technology of the treatment - Primary, secondary and tertiary measures against acidification for different mine sites <p>Exercises:</p> <ul style="list-style-type: none"> - Detailed explanation of investigation strategies to characterise and balance acid mine drainage behaviour for dump and tailings bodies - Detailed explanation of water treatment systems for different mine sites - Preparing an report about investigation of a given test site. Figure out the idea and planning of a water treatment for a given special mine water composition. 		
Literature:	<p>JAMBOR, J.L. & BLOWES, D.W.: Short Course Handbook on Environmental Geochemistry of Sulfid Mine Wastes. Younger (2002): Mine water hydrogeology and geochemistry. Beale & Read (2013) Evaluating water in pit slope stability Wolkersdorfer (2013) Grubenwasserreinigung - Verfahren und Vorgehensweise</p>		
Types of Teaching:	S1 (SS): Lectures (2 SWS) S1 (SS): Exercises (1 SWS)		
Pre-requisites:	Recommendations: Basic knowledge in hydrogeochemistry		
Frequency:	yearly in the summer semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [90 min] PVL: Exercises and homework PVL have to be satisfied before the examination. Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min] PVL: Übungen und Hausaufgaben PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.		
Credit Points:	6		
Grade:	The Grade is generated from the examination result(s) with the following		

	weights (w): KA [w: 1]
Workload:	The workload is 180h. It is the result of 45h attendance and 135h self-studies. (135 h are spent on preparation for the classes, preparing the report and with self study)

	<p>* In modules requiring more than one exam, this exam has to be passed or completed with at least "ausreichend" (4,0), respectively.</p> <p>Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA* [90 min] AP*: Aktive Teilnahme, sowie Belegarbeiten in der Veranstaltung</p> <p>* Bei Modulen mit mehreren Prüfungsleistungen muss diese Prüfungsleistung bestanden bzw. mit mindestens "ausreichend" (4,0) bewertet sein.</p>
Credit Points:	6
Grade:	<p>The Grade is generated from the examination result(s) with the following weights (w): KA* [w: 4] AP*: Active participation, as well as assignments in the module [w: 1]</p> <p>* In modules requiring more than one exam, this exam has to be passed or completed with at least "ausreichend" (4,0), respectively.</p>
Workload:	<p>The workload is 180h. It is the result of 60h attendance and 120h self-studies. Self-study time includes reading the relevant literature, preparation and follow-up work for in-class participation as well as preparation time for the written exam, i.e. "Klausurarbeit" and the assignments.</p>

Data:	SUSRAD. MA. Nr. 2091 / Examination number: 34103	Version: 06.07.2016 	Start Year: SoSe 2015
Module Name:	Radioactivity		
(English):			
Responsible:	Mischo, Helmut / Prof. Dr.-Ing.		
Lecturer(s):	Mischo, Helmut / Prof. Dr.-Ing. Weyer, Jürgen / Dr.-Ing.		
Institute(s):	Institute of Mining and Special Civil Engineering		
Duration:	1 Semester(s)		
Competencies:	Basic knowledge of radioactive decay, measurement of radiation, units, technique of sampling, decontaminations techniques, ventilation		
Contents:	<ul style="list-style-type: none"> • Radioactive decay • Special consideration of Rn222 and Radon decay • Products • ICRP principles • Protection against radiation • Measurement and sampling • Pathways • Risk analysis • Optimal remedial procedures • Decontamination techniques • Ventilation systems • Gases • Airway resistance 		
Literature:	ICRP publications, especially ICRP 43 and 65, conference proceedings		
Types of Teaching:	S1 (SS): 45 hours / Lectures (3 SWS) S1 (SS): seminars and practical training, excursions to rehabilitation sites - 45 hours / Practical Application (3 SWS)		
Pre-requisites:	Recommendations: Fundamentals in engineering and natural science		
Frequency:	yearly in the summer semester		
Requirements for Credit Points:	<p>For the award of credit points it is necessary to pass the module exam. The module exam contains: MP/KA (KA if 15 students or more) [MP minimum 30 min / KA 120 min] PVL: Project report PVL have to be satisfied before the examination.</p> <p>Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: MP/KA (KA bei 15 und mehr Teilnehmern) [MP mindestens 30 min / KA 120 min] PVL: Projektbericht PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.</p>		
Credit Points:	6		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): MP/KA [w: 1]		
Workload:	The workload is 180h. It is the result of 90h attendance and 90h self-studies. The latter includes industrial placement.		

Data:	BBREKL. MA. Nr. 2087 / Examination number: 31719	Version: 13.07.2014 	Start Year: SoSe 2014
Module Name:	Reclamation		
(English):			
Responsible:	Drebenstedt, Carsten / Prof. Dr.		
Lecturer(s):	Drebenstedt, Carsten / Prof. Dr.		
Institute(s):	Institute of Mining and Special Civil Engineering		
Duration:	1 Semester(s)		
Competencies:	The module provides the development of expertise and methodological skills in the field of mining engineering. The students learn the theory and practice of reclamation in mining as essential element of balance for mining impacts. They understand the parallelism of mine and reclamation planning and the fact, why reclamation can exceed the mine project phase. Additionally the students will be qualified to explain scientifically reclamation measures, plan technical measures and calculate the financial expenses.		
Contents:	<ul style="list-style-type: none"> - Impacts of mining and its effects - Legal requirements for permission - Scientific fundamentals of reclamation (soil, ground water balance,...) - Utilization requirements and realization in the post-mining landscaping (agriculture, forestry, waterbodies, nature protection, recreation, miscellaneous) - Concepts, Case studies 		
Literature:	Pflug (Hrsg.), 1998, Braunkohlentagebau und Rekultivierung, Springer Verlag Olschowy, Bergbau und Landschaft, 1993, Paray Verlag Gilscher, Bruns, 1999, Renaturierung von Abbaustellen, Verlag Eugen Ulmer Stuttgart		
Types of Teaching:	S1 (SS): Lectures (3 SWS) S1 (SS): Exercises (2 SWS) S1 (SS): Practical Application (1 SWS)		
Pre-requisites:	Recommendations: Mathematic-scientific fundamentals		
Frequency:	yearly in the summer semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: MP/KA (KA if 21 students or more) [MP minimum 30 min / KA 60 min] PVL: Submission and positive evaluation of module exercises PVL: Participation in 2 excursions of the chair Surface-Mining PVL have to be satisfied before the examination. Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: MP/KA (KA bei 21 und mehr Teilnehmern) [MP mindestens 30 min / KA 60 min] PVL: Erfolgreicher Abschluss der Übungsaufgaben PVL: 2 Fachexkursionen Tagebau PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.		
Credit Points:	6		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): MP/KA [w: 1]		
Workload:	The workload is 180h. It is the result of 90h attendance and 90h self-studies. Self-study includes autonomous and instructed preparation and performance of follow-up course work and examination preparation.		

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