

Amtliche Bekanntmachungen der TU Bergakademie Freiberg



Nr. 17, Heft 2 vom 05. Mai 2026

Modulhandbuch für den Masterstudiengang Groundwater Management

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Abkürzungen

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:	CSRM. MA. Nr. 2908 / Examination number: 62405	Version: 19.02.2018 	Start Year: SoSe 2017
Module Name:	Corporate Sustainability and Risk Management		
(English):			
Responsible:	Glöser-Chahoud, Simon / Prof.		
Lecturer(s):	Glöser-Chahoud, Simon / Prof.		
Institute(s):	Corporate Sustainability and Environmental Management		
Duration:	1 Semester(s)		
Competencies:	The students are able to identify, discuss and solve fundamental problems of sustainability and risk management in companies.		
Contents:	<p>Among others the topics of the course comprise:</p> <ul style="list-style-type: none"> • Originis the sustainability concept • Relevance of the sustainability concpet for companies • Methods and tools for the operationalisation of sustainability management, • Relevance of corporate risk management • The risk management cycle • Methods and tools for corporate risk management. 		
Literature:	<ul style="list-style-type: none"> • Anderson (2005): Corporate Survival: The Critical Importance of Sustainability Risk Management, iUniverse • Bertsch (2011): Uncertainty handling in multi-attribute decision support for industrial risk management , KIT Scientific Publishing • Borghesi, Gaudenzi (Eds., 2013): Risk Management, Springer • Merz (2011): Entwicklung einer indikatorenbasierten Methodik zur Vulnerabilitätsanalyse für die Bewertung von Risiken in der industriellen Produktion, KIT Scientific Publishing • Okpara, Idowu (Eds., 2013): Corporate Social Responsibility, Springer • Pojasek, R.B. (2017): Organizational Risk Management and Sustainability: A Practical Step-by-Step Guide, CRC Press • Taticchi, Carbone, Albino (Eds., 2013): Corporate Sustainability, Springer 		
Types of Teaching:	S1 (SS): Lectures (2 SWS) S1 (SS): Exercises (2 SWS)		
Pre-requisites:			
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: KA [90 min]</p> <p>Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min]</p>		
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 60h attendance and 120h self-studies.		

Daten:	DEU A1/ 1.Sem. BA. Nr. 948 / Prüfungs-Nr.: 71101	Stand: 04.08.2017 	Start: WiSe 2016
Modulname:	Deutsch A1/ 1. Semester		
(englisch):	German A 1/ 1st Semester		
Verantwortlich(e):	Polanski, Katja		
Dozent(en):			
Institut(e):	Internationales Universitätszentrum/ Sprachen		
Dauer:	1 Semester		
Qualifikationsziele / Kompetenzen:	Im Kurs werden Grundlagen in Phonetik, Orthographie, Grammatik und Lexik vermittelt. Die Teilnehmer erwerben Grundkenntnisse und Grundfertigkeiten im Hören, Sprechen, Lesen und Schreiben auf der Basis der Allgemeinsprache sowie landeskundliche Kenntnisse.		
Inhalte:	Kommunikation im Alltag (Menschen kennen lernen, Einkaufen, Restaurantbesuch, Tagesabläufe, Uhrzeit); Grammatik: zum Beispiel Fragestellungen, Zahlen, Konjugation der Verben, Präsens und Präteritum, Mengenangaben, Plural der Nomen, Komposita		
Typische Fachliteratur:	Begegnungen A1+, Schubert Verlag		
Lehrformen:	S1 (WS): Übung (4 SWS)		
Voraussetzungen für die Teilnahme:	Empfohlen: Keine Vorkenntnisse der deutschen Sprache notwendig		
Turnus:	jährlich im Wintersemester		
Voraussetzungen für die Vergabe von Leistungspunkten:	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min] PVL: Aktive Teilnahme an mindestens 80% des Unterrichts PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.		
Leistungspunkte:	4		
Note:	Die Note ergibt sich entsprechend der Gewichtung (w) aus folgenden(r) Prüfungsleistung(en): KA [w: 1]		
Arbeitsaufwand:	Der Zeitaufwand beträgt 120h und setzt sich zusammen aus 60h Präsenzzeit und 60h Selbststudium.		


Daten:	DEU A1/ 2. Sem. BA. Nr. 949 / Prüfungs-Nr.: 71102	Stand: 04.08.2017 	Start: SoSe 2017
Modulname:	Deutsch A1/ 2. Semester		
(englisch):	German A1/ 2nd Semester		
Verantwortlich(e):	Polanski, Katja		
Dozent(en):			
Institut(e):	Internationales Universitätszentrum/ Sprachen		
Dauer:	1 Semester		
Qualifikationsziele / Kompetenzen:	Im Kurs werden Grundlagen in Phonetik, Orthographie, Grammatik und Lexik vermittelt. Die Teilnehmer erwerben Grundkenntnisse und Grundfertigkeiten im Hören, Sprechen, Lesen und Schreiben auf der Basis der Allgemeinsprache sowie landeskundliche Kenntnisse.		
Inhalte:	Orientierung in der Stadt beziehungsweise in der Firma, öffentliche Verkehrsmittel, Wegbeschreibung, Berufe und Arbeitsalltag, Körper und Gesundheit, Wohnungssuche und -einrichtung, Lebenslauf, Kleidung; Grammatik: zum Beispiel Präpositionen, Frageartikel, Modalverben, Possessivartikel, Perfekt, Konjunktionen, Demonstrativpronomen, Graduierung und Komparativ		
Typische Fachliteratur:	Begegnungen A1+, Schubert Verlag		
Lehrformen:	S1 (SS): Übung (4 SWS)		
Voraussetzungen für die Teilnahme:	Obligatorisch: Deutsch A1/ 1. Semester, 2015-08-26 oder äquivalente Sprachkenntnisse		
Turnus:	jährlich im Sommersemester		
Voraussetzungen für die Vergabe von Leistungspunkten:	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min] PVL: Aktive Teilnahme an mind. 80% des Unterrichts PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.		
Leistungspunkte:	4		
Note:	Die Note ergibt sich entsprechend der Gewichtung (w) aus folgenden(r) Prüfungsleistung(en): KA [w: 1]		
Arbeitsaufwand:	Der Zeitaufwand beträgt 120h und setzt sich zusammen aus 60h Präsenzzeit und 60h Selbststudium. Der Zeitaufwand beträgt 120 Stunden und setzt sich zusammen aus 60 Stunden Präsenzzeit und 60 Stunden Selbststudium.		


Daten:	DEU A2/1. Sem. BA.Nr. 950 / Prüfungs-Nr.: 71103	Stand: 04.08.2017 	Start: WiSe 2016
Modulname:	Deutsch A2/ 1. Semester		
(englisch):	German A2/ 1st Semester		
Verantwortlich(e):	Polanski, Katja		
Dozent(en):			
Institut(e):	Internationales Universitätszentrum/ Sprachen		
Dauer:	1 Semester		
Qualifikationsziele / Kompetenzen:	Die Teilnehmer erweitern ihre Kenntnisse zu Grundlagen der deutschen Grammatik sowie ihren alltagspraktischen Wortschatz und führen Gespräche zu verschiedenen Themen des Alltags.		
Inhalte:	Familie und Verwandtschaft, Feste und Feiern in Deutschland, Wohnung und Wohnungseinrichtung, Schule und Ausbildung, Aussehen und Mode, Jahreszeiten, Wetter und Urlaub, Aspekte der Geschichte (Deutschland, Österreich, Schweiz); Grammatik: z.B. Nebensätze mit weil, wenn, dass; Rektion der Verben; Ordinalzahlen; Präpositionen; Reflexivpronomen; Zukunft ausdrücken; Adjektivdeklination		
Typische Fachliteratur:	Begegnungen A2+, Schubert Verlag		
Lehrformen:	S1 (WS): Übung (4 SWS)		
Voraussetzungen für die Teilnahme:	Obligatorisch: Deutsch A1/ 2. Semester, 2015-08-26 oder äquivalente Sprachkenntnisse		
Turnus:	jährlich im Wintersemester		
Voraussetzungen für die Vergabe von Leistungspunkten:	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min] PVL: Aktive Teilnahme an mind. 80% d. Unterrichts PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.		
Leistungspunkte:	4		
Note:	Die Note ergibt sich entsprechend der Gewichtung (w) aus folgenden(r) Prüfungsleistung(en): KA [w: 1]		
Arbeitsaufwand:	Der Zeitaufwand beträgt 120h und setzt sich zusammen aus 60h Präsenzzeit und 60h Selbststudium.		


Daten:	DEUA/2.Sem BA.Nr. 951 / Prüfungs-Nr.: 71105	Stand: 26.08.2015 	Start: SoSe 2017
Modulname:	Deutsch A2/ 2. Semester		
(englisch):	German A2/ 2nd Semester		
Verantwortlich(e):	Polanski, Katja		
Dozent(en):			
Institut(e):	Internationales Universitätszentrum/ Sprachen		
Dauer:	1 Semester		
Qualifikationsziele / Kompetenzen:	Die Teilnehmer erweitern ihre Kenntnisse zu Grundlagen der deutschen Grammatik sowie ihren allgemeinsprachlichen Wortschatz und führen Gespräche zu verschiedenen Themen des Alltags.		
Inhalte:	Freizeitaktivitäten (Sport, Vereine), Arbeit und Arbeitssuche, Politik in Deutschland, Städte (Leipzig, Berlin), Verkehr und Verkehrsmittel, Medien, Fernsehen in Deutschland, Kulturelle Unterschiede; Grammatik: z.B. Indefinita, Relativsätze, Nebensätze mit bevor, bis, als, deshalb, wenn, Konjunktiv II,		
Typische Fachliteratur:	Begegnungen A2+, Schubert Verlag		
Lehrformen:	S1 (SS): Übung (4 SWS)		
Voraussetzungen für die Teilnahme:	Obligatorisch: Deutsch A2/ 1. Semester, 2015-08-26 oder äquivalente Sprachkenntnisse		
Turnus:	jährlich im Sommersemester		
Voraussetzungen für die Vergabe von Leistungspunkten:	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min] PVL: Aktive Teilnahme an mind. 80% d. Unterrichts PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.		
Leistungspunkte:	4		
Note:	Die Note ergibt sich entsprechend der Gewichtung (w) aus folgenden(r) Prüfungsleistung(en): KA [w: 1]		
Arbeitsaufwand:	Der Zeitaufwand beträgt 120h und setzt sich zusammen aus 60h Präsenzzeit und 60h Selbststudium.		

Daten:	DEUB1/1.Sem. Nr. 952 / Prüfungs-Nr.: 71104	Stand: 04.08.2017 	Start: WiSe 2016
Modulname:	Deutsch B1/ 1. Semester		
(englisch):	German B1/ 1st Semester		
Verantwortlich(e):	Polanski, Katja		
Dozent(en):			
Institut(e):	Internationales Universitätszentrum/ Sprachen		
Dauer:	1 Semester		
Qualifikationsziele / Kompetenzen:	Die Teilnehmer bauen die in den Modulen Deutsch A1 und A2 erworbenen sprachlichen Kenntnisse und Fertigkeiten unter besonderer Berücksichtigung der mündlichen Kommunikation aus. Sie wiederholen und erweitern ihren Wortschatz. Auf der Basis aktueller und historischer Texte erhalten die Teilnehmer landeskundliche Informationen über die Bundesrepublik Deutschland.		
Inhalte:	Zusammenleben der Menschen in Deutschland (Wohn- und Lebensformen, Vorstellungen über berufliche Entwicklung und Freizeitgestaltung, Konsumverhalten, Beziehung zur Natur)		
Typische Fachliteratur:	Begegnungen B1+, Schubert Verlag		
Lehrformen:	S1 (WS): Übung (4 SWS)		
Voraussetzungen für die Teilnahme:	Obligatorisch: Deutsch A2/ 2. Semester, 2015-08-26 oder äquivalente Sprachkenntnisse		
Turnus:	jährlich im Wintersemester		
Voraussetzungen für die Vergabe von Leistungspunkten:	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min] PVL: Aktive Teilnahme an mind. 80% d. Unterrichts PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.		
Leistungspunkte:	4		
Note:	Die Note ergibt sich entsprechend der Gewichtung (w) aus folgenden(r) Prüfungsleistung(en): KA [w: 1]		
Arbeitsaufwand:	Der Zeitaufwand beträgt 120h und setzt sich zusammen aus 60h Präsenzzeit und 60h Selbststudium.		

Daten:	DEUB1/2. Sem. 953 / Prüfungs-Nr.: 71106	Stand: 26.08.2015 	Start: SoSe 2017
Modulname:	Deutsch B1/ 2. Semester		
(englisch):	German B1/ 2nd Semester		
Verantwortlich(e):	Polanski, Katja		
Dozent(en):			
Institut(e):	Internationales Universitätszentrum/ Sprachen		
Dauer:	1 Semester		
Qualifikationsziele / Kompetenzen:	Die Teilnehmer bauen die in dem Modul Deutsch b1/1.Semester erworbenen sprachlichen Kenntnisse und Fertigkeiten unter besonderer Berücksichtigung der mündlichen Kommunikation aus. Sie wiederholen und erweitern ihren Wortschatz. Auf der Basis aktueller und historischer Texte erhalten die Teilnehmer landeskundliche Informationen über die Bundesrepublik Deutschland.		
Inhalte:	Zusammenleben der Menschen in Deutschland (Wohn- und Lebensformen, Vorstellungen über berufliche Entwicklung und Freizeitgestaltung, Konsumverhalten, Beziehung zur Natur)		
Typische Fachliteratur:	Begegnungen B1+, Schubert Verlag		
Lehrformen:	S1 (SS): Übung (4 SWS)		
Voraussetzungen für die Teilnahme:	Obligatorisch: Deutsch B1/ 1.Semester, 2015-08-26 oder äquivalente Sprachkenntnisse		
Turnus:	jährlich im Sommersemester		
Voraussetzungen für die Vergabe von Leistungspunkten:	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min] PVL: Aktive Teilnahme an mind. 80% d. Unterrichts PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.		
Leistungspunkte:	4		
Note:	Die Note ergibt sich entsprechend der Gewichtung (w) aus folgenden(r) Prüfungsleistung(en): KA [w: 1]		
Arbeitsaufwand:	Der Zeitaufwand beträgt 120h und setzt sich zusammen aus 60h Präsenzzeit und 60h Selbststudium.		


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:	ENVMGTPOL. MA. Nr. 2909 / Examination number: 62403	Version: 16.10.2023 	Start Year: WiSe 2018
Module Name:	Environmental Management and Policies		
(English):			
Responsible:	Glöser-Chahoud, Simon / Prof.		
Lecturer(s):	Glöser-Chahoud, Simon / Prof.		
Institute(s):	Corporate Sustainability and Environmental Management		
Duration:	1 Semester(s)		
Competencies:	Students are able to identify and explain environmental issues occurring in companies. They explain the origin of environmental impacts and are able to apply selected methods and tools to solve (simplified) problems occurring in practice. Students describe instruments of environmental policies to mitigate and regulate emissions. They know basic approaches of environmental management systems (mainly ISO 14001) and are capable to quantify specific environmental impacts such as carbon and water footprints. They discuss the status of these methods and tools with regard to real problem instances and the current scientific literature and political discussion.		
Contents:	<p>The course covers among others:</p> <ul style="list-style-type: none"> • Environmental impacts of industrial and business activities, • Societal, economic and legal frameworks of environmental protection, • Environmental Management Systems, and • Methods and tools of Cleaner Production and Environmental Impact Assessment. 		
Literature:	<ul style="list-style-type: none"> • Calow (1999): Blackwells Concise Encyclopedia of Environmental Management, John Wiley & Sons • Dobson (2016): Environmental Politics, Oxford University Press • Russo (2008): Environmental Management: Readings and Cases, Sage Pubn • Schaltegger, Burritt, Petersen (2003): An Introduction to Corporate Environmental Management, Greenleaf Publishing • Tinsley, Pillai (2016): Environmental Management Systems: Understanding Organizational Drivers and Barriers, Routledge 		
Types of Teaching:	S1 (WS): Lectures (2 SWS) S1 (WS): Exercises (2 SWS)		
Pre-requisites:			
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	<p>For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [90 min]</p> <p>Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min]</p>		
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 60h attendance and 120h self-studies.		

Data:	EURVAL. BA.Nr. / Examination number: 31733	Version: 04.07.2022 	Start Year: SoSe 2023
Module Name:	European Values and Culture		
(English):	European Values and Culture		
Responsible:	Kreßner, Martin / Prof.		
Lecturer(s):	Bongaerts, Jan C. / Prof. Dr.		
Institute(s):	Institute of Mining and Special Civil Engineering		
Duration:	1 Semester(s)		
Competencies:	Students learn to understand the origins and the development of European values within the European cultural context. They understand the relevance and importance of European Values for technology development and for management processes at all levels. They understand how to integrate European Values into the value creation of business and other organizations.		
Contents:	The origins of European values from Antiquity and Early Christianity through Renaissance, the Enlightenment and the French Revolution to postwar European political initiatives and modern-day trends. Insights in the relevance of European values for the development of public administrations and society, the advancement of education and research and the management of business operations of all kinds. Potential threats to Europe by “competing” value systems Applications to specific areas of technology innovation with a reflection of the respective Sustainable Development Goals. Examples include technologies and systems for mobility, agriculture and food production, IT and data management, intergenerational equity and the circular economy, health, safety and job satisfaction.		
Literature:	Halman, L., Reeskens, T., Sieben, I., & Zundert, M. van. (2022). Atlas of European Values. <i>Open Press TiU</i> . DOI: 10.26116/p8v-tt12 Soboleva, N. (2022), “The determinants of the link between life satisfaction and job satisfaction across Europe”, <i>International Journal of Sociology and Social Policy</i> , Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/IJSSP-06-2021-0152		
Types of Teaching:	S1 (SS): Lectures (2 SWS) S1 (SS): Seminar (1 SWS)		
Pre-requisites:			
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: AP: Presentation with Questions and Answers [45 min] AP: term paper (minimally 12 pages)		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: AP: Präsentation mit Fragen und Antworten [45 min] AP: Ausarbeitung (mindestens 12 Seiten)		
Credit Points:	5		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): AP: Presentation with Questions and Answers [w: 1] AP: term paper (minimally 12 pages) [w: 1]		
Workload:	The workload is 150h. It is the result of 45h attendance and 105h self-studies.		

Data:	GSC. MA. Nr. 3630 / Examination number: 31724	Version: 04.07.2018	Start Year: SoSe 2019
Module Name: (English):	Geo-scientific Communication		
Responsible:	Hoth, Nils / Dr. Kreßner, Martin / Prof.		
Lecturer(s):	Jacob, Mark / Dr. Hoth, Nils / Dr.		
Institute(s):	International Centre/ Languages Institute of Mining and Special Civil Engineering		
Duration:	1 Semester(s)		
Competencies:	The course intends to give students the knowledge and the ability to perform scientific database research. Furthermore they will be able to structure and document their scientific work and results. Also they learn more about scientific writing (of a paper), as well as to present and defence their results (oral talk). This is very important before writing their MSc-thesis.		
Contents:	<ul style="list-style-type: none"> - dealing with scientific literature - Detailed database research, - citation of publications, - aspects about writing technical or review papers - structure your practical work in relation to the Master thesis (deal with sub-aspects) - Main ideas how to structure the written MSc-thesis in comparison to technical reports - dealing with the resources of the university library - search papers, therefore searching strategies <p>Oral communication (language of describing graphs, charts and diagrams)</p> <p>Argumentation line of talks</p> <p>Written communication - Language to link points and ideas, language of comparing and contrasting</p> <p>Major goals are learning and applying strategies of transporting scientific informations using different techniques and analogue and digital sources.</p> <p>AP main work</p> <p>working on a scientific topic for a defined time, prepare a paper (around 12 pages) in relation to a ground water, mine water or mining/ geoscience based topic. Students have to present their topic, argumentation line and basic literature (2 to 5 scientific papers) in before they start to write the paper. Afterwards, when they have handed in the paper, they have to give a presentation/ defence talk about this topic/ paper.</p>		
Literature:	Cargill, M. [2013] : 2013 Writing scientific research articles and internal material		
Types of Teaching:	S1 (SS): Lectures (1 SWS) S1 (SS): Exercises (2 d)		
Pre-requisites:	Recommendations: basics in hydrogeology, groundwater chemistry and mine water		
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: AP*: writing a scientific research paper AP*: presentation and defence of the paper		


	<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: AP*: Fachartikel erstellen AP*: Vorstellung und Verteidigung des Fachartikels</p> <p>* Bei Modulen mit mehreren Prüfungsleistungen muss diese Prüfungsleistung bestanden bzw. mit mindestens "ausreichend" (4,0) bewertet sein.</p>
Credit Points:	4
Grade:	<p>The Grade is generated from the examination result(s) with the following weights (w): AP*: writing a scientific research paper [w: 2] AP*: presentation and defence of the paper [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:	The workload is 120h. It is the result of 31h attendance and 89h self-studies. (89 h are spent on preparation of the paper and preparing the presentation as well as self study).

Data:	Geomod. MA. Nr. 638 / Examination number: 30114	Version: 05.12.2018 	Start Year: WiSe 2019
Module Name: (English):	Geomodelling - Geostatistics for Natural Resource Modelling		
Responsible:	Benndorf, Jörg / Prof. Dr.-Ing.		
Lecturer(s):			
Institute(s):	Institute for Mine Surveying and Geodesy		
Duration:	1 Semester(s)		
Competencies:	<p>After successful completion of the course, students are able to:</p> <ul style="list-style-type: none"> - explain the theoretical foundation of spatial data analysis, geostatistical model building and estimation, - apply geostatistical methods in the context of estimating natural resources/reserves, - critically evaluate model assumptions of different estimation and simulation method and choose suitable methods for specific applications, - discuss the critical character of the SMU-size to recoverable reserves, - conduct a resource/reserve estimation in a simple case study. 		
Contents:	<p>Importance of Resource Modelling and Estimation in the Value Chain of Mining, Uni-variate and Multi-variate Explorative Data Analysis, Analysis of Spatial Continuity, the Spatial Random Function Model, Model Assumptions of Stationarity and Ergodicity, Inference of a Spatial Random Function using unbiased Estimators, Dealing with Preferential Sampling, Variography and Variogram Modeling, Simple Methods for Spatial Estimation including the Polygon Method, Triangulation, Inverse Distance Power and Polynomial Regression, Geostatistical Methods for Spatial Estimation including Simple Kriging, Ordinary Kriging and Universal Kriging, Integrating Secondary Information into Spatial Modeling using Techniques of Co-Kriging, other methods including Indicator Kriging and Block Kriging, Introduction in Modeling spatial Uncertainty using Conditional Simulation, the Method of Sequential Gaussian Simulation, Geostatistical Considerations in Estimating Reserves in Terms of Volume-Variance Relationship for defining Smallest Movable Units and Grade Tonnage Curves, Applications in Mining Cases, Introduction to CRIRSCO-based International Reporting standards (example JORC Code).</p>		
Literature:	<p>M. Armstrong: "Basic Linear Geostatistics", Springer Verlag; H. Akin, H. Siemes: „Praktische Geostatistik“, Springer Verlag; A. G. Journel, and C.J. Huijbregts, 1978, Mining Geostatistics, Academic Press; P. Goovaerts: "Geostatistics for Natural Resource Evaluation", Oxford University Press; T. Schafmeister: "Geostatistik für die hydrogeologische Praxis", Springer Verlag</p>		
Types of Teaching:	<p>S1 (WS): Geomodelling – Geostatistics for natural resource modelling - Lecture / Lectures (2 SWS) S1 (WS): Geomodelling – Geostatistics for natural resource modelling - Practical work in the computer lab / Practical Application (2 SWS)</p>		
Pre-requisites:	<p>Recommendations: Angewandte Statistik, 2021-11-22 Infinitesimalrechnung, An introductory course in statistics.</p>		
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	<p>For the award of credit points it is necessary to pass the module exam. The module exam contains: KA* [90 min]</p>		


	<p>AP*: Set of assignments</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> <p>Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst:</p> <p>KA* [90 min]</p> <p>AP*: Hausarbeiten</p> <p>* Bei Modulen mit mehreren Prüfungsleistungen muss diese Prüfungsleistung bestanden bzw. mit mindestens "ausreichend" (4,0) bewertet sein.</p>
Credit Points:	5
Grade:	<p>The Grade is generated from the examination result(s) with the following weights (w):</p> <p>KA* [w: 2]</p> <p>AP*: Set of assignments [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:	The workload is 150h. It consists of 60h presence time (lectures and practical), and 90 hours independent work including group work, practical, self-study and preparation for examination.

Data:	GEOMON. BA. 128 / Examination number: 33002	Version: 05.12.2018	Start Year: WiSe 2019
Module Name:	Geomonitoring		
(English):			
Responsible:	Benndorf, Jörg / Prof. Dr.-Ing.		
Lecturer(s):	Benndorf, Jörg / Prof. Dr.-Ing. John, André / Dr.-Ing.		
Institute(s):	Institute for Mine Surveying and Geodesy		
Duration:	1 Semester(s)		
Competencies:	<p>Students are able to build on their knowledge about geodetic and geotechnical measurement methods on the one hand and their understanding about the geogenic/ antropogenic process to monitor on the other hand to generate reliable and effective monitoring concepts for spatial, temporal and spatio-temporal processes.</p> <p>Students are able to critically analyze monitoring concepts and interpret monitoring results.</p>		
Contents:	<p>The lecture introduces to applications and to the methodological approach of geomonitoring. Starting on the basis of measurement and data acquisition techniques it discusses monitoring design aspects and statistical and model based inference strategies. The aim is to infer an understanding of geo-processes and their relevant spatio-temporal dynamics, including change detection.</p> <p>Topical application in the context of resource extraction impact- and environmental impact monitoring on different scales in time and space will be discussed and analyzed.</p>		
Literature:	<p>Kavanagh, B.F. (2002): Geomatics. Pearson Education, Upper Saddle River;</p> <p>Jain, R. (2015). Environmental Impact of Mining and Mineral Processing: Management, Monitoring, and Auditing Strategies. Butterworth-Heinemann.</p> <p>Fischer-Stabel, P. (2005): Umweltinformationssysteme. Wichmann, Heidelberg.</p> <p>de Gruijter, J., Brus, D.J., Bierkens, M.F.P., Kotters, M.(2006). Sampling for Natural Resources. Springer.</p>		
Types of Teaching:	<p>S1 (WS): Geomonitoring - Lecture / Lectures (2 SWS)</p> <p>S1 (WS): Geomonitoring - Practical exercises / Practical Application (2 SWS)</p>		
Pre-requisites:	<p>Recommendations:</p> <p>Geomodellierung, 2018-01-11</p> <p>Grundlagen der Geoinformationssysteme, 2014-06-16</p> <p>Allgemeine Grundlagen der Vermessungs- und Instrumententechnik, 2023-06-30</p> <p>Ingenieurgeodäsie, 2017-09-13</p> <p>Grundlagen der Geofernerkundung, 2017-12-19</p> <p>Ingenieurvermessung</p>		
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	<p>For the award of credit points it is necessary to pass the module exam.</p> <p>The module exam contains:</p> <p>MP [30 min]</p> <p>PVL: Project report</p> <p>PVL have to be satisfied before the examination.</p> <p>Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst:</p> <p>MP [30 min]</p>		


	PVL: Projektbericht PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.
Credit Points:	5
Grade:	The Grade is generated from the examination result(s) with the following weights (w): MP [w: 1]
Workload:	The workload is 150h. It consists of 60h supervised lecture and practical time and 90h independent work including group work, practical, self-study and preparation for examination.

Data:	GWCGWMA. MA. Nr. 3631 / Examination number: 31725	Version: 03.04.2023 	Start Year: SoSe 2023
Module Name: (English):	Ground Water Chemistry for GW-Management - Advanced		
Responsible:	Hoth, Nils / Dr. Kreßner, Martin / Prof.		
Lecturer(s):	Hoth, Nils / Dr.		
Institute(s):	Institute of Mining and Special Civil Engineering		
Duration:	1 Semester(s)		
Competencies:	Students will gain confidence and experience in sampling, sample handling (conservation, storage) as well as measuring field parameters. Furthermore they enhance their knowledge about analytical techniques for groundwater. He gets a general understanding with respect to the use of isotopes to trace flow and reactive systems in the subsurface (within aquifers). In general they practice and deepen their knowledge about handling of photometry and other analytical techniques.		
Contents:	<p>Lecture of groundwater chemistry advanced combined with laboratory exercises and hydrogeochemical modelling with PhreeqC</p> <ul style="list-style-type: none"> - field sampling and on-site parameter - sample preservation methods - basics in analytical techniques - different analytical techniques in more detail (gravimetry, volumetry, spectroscopy, chromatography) - evaluation of analytical data - use of analytical data in hydrogeochemical modelling (ion balance error, saturation index, equilibrium to mineral phases etc.) - basics of isotope measurements in context to trace subsurface flow systems - explanation of investigations on different test sites (field examples) - study and interpretation of flow and reactive systems 		
Literature:	<p>Stumm & Morgan (1996): Aquatic Chemistry. John, Wiley & Sons; APPELO & POSTMA (1996) or (2005): Geochemistry, groundwater and pollution, Balkema. CLARK & FRITZ (1997): Environmental Isotopes in Hydrogeology, Lewis Publishers.</p>		
Types of Teaching:	S1 (SS): GW chemistry - advanced / Lectures (2 SWS) S1 (SS): groundwater chemistry - advanced lab practice / Practical Application (1 SWS)		
Pre-requisites:	Recommendations: Ground Water Chemistry for GW-Management - Basics, 2018-07-04		
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*: GW chemistry - Advanced [120 min] AP*: reports of lab practice and homework * In modules requiring more than one exam, this exam has to be passed or completed with at least "ausreichend" (4,0), respectively. Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA*: Grundwasserchemie - Fortgeschritten [120 min] AP*: Praktikumsprotokolle und Hausaufgaben * Bei Modulen mit mehreren Prüfungsleistungen muss diese		

	Prüfungsleistung bestanden bzw. mit mindestens "ausreichend" (4,0) bewertet sein.
Credit Points:	6
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA*: GW chemistry - Advanced [w: 2] AP*: reports of lab practice and homework [w: 1] * In modules requiring more than one exam, this exam has to be passed or completed with at least "ausreichend" (4,0), respectively.
Workload:	The workload is 180h. It is the result of 45h attendance and 135h self-studies. (120 h are spent on preparation, preparing the reports for the lab classes and self study)

Data:	GWCGWMB. MA. Nr. 3628 / Examination number: 31722	Version: 04.07.2018 	Start Year: WiSe 2018
Module Name: (English):	Ground Water Chemistry for GW-Management - Basics		
Responsible:	Hoth, Nils / Dr. Kreßner, Martin / Prof.		
Lecturer(s):	Hoth, Nils / Dr.		
Institute(s):	Institute of Mining and Special Civil Engineering		
Duration:	1 Semester(s)		
Competencies:	The student is widening his chemical know how in the field of hydrochemical aspects in particular with respect to groundwater. He will be able to understand and solve basic as well as more complex water quality problems. He gains an understanding of basic practical lab work for analysis.		
Contents:	<ul style="list-style-type: none"> - water as universal solvent - drinking water standards / disease aspects - basics of thermodynamics in relation to Ground waters (ionic strength, activity versus concentration, saturation index) - species interactions, solubility of gases in water - redox reactions - stability diagrams - solution/ precipitation of mineral phases - equilibria to the fluid phase - hydrochemical milieu measurements (background) - Acidity, alkalinity - Kb, Ks values - and titration in general - Carbonic acid - Carbonate phases interaction - Ground Water Sampling (hydraulic and chemical criteria) - Field handling of Water Samples (Filtration, Conservation) 		
Literature:	APPELO & POSTMA (1996) or (2005): Geochemistry, groundwater and pollution, Balkema.		
Types of Teaching:	S1 (WS): Basics of GW chemistry / Lectures (2 SWS) S1 (WS): practical lab courses - Basic hydrochemical lab work, basics of titration, photometry etc. / Practical Application (2 SWS)		
Pre-requisites:	Recommendations: Basic knowledge of chemistry and hydrogeology		
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	<p>For the award of credit points it is necessary to pass the module exam. The module exam contains: KA*: written exam to GW-chemistry [90 min] AP*: reports of lab practical work</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> <p>Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA*: Klausur Grundwasserchemie - Grundlagen [90 min] AP*: Protokolle zu den Laborpraktika Grundwasserchemie-Grundlagen</p> <p>* Bei Modulen mit mehreren Prüfungsleistungen muss diese Prüfungsleistung bestanden bzw. mit mindestens "ausreichend" (4,0) bewertet sein.</p>		
Credit Points:	6		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA*: written exam to GW-chemistry [w: 2] AP*: reports of lab practical work [w: 1]		

	* In modules requiring more than one exam, this exam has to be passed or completed with at least "ausreichend" (4,0), respectively.
Workload:	The workload is 180h. It is the result of 60h attendance and 120h self-studies. (120 h are spent on preparation, writing the lab course reports and self study)


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.		

Data:	FTMGWM. MA. Nr. 3635 / Examination number: 31729	Version: 04.07.2018	Start Year: WiSe 2018
Module Name:	Hydrogeological Flow and Transport Modelling for GW-Management		
(English):			
Responsible:	Hoth, Nils / Dr. Kreßner, Martin / Prof.		
Lecturer(s):	Berrios Amador, Danilo Hoth, Nils / Dr. Shao, Haibing / Junior-Prof.		
Institute(s):	International Centre/ Languages Institute of Mining and Special Civil Engineering Institute of Geotechnics		
Duration:	1 Semester(s)		
Competencies:	Modelling of flow, transport and chemical reactions for ground water systems. The student will be able to analyse a given situation, to choose an appropriate algorithm and software package to solve a given task. He is able to interpret complex results of the different models in relation to the practical, site related questions.		
Contents:	<ul style="list-style-type: none"> - Basics of hydrogeological flow modelling - numerical (FDM, FEM) and analytical solutions - Importance of the conceptual model - Boundary conditions, local grid refinements - Parameterisation aspects - Basics of non-reactive transport modelling - Transport modelling of organic contaminants - application of knowledge from GW-chemistry (use of isotherme concepts) - Boundary conditions for transport equation, stability criteria for numerical solution techniques - Reactive transport modelling - 1D with PHREEQC - concept, basic understanding (with mineral phase interactions and cation exchange) - Conceptual understanding for the modelling of column flow/ transport experiments - Short introduction to Multiphase flow and density driven flow <p>Practical exercises: computer- training block courses in relation to FDM Modelling - MODFLOW FEM- Modelling 1D-reactive transport with PHREEQC</p>		
Literature:	Rausch et al. (2005): Solute transport modelling Domenico & Schwartz (1998): Physical and Chemical Hydrogeology. APPELO & POSTMA (2005): Geochemistry, groundwater and pollution		
Types of Teaching:	S1 (WS): Lectures (2 SWS) S1 (WS): computer exercises / Exercises (2 SWS)		
Pre-requisites:	Recommendations: Hydrogeology for GW-Management - Basics and Advanced		
Frequency:	yearly in the winter 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] AP*: Exercises - homework computer courses * In modules requiring more than one exam, this exam has to be passed		


	<p>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:</p> <p>KA* [90 min]</p> <p>AP*: Übungen - Hausaufgaben aus den Computerkursen</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):</p> <p>KA* [w: 2]</p> <p>AP*: Exercises - homework computer courses [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:	The workload is 180h. It is the result of 60h attendance and 120h self-studies. (120 h are spent on preparation, to prepare reports and homework in relation to the exercises and self study)

Data:	HYGWMA. MA. Nr. 3632 / Examination number: 31726	Version: 04.07.2018	Start Year: SoSe 2019
Module Name:	Hydrogeology for GW-Management - Advanced		
(English):			
Responsible:	Hoth, Nils / Dr. Kreßner, Martin / Prof.		
Lecturer(s):	Hoth, Nils / Dr.		
Institute(s):	Institute of Mining and Special Civil Engineering		
Duration:	1 Semester(s)		
Competencies:	Students gain profound knowledge in karsthydrogeology and karst research. Furthermore his skills with respect to handling of data, multiple statistical evaluation will be enhanced to enable him solving hydrogeological problems on his own. Additional his team competence skills will be enforced.		
Contents:	<ul style="list-style-type: none"> - detailed understanding of hydrological aspects of water cycle (measurement of the different parts) - estimation of GW recharge - hydrological processes in arid, semi-arid zones - aspects of irrigation methods - Karst hydrogeology (different types of karst, karst phenomena, relevant karst features, karst indicators, karstifiable rocks, physical/chemical dissolution) - flow and transport in karst systems (contaminations, tracers, protection), regional examples of different karst systems - River bank filtration - geophysical exploration techniques and practical aspects of borehole logging - data evaluation and GIS-based data handling - 2D data analysis, kriging, basics of variogram-analysis Practical exercises: to GIS-based data handling and 2D – data analysis (spatial interpolation)		
Literature:	Dreybrodt (1988) Processes in Karst Systems Physics, Chemistry and Geology, Goldscheider & Drew (2007) Methods in Karst Hydrogeology Simmers (2003) Understanding water in a dry environment – hydrological processes in arid and semi-arid zones Kitanidis (1997) Introduction to geostatistics – applications to hydrogeology Ray et al. (2003) Riverbank filtration – improving source water quality		
Types of Teaching:	S1 (SS): Lectures (2 SWS) S1 (SS): Exercises (1 SWS)		
Pre-requisites:	Recommendations: Hydrogeology for GW-Management - Basics, 2018-07-04 Basic knowledge in statistics and data management.		
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: Homework - assignments 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: Hausaufgaben		

	PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.
Credit Points:	4
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]
Workload:	The workload is 120h. It is the result of 45h attendance and 75h self-studies. (75 h are spent with preparation, preparing home work and report and self study).

Data:	HYGWMB. MA. Nr. 3629 / Examination number: 31723	Version: 04.07.2018 	Start Year: WiSe 2018
Module Name: (English):	Hydrogeology for GW-Management - Basics		
Responsible:	Hoth, Nils / Dr. Kreßner, Martin / Prof.		
Lecturer(s):	Hoth, Nils / Dr.		
Institute(s):	Institute of Mining and Special Civil Engineering		
Duration:	1 Semester(s)		
Competencies:	<p>The student will gain general knowledge to characterise and investigate hydrogeological systems. So he will be able to solve relevant hydrogeological tasks.</p> <p>He will be able to select appropriate techniques for investigation and data evaluation. Furthermore he will gain knowledge around groundwater protection measures.</p>		
Contents:	<p>Lecture:</p> <ul style="list-style-type: none"> - general understanding of subsurface flow-processes (water-saturated GW-zone and water-unsaturated "soil-zone"). - porous media behaviour of loose rock aquifers (differences of kf-value versus permeability) - fissure/ fracture driven preferential flow in hard rock bodies - methods to estimate relevant flow parameters (challenges around) - pumping test (design, performance) and evaluation - saline water intrusion (fresh-saltwater interface at coastal sites). - Ground water flow to wells and drilling of wells (well development, rehabilitation) - basic understanding of acid mine drainage generation - Well head protection zones - general GW protection - European water frame work <p>Practical exercises:</p> <p>Estimation of relevant aquifer parameters (kf-values) Characterisation of water samples Sampling (low flow sampling), filtration, impact of construction materials on monitoring wells, Classification of loose rock materials hXRF-measurements as basis for qualitative characteristics of loose rock and dump/ tailings materials</p>		
Literature:	Fetter (1993): Applied Hydrogeology. Domenico & Schwartz (1998): Physical and Chemical Hydrogeology. USGS (2004) Water Supply Paper. Sterret (2007): Groundwater and Wells. DWGW-Richtlinie W101		
Types of Teaching:	S1 (WS): Lectures (2 SWS) S1 (WS): hydrogeology - practica and exercises / Practical Application (2 SWS)		
Pre-requisites:	Recommendations: Basic knowledge in Geology, Applied Geosciences		
Frequency:	yearly in the winter 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] AP*: Practica and exercises		

	<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*: Praktikum und Übungen</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: 2] AP*: Practica and exercises [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:	The workload is 180h. It is the result of 60h attendance and 120h self-studies. (120 h are spent on preparation for the classes, preparing the reports and self study)

Data:	INTMAN. MA. Nr. 2072 / Examination number: 62007	Version: 09.03.2023 	Start Year: SoSe 2016
Module Name:	International Business and Management		
(English):			
Responsible:	Stephan, Johannes / Prof. Dr.		
Lecturer(s):	Stephan, Johannes / Prof. Dr.		
Institute(s):	Professor of International Resource Policy and Economic Development		
Duration:	1 Semester(s)		
Competencies:	<p>The intention of this module is that students are enabled to analyse the particularities of management of firms where several international markets are involved. The module prepares to-be-managers or high-level public administration employees for the particular challenges and problems involved with the internationalisation of firms, the governance of foreign direct investment (inward and outward), and the management of multi-national corporations. After completion of the module, students can analyse and assess the value of inward and outward foreign direct investment of firms for the host and home countries.</p> <p>The first part of this course focuses on the ability to explain the existence of the multinational enterprise by generalising the theory of the firm and its characterisation on the one side and particularities of management in multinational enterprises on the other. The management part of the course enables students to analyse strategies of entry into foreign markets, including entry modes, entry timing and the location from an institutional perspective and by use of case studies. The third part of the course enables students to understand and apply strategies of management of knowledge and R&D both within the multinational enterprise and between the multinational enterprise and its host economies. This is discussed in terms of effects of knowledge and R&D management on subsidiary development and on technology transfer externalities (spillovers). The final part enables students to assess national and regional policies to attract or demotivate internationalisation of firms and industries.</p>		
Contents:	<p>Part 1: Economic theories of internationalisation and TNC</p> <ul style="list-style-type: none"> • The Transnational Corporation is a particular kind of firm <ul style="list-style-type: none"> ◦ Developing the reasons of existence of TNCs ◦ Defining a TNC ◦ An empirical representation of TNCs in the world ◦ TNCs in emerging markets ◦ Internationalisation of SMEs ◦ Micro-Multinationals and “How start-ups go global” • Hymer’s theory of the multinational firm: market imperfections • Product life cycle: a maturing theory • Internalisation theory: transaction costs and market failure • Dunning’s eclectic OLI-paradigm • The Scandinavian School: stages in the internationalisation process • Cantwell’s theory of technological accumulation • Kogut and Zander’s theory of MNCs as social communities • Verbeke’s evolutionary theory of the MNE <p>Part 2: Internationalisation strategies</p> <ul style="list-style-type: none"> • Network theory and “International Entrepreneurship” 		

- MNCs as an cross-country organisation: management and corporate control issues
- GVC governance: the orchestration of fragmented and internationally dispersed operations (WIR 2013, pp. 140-144)
- Aspect one: international strategic management
- Aspect two: Elements of a suitable strategy for firm-internationalisation
- Management of knowledge and technology in TNCs

Part 3: The role of FDI for economic development

- Two cases from empirical research in International Business
 - Knowledge and technology spillovers and the role of national innovation systems
 - The relationship between foreign trade, licensing and franchising, and foreign direct investment

Part 4: Policy-implications

- Foreign Direct Investment policies
 - Motivating FDI policy
 - Pitfalls and dangers of FDI policies
 - Overview of policy-strategies and instruments
 - Main questions to be asked/answered
 - Some conclusions

Literature:

Blomström, M. and A. Kokko (1998), MNCs and spillovers, *Journal of economic surveys*, Vol. 12, No. 3, pp. 247-277.

Cavusgil, S.T., G. Knight, and J.R. Riesenberger (2008) *International Business*, Pearson International, New Jersey.

Cavusgil, S.T. et al. (2012) *Doing Business in Emerging Markets*, Sage Publishing

Dunning, J. and S.M. Lundan (2008), *Multinational Enterprises and the Global Economy*, 2nd edition. Cheltenham: Edward Elgar.

Ietto-Gillies, G. (2005), *Transnational Corporations and International Production – Concepts, Theories, Effects*. Cheltenham: Edward Elgar.

Jindra, B. (2006), The theoretical framework: FDI and Technology Transfer, in J. Stephan (ed) *Technology Transfer via Foreign Direct Investment in Central and Eastern Europe – Theory, Method of Research and Empirical Evidence*, Houndsmill, Basingstoke (UK): Palgrave Macmillan, Chapter 2 (pp. 6-29).

Moran, T.H. et al. (eds) (2005), *Does Foreign Direct Investment Promote Development?* Institute for International Economics, Center for Global Development, Washington, DC

Pitelis, C. (ed.) (2000), *The nature of the transnational firm*, 2nd edition. London: Routledge.

Peng, M. and K. Meyer (2011), *International Business*, Centage Learning: London.

World Investment Report (2005), *Transnational Corporations and the Internationalization of R&D: Chapter VI: Development implications*, pp. 179-200.

Types of Teaching:

S1 (SS): Lectures (2 SWS)
S1 (SS): Exercises (2 SWS)

Pre-requisites:


Recommendations:

Knowledge of micro-economics and macro-economics at Bachelor level equivalent to 6 ECTS points each is required to be able to follow

	teaching and tutorials in the module and successfully complete the module.
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: Presentations and paper submissions 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: Präsentationen und Hausarbeiten 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 60h attendance and 120h self-studies.

Data:	IDEVRES. MA. Nr. 3417 / Examination number: 62005	Version: 09.03.2023	Start Year: WiSe 2013
Module Name:	International Development and Resources		
(English):			
Responsible:	Stephan, Johannes / Prof. Dr.		
Lecturer(s):	Stephan, Johannes / Prof. Dr.		
Institute(s):	Professor of International Resource Policy and Economic Development		
Duration:	1 Semester(s)		
Competencies:	<p>Students are enabled to understand the implications of management of firms in the environment of developing economies. Companies involved in a region that is characterised by much lower levels of economic development face particular challenges in the management: consideration of the implications of weak markets and statehood; of national and international development strategies; and such coordinated by multilateral organisations and international NGOs.</p> <p>Students become aware that of particular relevance in developing economies is the role of natural resources that are often abundant and currently their most precious source of national welfare. Students acquire the understanding that natural resources can turn into a curse, if they are not included into a coherent national development policy. Those include most prominently export-oriented policies, state-aid policies and the development of national champions, the role of foreign direct investments, and incentive systems for outward investment.</p>		
Contents:	<p>Course I The process of economic development and emerging markets</p> <ul style="list-style-type: none"> I.1 Foreign exchange and economic development I.2 Characteristics of developed, emerging, and developing countries I.3 Theories of Economic Development: Overview I.4 Development Policies: Approaches, Failures, and New Consensus? <p>Course II The role of natural resources for economic development</p> <ul style="list-style-type: none"> II.1 Natural resources and environment as production factor II.2 The concept of the resource curse in general II.3 Concepts for a benign role of resources for development ("Successful resource-based development") II.4 Natural resources global markets and national focus 		
Literature:	<p>Reading for Course I</p> <p>Clark, D.A. (ed.) The Elgar Companion to Development Studies (Elgar) Todaro, M. P. and S. C. Smith (12th edition) Economic Development (The Pearson Series In Economics) Desai, V. and R.B. Potter (eds) The Companion to Development Studies (Routledge) Journal articles from e.g. "World Development"; "World Bank Economic Review"; "Journal of Development Economics"; "The Review of International Organizations" World Bank Development Reports (annual)</p> <p>Reading for Course II</p> <p>Brautigam, D. (2009) The Dragon's Gift - China in Africa: The Real Story (Oxford University Press) Conrad, J. M. and D. Rondeau (eds) (2020) Natural Resource Economics: Analysis, Theory, and Applications (Cambridge University Press) Andersen, A. D. and B. Johnson (2014) Monocausalism versus Systems Approach to Development ' The Possibility of Natural Resource-based</p>		

	<p>Development. Institutions and Economies, Vol. 6, No. 2, pp. 27-54</p> <p>Gylfason, T. (2001) Natural resources, education, and economic development. European Economic Review, Vol. 45, Issue 4-6, pp. 847-859</p> <p>Sachs, J. D. and A. M. Warner (1997) Natural Resource Abundance and Economic Growth. NBER Working Papers Series</p> <p>van den Ploeg (2011) Natural Resources: Curse or Blessing? Journal of Economic Literature 49/2, pp. 366-420</p>
Types of Teaching:	<p>S1 (WS): Lectures (2 SWS)</p> <p>S1 (WS): Exercises (2 SWS)</p>
Pre-requisites:	<p>Recommendations:</p> <p>Knowledge of micro-economics and macro-economics at Bachelor level equivalent to 6 ECTS points each is required to be able to follow teaching and tutorials in the module and successfully complete the module.</p>
Frequency:	yearly in the winter semester
Requirements for Credit Points:	<p>For the award of credit points it is necessary to pass the module exam.</p> <p>The module exam contains:</p> <p>KA [90 min]</p> <p>PVL: Presentations and accompanying papers</p> <p>PVL have to be satisfied before the examination.</p> <p>Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst:</p> <p>KA [90 min]</p> <p>PVL: Präsentationen und Hausarbeiten</p> <p>PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.</p>
Credit Points:	6
Grade:	<p>The Grade is generated from the examination result(s) with the following weights (w):</p> <p>KA [w: 1]</p>
Workload:	The workload is 180h. It is the result of 60h attendance and 120h self-studies.


Data:	MTGMAN. MA. Nr. 3204 / Examination number: -	Version: 28.02.2023 	Start Year: SoSe 2010
Module Name:	Master Thesis Groundwater Management		
(English):			
Responsible:	Hoth, Nils / Dr. Kreßner, Martin / Prof.		
Lecturer(s):			
Institute(s):	Institute of Mining and Special Civil Engineering		
Duration:	1 Semester(s)		
Competencies:	<p>The students learn to work fully independent on a research topic. Therefore they have to use their knowledge from "Geo-Scientific Communication", mainly how to structure their work. Furthermore they will enforce their skills with respect to handling large data sets and to develop an investigation strategy from different technical points of view. So in the end they have to combine all their knowledge they got in relation to hydrogeological, hydrochemical and management aspects, as well as to deal with a general argumentation line. Additionally their team competencies and time management skills will be improved.</p>		
Contents:	Of course this depends on the detailed topic. Possible topics may be related to hydrogeological or hydrogeochemical aspects, as well as applied management or business administration questions in relation to groundwater (risk assessment studies, management concepts).		
Literature:	Depends on the research topic. For the general strategy to structure the work and how to write the MSc-thesis the acquired knowledge from "Geo-Scientific Communication" can and has to be used.		
Types of Teaching:	S1: Master thesis / Thesis (6 Mon)		
Pre-requisites:	<p>Mandatory: Themenausgabe: Abschluss von Modulen nach dieser Ordnung im Umfang von mind. 84 LP (Issue of the topic of the thesis: Modules totalling at least 84 CP according to the exam regulations have to be completed)Kolloquium: Abschluss aller Module (Oral defense of the thesis with discussion: all modules have to be completed)</p>		
Frequency:	constantly		
Requirements for Credit Points:	<p>For the award of credit points it is necessary to pass the module exam. The module exam contains: AP*: Thesis AP*: Oral defense of the thesis with discussion</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> <p>Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: AP*: Masterarbeit AP*: Verteidigung der Masterarbeit mit Diskussion</p> <p>* Bei Modulen mit mehreren Prüfungsleistungen muss diese Prüfungsleistung bestanden bzw. mit mindestens "ausreichend" (4,0) bewertet sein.</p>		
Credit Points:	30		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): AP*: Thesis [w: 2]		

AP*: Oral defense of the thesis with discussion [w: 1]


* In modules requiring more than one exam, this exam has to be passed or completed with at least "ausreichend" (4,0), respectively.

Workload:


The workload is 900h.


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:	Hoth, Nils / Dr. Kreßner, Martin / Prof.		
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: Extensive 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: Umfangreiche 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)

Data:	MWDTP. MA. Nr. 3634 / Examination number: 31728	Version: 04.07.2018 	Start Year: WiSe 2018
Module Name: (English):	Mine Water II - Dewatering, Technical Devices, Projects		
Responsible:	Hoth, Nils / Dr. Kreßner, Martin / Prof.		
Lecturer(s):	Hoth, Nils / Dr.		
Institute(s):	Institute of Mining and Special Civil Engineering		
Duration:	1 Semester(s)		
Competencies:	The students will gain knowledge about inflowing waters to open cast, open pits. They are able to deal with water balances and to characterise the status of slope stabilities in relation to pore pressures. They have an understanding how the dewatering system (pumps etc.) has to be chosen in relation to the site specific situation. Furthermore they are able to build up a site specific strategy to investigate, characterise, trace the inflowing waters to open pits or underground mines hydrogeochemically.		
Contents:	<p>Lecture:</p> <ul style="list-style-type: none"> - Water balances of open casts - Dewatering aspects under consideration of pit development - Pore pressures and slope stability and slope failures - Examples of water handling systems at different mine sites - Detailed explanation of investigation strategies/ results of different projects - Water inflow balances for test sites - how to deal with data shortage - Operational cost differences related to dewatering systems - Open pit or underground mine inflow systems - hydrogeochemical investigations (trace metals, REE, isotopes, Tracers ...) <p>Exercises:</p> <ul style="list-style-type: none"> - Calculate surface run-off - Water related problems - influence to mining operation/ Impact to operational costs - Open Pit under extreme climate - groundwater and surface water inflow - Rough dewatering estimation by easy analytical solutions 		
Literature:	Beale & Read (2013) Evaluating water in pit slope stability Herth & Arndts (1995) Theorie und Praxis der Grundwasserabsenkung		
Types of Teaching:	S1 (WS): Lectures (2 SWS) S1 (WS): Exercises (1 SWS)		
Pre-requisites:	Recommendations: Mine Water I – Formation and Treatment, 2018-07-04		
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	<p>For the award of credit points it is necessary to pass the module exam. The module exam contains:</p> <p>KA [90 min] PVL: Exercises and homework PVL have to be satisfied before the examination.</p> <p>Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst:</p> <p>KA [90 min] PVL: Übungen und Hausaufgaben PVL müssen vor Prüfungsantritt erfüllt sein bzw. nachgewiesen werden.</p>		
Credit Points:	4		


Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]
Workload:	The workload is 120h. It is the result of 45h attendance and 75h self-studies. (75 h are spent on preparation for the classes, homework and with self study)

Data:	OPMAN. MA. Nr. 2970 / Examination number: 61304	Version: 06.07.2015 	Start Year: WiSe 2016
Module Name:	Operations Management		
(English):			
Responsible:	Höck, Michael / Prof. Dr.		
Lecturer(s):	Höck, Michael / Prof. Dr.		
Institute(s):	Professor of Industrial Management, Production Management and Logistics		
Duration:	1 Semester(s)		
Competencies:	Foremost, the module aims to convey to the student problem-solving competencies with a view to putting the student in a position to analyse the complex questions in operations management, to structure them, and to develop solution alternatives.		
Contents:	This course addresses the management of operations in manufacturing and service firms. Diverse activities, such as determining the size and type of production process, purchasing the appropriate raw materials, planning and scheduling the flow of materials and the nature and content of inventories, assuring product quality, and deciding on the production hardware and how it gets used, comprise this function of the company. Managing operations well requires both strategic and tactical skills. During the term, we will consider such topics as: process analysis, workforce issues, materials management, quality and productivity, technology, and strategic planning, together with relevant analytical techniques. This course will provide a survey of these issues.		
Literature:	Davis, M. & Heineke, J. (2005): Operations Management, 5/e, McGraw-Hill Cachon & Terwiesch (2006): Matching Supply and Demand, McGraw-Hill Stevenson (2007): Operations Management, 9/e, McGraw-Hill.		
Types of Teaching:	S1 (WS): Lectures (2 SWS) S1 (WS): Exercises (2 SWS)		
Pre-requisites:	Recommendations: None		
Frequency:	yearly in the winter 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: Case Studies 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: Fallstudien 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 60h attendance and 120h self-studies. Self-study consists of preparation and review of the lectures, independent work on case studies, as well as preparation for the written test.		

Data:	PRIMA. BA. / Examination number: 60916	Version: 14.01.2022 	Start Year: SoSe 2022
Module Name:	Project Risk Management		
(English):			
Responsible:	Wiens, Marcus / Prof. Dr.		
Lecturer(s):	Wiens, Marcus / Prof. Dr.		
Institute(s):	Professor of Innovation and Risk Management		
Duration:	1 Semester(s)		
Competencies:	After successful completion of the module, students should be able to explain the context, rationale, strategy and tactics of project management with emphasis on the importance of project planning and project risk management by identifying and examining critical project phases and conditions. The course enables the participants to apply project management skills to projects in a variety of industries and disciplines with a strong focus on the complexities and problem constellations of mega projects, but also information technology, procurement & maintenance projects. By focussing on providing knowledge in core areas of risk analysis, time, cost and quality, the participants are able to confidently deal with the ever growing complexities and challenges of project management.		
Contents:	The module starts with a systematic overview of the principles of project management. The module covers the areas of project scope management, time management and resource scheduling as well as cost & quality management primarily from a risk-oriented perspective. The module applies methods such as model-based and statistical risk analysis, decision-theoretic analyses, Monte-Carlo-simulations as well as behavioral and game-theoretic approaches to understand incentives, decision biases and public acceptance. Finally, the module derives conclusions for efficient risk management policies for complex projects.		
Literature:	Charrel, P.-J. & Galarreta, D. (ed.) (2007): Project Management and Risk Management in Complex Projects, Springer. Munier, N. (2014): Risk Management for Engineering Projects, Springer. Wiens, M. & Schultmann, F. (2022): Precarious Projects - Case Studies and Solutions for High Risk Projects, KIT-Publishing.		
Types of Teaching:	S1 (SS): Lectures (2 SWS) S1 (SS): Exercises (2 SWS)		
Pre-requisites:			
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]		
	Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA [90 min]		
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 60h attendance and 120h self-studies.		

Data:	RESMGT. MA. Nr. 2082 / Examination number: 62407	Version: 31.05.2018 	Start Year: WiSe 2016
Module Name:	Resource Management		
(English):			
Responsible:	Glöser-Chahoud, Simon / Prof.		
Lecturer(s):	Glöser-Chahoud, Simon / Prof.		
Institute(s):	Corporate Sustainability and Environmental Management		
Duration:	1 Semester(s)		
Competencies:	<p>Students</p> <ul style="list-style-type: none"> • explain the resource related corporate management tasks, structure these, • use selected tools and methods and • explain the interplay between resource management and related tasks such as operations and supply chain management. 		
Contents:	<p>The course deals with the field of resource management from an industrial perspective. This comprises resource related management tasks, methods and tools to solve these and how they are embedded within functions and processes of companies. Thereby the focus lies on repetition factors mineral raw materials and energy carriers, renewable raw materials and energy carriers as well as secondary raw materials and energy carriers.</p>		
Literature:	<p>Bausch (2009): Handbook Utility Management, Springer Thiede (2012): Energy Efficiency in Manufacturing Systems, Springer Thonemann (2015): Operations Management, Pearson Vrat (2014): Materials Management, Springer Wagner,ENZLER (2006) Material Flow Management, Physica</p>		
Types of Teaching:	<p>S1 (WS): Lectures (2 SWS) S1 (WS): Exercises (2 SWS)</p>		
Pre-requisites:			
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	<p>For the award of credit points it is necessary to pass the module exam. The module exam contains: AP*: Case study with oral presentation KA* [90 min]</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> <p>Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: AP*: Fallstudie mit mdl. Präsentation KA* [90 min]</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): AP*: Case study with oral presentation [w: 1] KA* [w: 4]</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:	The workload is 180h. It is the result of 60h attendance and 120h self-studies.
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Data:	RESPCON. BA. Nr. / Examination number: 31732	Version: 04.07.2022 	Start Year: SoSe 2023
Module Name:	Responsible Consumption		
(English):	Responsible Consumption		
Responsible:	Drebenstedt, Carsten / Prof. Dr.		
Lecturer(s):	Bongaerts, Jan C. / Prof. Dr.		
Institute(s):	Institute of Mining and Special Civil Engineering		
Duration:	1 Semester(s)		
Competencies:	Students learn the essence and the significance of responsible consumption, both from the side of consumers and of producers in their function as enablers through appropriate product design, materials selection, ethically correct production conditions and respect for the environment. Students learn the potentials of consumers to behave responsibly and the opportunities of producers to enhance these potentials.		
Contents:	<p>Consumer economics: the rational neo-classical consumer model, consumer models of behavioural economics, psychological models of the learning consumer, sociological consumer models, ecological consumer models</p> <p>Consumer law, consumer education and information, standards, guidelines and labels for product development, manufacturing, distribution and recycling</p> <p>Marketing tools and techniques</p> <p>Measurement and evaluation systems for the assessment of products and services: Life Cycle Analysis, CO₂ footprint, ecological handprint and others</p> <p>Development (by engineers) of enabling technologies and management practice for responsible consumption: recyclable materials, design for recycling, durability of product use, human health and animal welfare etc.</p> <p>Case studies</p>		
Literature:	<p>Arto O. Salonen: Responsible Consumption, in: Samuel O. Idowu, Nicholas Capaldi, Liangrong Zu, Ananda Das Gupta (Eds): Encyclopedia of Corporate Social Responsibility, Springer, 2013, DOI: https://doi.org/10.1007/978-3-642-28036-8_119</p> <p>Journal of Cleaner and Responsible Consumption (Elsevier Open Access)</p>		
Types of Teaching:	<p>S1 (SS): Lectures (2 SWS)</p> <p>S1 (SS): Seminar (1 SWS)</p>		
Pre-requisites:			
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:</p> <p>KA* [90 min]</p> <p>AP*: term paper (minimally 12 pages)</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> <p>Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst:</p>		

	<p>KA* [90 min] AP*: Ausarbeitung (mindestens 12 Seiten)</p> <p>* Bei Modulen mit mehreren Prüfungsleistungen muss diese Prüfungsleistung bestanden bzw. mit mindestens "ausreichend" (4,0) bewertet sein.</p>
Credit Points:	5
Grade:	<p>The Grade is generated from the examination result(s) with the following weights (w):</p> <p>KA* [w: 2] AP*: term paper (minimally 12 pages) [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:	The workload is 150h. It is the result of 45h attendance and 105h self-studies.

Data:	HYTRACE. MA Nr. 3548 / Examination number: 30256	Version: 16.10.2019	Start Year: SoSe 2021
Module Name:	Tracers in Hydrogeology		
(English):			
Responsible:	Scheytt, Traugott / Prof. Dr.		
Lecturer(s):	Scheytt, Traugott / Prof. Dr.		
Institute(s):	Institute of Geology		
Duration:	1 Semester(s)		
Competencies:	Upon successful completion of the course, students will have demonstrated the ability to plan, execute and interpret a tracer test using artificial dye tracers. They will have shown the ability to make use of further compounds as tracers (isotopes, trace compounds) for determination of groundwater processes.		
Contents:	In groundwater, a variety of organic (including pesticides, pharmaceutical agents, sweeteners, Petroleum hydrocarbons, VOCs) and inorganic (including metals, rare earth elements, anions) substances are solved, their occurrence and concentrations reveal groundwater age, the infiltration function, or the transport processes. In addition, there are a number of reactive and non-reactive tracers that can be added to the groundwater and can provide important information about the flow and reactivity of groundwater and aquifer during tracer or push-pull test. Finally, isotopes and isotope ratios provide important insights into the recharge and age of groundwater. These experiments and investigations are needed to evaluate groundwater flow and transport. The course includes a tracer experiment conducted and interpreted in the hydrogeological test field.		
Literature:	Leibundgut, Ch., Maloszewski, P. & Külls, Ch. (2009): Tracers in Hydrology. - Wiley Blackwell.		
Types of Teaching:	S1 (SS): Lectures (1 SWS) S1 (SS): Exercises (1 SWS)		
Pre-requisites:	Recommendations: Introduction to Hydrogeology, 2019-10-01 Hydrogeochemistry, 2019-10-01		
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: Exam [90 min] AP: Preparing and submitting a report on the tracer investigation Voraussetzung für die Vergabe von Leistungspunkten ist das Bestehen der Modulprüfung. Die Modulprüfung umfasst: KA: Exam [90 min] AP: Bericht zur Geländeübung		
Credit Points:	3		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA: Exam [w: 1] AP: Preparing and submitting a report on the tracer investigation [w: 1]		
Workload:	The workload is 90h. It is the result of 30h attendance and 60h self-studies.		

Freiberg, den 04. Mai 2026
gez.
Prof. Dr. Jutta Emes
Rektorin

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