



**MASTER'S PROGRAMME "INTERNATIONAL MANAGEMENT OF
RESOURCES AND THE ENVIRONMENT"
(IMRE)**

MODULE HANDBOOK

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Introduction

Aims, Objectives, and Learning Outcomes of the Master Degree Course “International Management of Resources and the Environment” at the German-Mongolian Institute of Technology and Resources (GMIT)

Aims and Objectives

The Master's Course “International Management of Resources and Environment” is intended to impart essential knowledge of the relevant natural sciences and engineering and, above all, management with a dedicated focus on the natural resources and ecology.

Its objective is to qualify graduates of first cycle degrees in natural sciences and engineering to become knowledgeable about and acquainted with economics and business administration. This will focus on the natural resource sector, including mining and minerals processing, recycling, energy production and transformation in order to enable the graduates to pursue careers in natural resources and environment.

The studies take an interdisciplinary approach encompassing geosciences, ecology, mining engineering, law, economics, and management. Students will, therefore, be trained in this interdisciplinary approach.

The course covers 4 semesters consisting of 120 credits.

Qualification upon successful completion:

Bringing both their experience in engineering or in the natural sciences, resulting from their studies at the Bachelor's level, as well as their knowledge of economics and business administration combined with their deep insights into the natural resource sector acquired in this Master Degree Course, the graduates will be suited for many career opportunities in the natural resources and the energy sectors. In addition to this, they are also qualified for positions related to these sectors: including public administration (e.g. mining administrations, energy agencies), investment and financial organizations, equipment manufacturers and suppliers, logistics companies and consultants.

Learning Outcomes

The graduates of the second cycle degree course „International Management of Resources and the Environment” will be able to:

- Design strategic concepts for enterprises in the natural resource and the energy sectors
- Develop project management models for natural resources and energy projects
- Prepare assessments of environmental risks and their mitigation related to natural resource and energy projects
- Contribute to incorporating legal and regulatory requirements into natural resource and energy projects
- Prepare and assess financial reports related to natural resource and energy projects
- Work in interdisciplinary teams in order to achieve effective and ecologically sound business models for natural resources and management

Study plan IMRE

CPs	1. Semester	2. Semester	3. Semester	4. Semester	
1	Applied Economics 6 CP (2 UoL, 2 UoR)	Investment and Finance for the Resource Sector 6 CP (2UoL, 2UoR)	Sustainability Management 6 CP (2 UoL, 2 UoR)	Student Project 6 CP report+presentati on +excursion	
2					
3					
4					
5					
6					
7	Mining Technologies 4 CP (2 UoL, 2 UoR)	Mineral Economics 4 CP (2UoL, 2UoR)	Environmental Impact Studies 4 CP (2 UoL, 2 UoR)	Master Thesis 24 CP	
8					
9					
10					
11	Ecosystems 4 CP (2 UoL, 1 UoR/Field Trip)	Assessment and Management of Environmental Risks 6 CP (2 UoL, 2 UoR)	Strategic Management 6 CP (2 UoL, 2 UoR)		
12					
13					
14					
15	Natural Resources of Mongolia and Investigation Methods 6 CP (1 UoL, 4 UoR/Field Trip)	Law and Regulations of Resources and Environment 6 CP (1 UoL, 3 UoL)	Entrepreneurship 6 CP (2 UoL, 2 UoR)		
16					
17					
18					
19					
20					
21	Accounting and Financial Reporting 6 CP (2 UoL, 2 UoR)	Ecosystems Management 4 CP (1 UoL, 2 UoR/Field Trip)	Natural Resource and Energy Economics 4 CP (2 UoL, 2 UoR)		
22					
23					
24					
25					
26					
27	Electives 4 CP	Electives 4 CP	Electives 4 CP		
28					
29					
30					
CP total per semester	30	30	30		30
Legend:	CP =	Credit Points	Economics, business, finance		
	UoI =	Unit of Instruction (45 min. per unit)	Advanced Resource Economics and Management		
	UoIL =	Unit of Instruction Lecture	Resources and the Environment		
	UoIR =	Unit of Instruction Recitation	Mining		
	UoIExc =	Unit of Instruction Field trip	Thesis		
			Electives		

ECON-510 – Applied Economics

Module Title	Applied Economics			Module-Code	ECON-510
Duration	1 semester	Semester	Fall Semester	Module-Start	1
Credit points	6 CP	Workload	180 h	Contact hours	48 h
				Individual study	132 h
Module Coordinator	N.N.			Language	English
Syllabus	<p>The course is divided into three parts:</p> <ul style="list-style-type: none"> • Microeconomics: Theory of companies and of households, markets, market failure, second-best solutions, equilibrium, uncertainty and risk, and economics of information • Macroeconomics: Economy and growth, open economies, economic growth, investment and savings, business cycles and monetary economics • Public finance theory of resource-rich national economies: Natural resource shocks and the economic cycles, the theory of and evidence for the resource curse, optimal royalties and taxation, and case studies 				
Learning outcomes	<p>On successful completion of this module, the students should be able to:</p> <ul style="list-style-type: none"> • recall the principles of Microeconomics • recall the principles of Macroeconomics • explain the concept of Public finance theory of resource-rich national economies • explain and discuss the structure and the performance of economies as a whole • analyze and evaluate national welfare in a nation with a substantial natural-resources sector • assess and interpret the use and misuse of this welfare 				
Literature	<p>Ahlersten, Krister (2009): Essentials of Microeconomics. Ventus Publishing ApS.</p> <p>Cooper, Russell; John, Andrew (2011): Economics – Theory Through Applications. Melbourne Business School.</p> <p>Humphreys, Macartan; Sachs, Jeffrey D.; Stiglitz, Joseph E. (2007): Escaping the Resource Curse. Columbia University Press.</p> <p>Moss, David A. (2007): A Concise Guide to Macro-Economics. Harvard Business School Press.</p>				
Form of teaching	<p>Lecture (2 Uol)</p> <p>Recitation (2 Uol)</p>				
Assessment methods	<p>Written examination (90 min) and academic performance</p>				
Associated study programme	<p>MBA International Management of Resources and the Environment</p>				

Prerequisites for participation	None
Requirements for receiving credit points	Passing the module
Grading system	The final grade consists of the assignment and the academic performance during the module, accounting for 50%, and the module examination accounting for 50%.

PROC-510 – Mining Technology

Module Title	Mining Technology			Module-Code	PROC-510
Duration	1 semester	Semester	Fall Semester	Module-Start	1
Credit Points	4 CP	Workload	120 h	Contact hours	48 h
				Individual study	72 h
Module Coordinator	Prof. P.Vossen			Language	English
Syllabus	<p><u>Significance of Mining</u></p> <ul style="list-style-type: none"> - Mining in the Past, Present, and Future - Sustainability in Mining <p><u>The technology of Surface Mining</u></p> <ul style="list-style-type: none"> - Mining Methods and Selection of Mining Method - Planning Mining Process (extraction, loading, hauling, cycle times, production capacity) - Basic Mine Design - Open Pit Machines - Open Pit Optimization - Planning and Design of Mine Development <p><u>The technology of Underground Mining</u></p> <ul style="list-style-type: none"> - Underground Mining Methods and Selection of Mining Method - Determination Production Rate - Planning and Design of the Mining Process (extraction, loading, hauling, hoisting, cycle times, production capacity) - Underground Mining Machines - Mine Development Plan, Production Plan <p><u>Environmental Aspects and Mine Closure</u></p>				
Learning Outcomes	<p>On successful completion of this module, the students should be able to:</p> <ul style="list-style-type: none"> - select surface and underground mining methods (for a given deposit) and to develop a basic mine design, mine development plan, and mining plan. 				
Literature					
Form of teaching	Lecture (2 Uol) Recitation (2 Uol)				
Assessment methods	Written examination (90 min) and academic performance (Presentations)				
Associated study programme	MBA International Management of Resources and the Environment				
Prerequisites for participation					
Requirements for receiving credit points	Passing the module				
Grading system	The final grade consists of the assignment and the academic performance during the module, accounting for 50%, and the module examination accounting for 50%.				

ECOS-510 – Ecosystems

Module Title	Ecosystems			Module-Code	ECOS-510
Duration	1 semester	Semester	Fall Semester	Module-Start	1
Credit Points	4 CP	Workload	120 h	Contact hours	36 h
				Individual study	84 h
Module Coordinator	Prof. D. Karthe			Language	English
Syllabus	<p>This course will provide students with theoretical background knowledge in Geo-Ecology and provide first insights into the practical relevance and application. In the following semester, course ECOS-511 will build upon this module. Topics in this course include:</p> <ul style="list-style-type: none"> • Introduction to Ecology: abiotic and biotic components of ecosystems and their interlinkages; Ecosystem Dynamics; Ecosystem Services • Ecological zonation (at the global and regional scale) • General Climatology (physical basics, global atmospheric circulation, climate change); climate of Mongolia (regional circulation, specific characteristics, impacts and mitigation of climate change; urban climatology) • Soil Science (Introduction to soil physics, chemistry, and biology; soils of Mongolia: specific properties, distribution) • Hydrology (hydrological cycle, water quality; aquatic ecology; water resources of Mongolia) 				
Learning Outcomes	<p>On successful completion of this module, students should be able to:</p> <ul style="list-style-type: none"> • describe the fundamental principles of climatology, soil science, and hydrology; • explain basic ecological relationships and their dependence on the physical environment; • analyze environmental challenges and their drivers at the global level and specifically for Mongolia; • critically assess societal processes in relation to the usage of resources and protection of the natural environment 				
Literature	<p>Cunningham, W.P.; Cunningham, M.A., and Saigo, B. (2005): Environmental sciences: a global concern (8th ed.). McGraw-Hill. New York.</p> <p>Lottermoser, B. (2010): Mine Wastes. Springer, Heidelberg.</p> <p>Plaster, E. (2013): Soil Science and Management. Cengage Learning.</p>				
Form of teaching	Lecture (2 UoI) Recitation/Field Trip (1 UoI)				
Assessment methods	Written examination (90 min.), academic performance (presentations)				
Associated study programme	MBA International Management of Resources and the Environment				
Prerequisites for participation	Knowledge of Applied Geosciences recommended				
Requirements for receiving credit points	Passing the module				

Grading system	The final grade consists of the assignment and the academic performance during the module, accounting for 50%, and the module examination accounting for 50%.
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NRIM-510 – Natural Resources of Mongolia and Investigation Methods

Module Title	Natural Resources of Mongolia and Investigation Methods			Module-Code	NRIM-510
Duration	1 semester	Semester	Fall Semester	Module-Start	1
Credit Points	6 CP	Workload	180 h	Contact hours	60 h
				Individual study	120 h
Module Coordinator	Prof. R. Herd			Language	English
Syllabus	<p>Lecture Part A: “Geology of Mongolia” This part of the lecture provides an overview of the geology of Mongolia. Topics are: - regional geodynamic evolution and tectonics - geological units of Mongolia, their distribution and properties - magmatic and volcanic activities over time</p> <p>Lecture Part B: “Resource potential and typical raw material deposits of Mongolia” This part of the lecture focusses on the resource potential of Mongolia. Derived from the geodynamic evolution and the local geological units, the potential for natural resources will be estimated. The distribution of energy raw materials, metals, industrial minerals, hard and soft rocks as well as groundwater will be evaluated. Part A and B are supplemented by 3 one-day excursions to typical geological sites, raw material occurrences and active mines.</p> <p>Part C: “Investigation methods and techniques” The lecture provides an overview of the state-of-the-art investigation methods and techniques used for prospecting and the detection of raw materials and groundwater. Methods and techniques such as remote sensing, satellite and aerial image interpretation, seismic, electromagnetic, geoelectric, geomagnetic, radiometric investigations, as well as geochemical and geological methods will be considered. Part C is supplemented by a 3 day Field Training. The students will use different investigation methods in the field and will perform a small prospection campaign for a certain raw material.</p>				
Learning Outcomes	<p>On successful completion of the module, the student should be able to:</p> <ul style="list-style-type: none"> • describe the geodynamic evolution of the region • differentiate the geological units and their distribution • estimate the resource potential of the different units and regions • describe the distribution of raw material deposits in Mongolia • recall the state-of-the-art investigation methods • explain the principles of the investigation methods and their field of application 				
Literature	Evans, A. M. (1992): Ore Geology and Industrial Minerals. Blackwell. Oxford.				

	<p>Lillesand, T. M.; Kiefer, R. M.; Chipman, J. W. (2008): Remote sensing and image interpretation. Wiley. Hoboken.</p> <p>Reynolds, J. M. (2011): An introduction to applied and environmental geophysics. Wiley-Blackwell. Chichester.</p> <p>Vogelsang, D. (1995): Environmental Geophysics. Springer. Berlin.</p>
Form of teaching	<p>Lectures (1 Uol)</p> <p>Excursion (2 Uol) / 3 days</p> <p>Field Training (2 Uol) / 3 days</p>
Assessment methods	<p>Written examination, academic performance, and report for the field training (8-10 pages)</p>
Associated study programme	<p>MBA International Management of Resources and the Environment</p>
Prerequisites for participation	<p>Knowledge of Applied Geosciences recommended</p>
Requirements for receiving credit points	<p>Passing the module</p>
Grading system	<p>The final grade consists of the assignment and the academic performance during the module, accounting for 50%, and the module examination accounting for 50%.</p>

ACNT-510 – Accounting and Financial Reporting

Module Title	Accounting and Financial Reporting			Module-Code	ACNT-510
Duration	1 semester	Semester	Fall Semester	Module-Start	1
Credit Points	6 CP	Workload	180 h	Contact hours	48 h
				Individual study	132 h
Module Coordinator	N.N.			Language	English
Syllabus	<p>The students are familiarized with the principles and concepts of financial and managerial accounting:</p> <ol style="list-style-type: none"> (1) Basics of accounting and the business environment (2) Recording business transactions in accounting (3) Journalizing plant assets, natural resources, and intangibles (4) Journalizing long-term liabilities (loans and bonds) (5) Analyzing and preparing the statement of cash flows (6) Financial statement analysis (horizontal and vertical analysis, ratios) (7) Distinctions between Financial and Managerial and Accounting (8) Cost accounting systems (9) Budgeting (10) Short-term and long-term investment decisions (11) The Balanced Scorecard 				
Learning outcomes	<p>On successful completion of this module, the students should be able to:</p> <ol style="list-style-type: none"> (1) apply the main instruments of accounting, such as cash-flow statements, income, and expenditure statements, balance sheets (2) intelligently use accounting information e.g. to evaluate assets and liabilities (3) analyze and interpret financial documents (4) explain the economic performance of business operations and of companies (5) look through an annual report (learn the language and techniques) (6) develop the ability to use financial statements to assess a company's performance (7) have a sense of the limitations of financial statement data (8) understand the need and functioning of management control systems (9) understand the mechanics of cost accounting under different assumptions (10) apply the strategy and planning business tool Balanced Scorecard for real small business decisions 				
Literature	<ul style="list-style-type: none"> • Miller-Nobles/Mattison/Matsumura (2018): Horngren's Financial & Managerial Accounting, 6th Global Edition, Pearson. • Wild/Shaw/Chiappetta (2016): Fundamental Accounting Principles, 23rd ed., McGraw Hill. • Roychowdhury (2004): Introduction to Financial and Managerial Accounting, OpenCourseWare: Massachusetts Institute of Technology. 				
Form of teaching	Lecture (2 Uol) Exercises (1 Uol) Assignments (1 Uol)				
Assessment methods	Written examination(s), assignment and academic performance				
Associated study program	MBA International Management of Resources and the Environment				
Prerequisites for participation	None				
Requirements for receiving credit points	Passing the module				

Grading system	The final grade consists of the assignment and the academic performance during the module, accounting for 50%, and the module examination accounting for 50%.
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IFRS-510 – Investment and Finance for the Resource Sector

Module Title	Investment and Finance for the Resource Sector			Module-Code	IFRS-510
Duration	1 semester	Semester	Spring	Module-Start	2
Credit Points	6 CP	Workload	180 h	Contact hours	48 h
				Individual study	132 h
Module Coordinator	Prof. Jan C. Bongaerts			Language	English
Syllabus	<p>The participants of this course will learn the theoretical background and the practical application of the following:</p> <ul style="list-style-type: none"> • Valuation of projects in the natural resources industry • Calculation of investment projects and their performance • Financial markets, Portfolio Theory, CAPM • Corporate finance for the natural resources industry • Real options analysis for natural resources projects • Non-conventional financing of natural resources projects 				
Learning Outcomes	<p>On successful completion of the module, the students should be able to:</p> <ul style="list-style-type: none"> • specify requirements of fundraising for projects with a focus on the natural resources sector • assess the performance of projects • differentiate between classic and non-conventional financing means for all stages: exploration, preparation, production, closure, and post-closure 				
Literature	<p>Rudenko, Victor (2012): The Mining Valuation Handbook. Wiley. Torries, Thomas F. (1998): Evaluating Mineral Projects: Applications and Misconceptions. Society for Mining, Metallurgy, and Exploration.</p>				
Form of teaching	<p>Lecture (2 Uol) Recitation (2 Uol)</p>				
Assessment methods	<p>Written examination (90 min) course assignments, and academic performance</p>				
Associated study programme	<p>MBA International Management of Resources and the Environment</p>				
Prerequisites for participation	<p>None</p>				
Requirements for receiving credit points	<p>Passing the module</p>				
Grading system	<p>The final grade consists of the assignment and the academic performance during the module, accounting for 50%, and the module examination accounting for 50%.</p>				

MIEC-510 – Mineral Economics

Module Title	Mineral Economics			Module-Code	MIEC-510
Duration	1 semester	Semester	Spring Semester	Module-Start	2
Credit Points	4 CP	Workload	120 h	Contact hours	48 h
				Individual study	72 h
Module Coordinator	Prof. F. M. Meyer			Language	English
Syllabus	<p>Students will receive a good overview of the theory of mineral economics and relevant applications as follows:</p> <ul style="list-style-type: none"> • Properties and derived demand for minerals (metallic minerals, industrial minerals) • Overview of mineral extraction technologies (open-pit and underground mining, seabed mining) • Economic geology • Demand • Supply • Markets and prices • Mineral commodity trade and comparative advantage in mining • Market power and competition policy • Mining and economic development • Depletion and scarcity • Cutoff grade • Cash flow, the net present value • Net smelter return • Reporting of exploration results (JORC Code) • Geologic factors affecting recovery and value • Overview of costs in the base metal and gold mining industries • Depletion and the long-run availability of mineral commodities 				
Learning Outcomes	<p>On successful completion of the module, the students should be able to:</p> <ul style="list-style-type: none"> • Understand the principles of economic geology • Recall mineral extraction technologies • Recall the need for minerals and the principle of derived demand • Describe the specifics of the economics of minerals • Transfer this focus on all aspects: exploration, production, use, recycling. • Recall reporting of exploration results, resources, and reserves • Understand the implications of resource depletion and scarcity • Understand the significance of minerals in resource-rich economies. • Understand mineral commodity trade • Understand the operation of markets • Recall aspects of public policy, rents, and taxation 				
Literature	<p>Walter, J. Pohl (2011) Economic Geology – Principles and Practice, Wiley – Blackwell.</p> <p>Tilton, J. E.; Guzmán, J.G. (2016) Mineral Economics and Policy. Routledge.</p>				

	Doggett, M.D.; Parry, J.R. Editors. Wealth Creation in the Minerals Industry: Integrating Science, Business, and Education Society of Economic Geologists, Inc., Special Publication Number 12 Stone, John G.; Dunn, Peter G. Editors Ore Reserve Estimates in the Real World Society Of Economic Geologists, Inc., Special Publication Number 3.
Form of teaching	Lectures (2 UoI) Recitation (2 UoI)
Assessment methods	Written examination (90 min.) and academic performance
Associated study program	MBA International Management of Resources and the Environment
Prerequisites for participation	
Requirements for receiving credit points	Passing the module
Grading system	The final grade consists of the assignment and the academic performance during the module, accounting for 50%, and the module examination accounting for 50%.

AMER-510 – Assessment and Management of Environmental Risks

Module Title	Assessment and Management of Environmental Risks			Module-Code	AMER-510
Duration	1 semester	Semester	Spring Semester	Module-Start	2
Credit Points	6 CP	Workload	180 h	Contact hours	48 h
				Individual study	132 h
Module Coordinator	Dr. B.Gunsmaa			Language	English
Syllabus	<p>Students of this module will become familiar with the concepts of risk's definition and of the identification and evaluation of risks with a focus on environmental risks. They will learn the fundamental approach towards risk in all important dimensions, starting with risk identification and modeling, assessing its importance (in terms of hazardousness to various receptors), its management through prevention, damage limitation or damage repair and clean-up, and ending with documentation and communication. The assessment and management of risk being considered to be a process with the following steps:</p> <ul style="list-style-type: none"> • Definitions of (environmental and health and safety) risks • Risk modeling • Toxicity • Evaluation of risks • Risk and legislation • Risk management • Risk and communication 				
Learning Outcomes	<p>On successful completion of the module, the students should be able to:</p> <ul style="list-style-type: none"> • describe the fundamental properties of risk • identify, measure and model risk and evaluate risk, • set up proper management of risk and relate environmental and safety risks to industrial activities 				
Literature	<p>Calow, Peter P. (1997): Handbook of Environmental Risk Assessment and Management. Wiley-Blackwell.</p> <p>Fjeld, Robert A.; Eisenberg, Norman A.; Compton, Keith L. (2007): Quantitative Environmental Risk Analysis for Human Health. Wiley.</p>				
Form of teaching	<p>Lecture (2 Uol)</p> <p>Recitation (2 Uol)</p>				
Assessment methods	<p>Written examination (90 min), course case study, and academic performance</p>				
Associated study programme	<p>MBA International Management of Resources and the Environment</p>				

Prerequisites for participation	None
Requirements for receiving credit points	Passing the module
Grading system	The final grade consists of the assignment and the academic performance during the module, accounting for 50%, and the module examination accounting for 50%.

LAW-510 – Law and Regulations of Resources and the Environment

Module Title	Law and Regulations of Resources and the Environment			Module-Code	LAW-510
Duration	1 semester	Semester	Spring Semester	Module-Start	2
Credit Points	6 CP	Workload	180 h	Contact hours	48 h
				Individual study	132 h
Module Coordinator	N.N.			Language	English
Syllabus	<p>The module is divided into two parts. Part A consists of a lecture on the law and regulations of resources and the environment exclusively related to Mongolia. In Part B, which is taught as a seminar, the focus of the topic will be on the international perspective.</p> <p>Students will learn the principles, the functioning and the interaction of the laws and regulations of the Republic of Mongolia with reference to natural resources and ecology. With this knowledge in mind, they will also learn the legal frameworks -- in various countries -- of laws related to mining and the administrative procedures regulating mining operations at all process stages, including the obligations of both public mining authorities and (private) companies in the natural resource sector. Given the involvement of international companies in the natural resource sector of the country, attention also focusses on the relevant international aspects of Mongolian law:</p> <ul style="list-style-type: none"> • law on nature and environmental protection • law on the use of natural resources • law on mining • administrative law and procedures relating to the natural resources sector • company law related to internationally operating companies • law on international trade • law on international movements of capital and revenue 				
Learning Outcomes	<p>On successful completion of this module the students should be able to:</p> <ul style="list-style-type: none"> • analyze the interaction between the law on nature and environmental protection and the law on the use of natural resources • apply the law on mining and the relevant administrative procedures to the natural resources sector in all process stages (exploration, development, production, closure, and rehabilitation) • assess the functioning and the obligations of international companies in the natural resource sector intending to operate or operating within Mongolia 				
Literature	<p>The Minerals Law of Mongolia (Amended Law) (30.10.2006): http://www.charltonsmine.com/images/stories/Overseas_Law/Mongolia/mineralawsomongolia.pdf</p> <p>Lovells, Hogan (15.09.2014): Amendment to the Law of Mongolia on Minerals. http://www.lexology.com/library/detail.aspx?g=e7e4f13e-7114-454a-881f-288825b456eb</p> <p>Ellis, Elisabeth; Rosholt, Sebastian; Baasankhuu, Dunnaran; Tumurbaatar, Sundarya (2014): High-Level Overview: Amendments to the Minerals Law (2006). MinterEllison. http://www.eisourcebook.org/cms/January%202016/Mongolia%20Mineral%20Law%20Amendments%202014.pdf</p> <p>Davaasuren, Orgil (2015): The Amendments of 2013, 2014 and 2015 to the Law of Mongolia on Minerals (2006). Ashid Advocates LLP. http://www.ashidadvocates.mn/files/publications/Minerals%20law%20%20final%20pdf2.pdf</p>				

Commented [A1]: Dear GMIT, we have added this paragraph according to what has been said in the workshop. Please revise if that is ok. The part below has been delivered by TU Freiberg.

Commented [A2]: Dear GMIT, please check learning outcomes with regard to part A (lecture)

Commented [A3]: Dear GMIT, the links in the literature list are just for your information on the literature recommended. They should not be part of the final version of the module handbook.

	U.S. Embassy in Mongolia, Department of State (06.2014): 2014 Investment Climate Statement. http://www.state.gov/documents/organization/231251.pdf U.S. Embassy in Mongolia (05.2015): 2015 Investment Climate Statement. http://mongolia.usembassy.gov/ics2015.html
Form of teaching	Lecture (1 Uol) Seminar (3 Uol)
Assessment methods	Written examination for the lecture (90 min) and essay (8-10 p.) for the seminar and oral presentation (15 min)
Associated study programme	MBA International Management of Resources and the Environment
Requirements for receiving credit points	Passing the module
Grading system	The final grade consists of the examination for the lecture, accounting for 25%, the seminar paper, accounting for 60%, and the oral presentation accounting for 15%.

Commented [A4]: Dear GMT, Please be aware, that upon recommendation by Prof. Bongaerts the weighing of the module is now 25% for the lecture and 75% for the seminar. This applies both to contact hours and grading system.

ECOS-511 – Ecosystems Management

Module Title	Ecosystems Management			Module-Code	ECOS-511
Duration	1 semester	Semester	Spring Semester	Module-Start	2
Credit Points	4 CP	Workload	120 h	Contact hours	36 h
				Individual study	84 h
Module Coordinator	Prof. D. Karthe			Language	English
Syllabus	<p>In this module, an ecosystem-based approach to resource management is used.</p> <p>The participants of this course will learn the practical application of the following, based on the theoretical background from ECO510:</p> <ul style="list-style-type: none"> • Mitigation of air quality problems • Sustainable soil management • Integrated Water Resources Management • Restoration ecology • Geotechnics in rehabilitation • Case studies with a focus on Mongolia: Mining rehabilitation; Air pollution in Ulaanbaatar and control options; River Basin Management in Mongolia 				
Learning Outcomes	<p>On successful completion of this module, students should be able to:</p> <ul style="list-style-type: none"> • identify the main ecological challenges in Mongolia (sensitivity of the ecosystem; causes, impacts, interlinkages of environmental problems) • analyze environmental protection needs and strategies in Mongolia • compare the scopes and limitations of different environmental (management) options, also taking into account socioeconomic, political and cultural realities and needs • critically assess societal processes in relation to the usage of resources and protection of the natural environment • develop ecological management strategies within a given case study 				
Literature	<p>Cunningham, W.P.; Cunningham, M.A., and Saigo, B. (2005): Environmental sciences: a global concern (8th ed.). McGraw-Hill. New York.</p> <p>Lottermoser, B. (2010): Mine Wastes. Springer, Heidelberg.</p> <p>Plaster, E. (2013): Soil Science and Management. Cengage Learning.</p>				
Form of teaching	Lecture (1Uol) Recitation/Field Trip (2 Uol)				
Assessment methods	Project report (10 pages each), academic performance (presentations)				
Associated study programme	MBA International Management of Resources and the Environment				
Prerequisites for participation	Successful completion of the <i>Ecosystems</i> module				
Requirements for receiving credit points	Passing the module				

Grading system	Project report, accounting for 50% of the final grade Academic performance, presentation, accounting for 50% of the final grade.
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SUMA-610 – Sustainability Management

Module Title	Sustainability Management			Module-Code	SUMA-610
Duration	1 semester	Semester	Fall Semester	Module-Start	3
Credit Points	6 CP	Workload	180 h	Contact hours	48 h
				Individual study	132 h
Module Coordinator	N.N.			Language	English
Syllabus	<p>Students learn the concepts of sustainability management within the triangle of economy, environment, and society.</p> <ol style="list-style-type: none"> 1. The concept of sustainability 2. Conceptual and theoretical foundations of sustainability 3. Environmental impact studies 4. Stakeholder management 5. Compliance management 6. Sustainability indicators and reporting standards 7. Sustainability in mining operations 8. Case studies on sustainability in mining operations 				
Learning Outcomes	<p>On successful completion of the module, the students should be able to:</p> <ul style="list-style-type: none"> • recall sustainability indicators • examine the measurement of sustainability in businesses through indicators, • develop sustainability reporting standards • apply strategic best practices for sustainability • carry out case studies on mining operations • design sustainability concepts for natural resource projects and assess their feasibility and their social acceptance within an environmentally sound setting 				
Literature	<p>Spitz, Karlheinz; Trudinger, John (2008): Mining and the Environment: From Ore to Metal. Taylor & Francis Ltd.</p> <p>Botin, J.A. (2009): Sustainable Management of Mining Operations. Society for Mining, Metallurgy, and Exploration</p>				
Form of teaching	<p>Lecture (2 UoI) Recitation (2 UoI)</p>				
Assessment methods	Written examination (90 min) and academic performance				
Associated study programme	MBA International Management of Resources and the Environment				
Prerequisites for participation	None				
Requirements for receiving credit points	Passing the module				
Grading system	The final grade consists of the assignment and the academic performance during the module, accounting for 50%, and the module examination accounting for 50%.				

ENIS-610 – Environmental Impact Studies

Module Title	Environmental Impact Studies			Module-Code	ENIS-610ST
Duration	1 Semester	Semester	Fall Semester	Module-Start	3
Credit Points	4 CP	Workload	120 h	Contact hours	48 h
				Individual study	72 h
Module Coordinator	Mr. Z.Uuganbaatar			Language	English
Syllabus	<p>Students taking this module learn the theory and application of environmental impact assessment; one of the most fundamental instruments of environmental management, as follows:</p> <ul style="list-style-type: none"> • Definitions of important concepts related to Environmental Impacts and Environmental Impact Studies (EIS) • Procedural matters of EIS, contents of EIS, completeness, accuracy • Obligations of the public authority • Obligations of the project developer • Criteria for the selection of projects for a generally obligatory EIS and for an EIS on a case-by-case basis • Criteria for identifying the environmental impacts of projects • Administrative procedure for the completion of an EIS • Allocation of the costs for performing an EIS • Possibility for judicial review of the decisions taken by a public authority 				
Learning Outcomes	<p>On successful completion of this module, the students should be able to:</p> <ol style="list-style-type: none"> 1. Describe the essentials of an EIS from the viewpoint of contents and procedures 2. Analyze and evaluate an EIS with respect to relevant criteria set by law or other relevant standards (e.g. World Bank and other development banks) 3. Interpret the outcomes of EIS with their relevance for actual subsequent project development and project operation 4. Competently participate in an EIS procedure on behalf of a project developer 				
Literature	<p>Gilpin, Alan (1994): Environmental Impact Assessment: Cutting Edge for the 21st Century. Cambridge University Press.</p> <p>Jain, Ravi K.; Urban, L. V.; Stacey, Gary S.; Balbach, Harold E. (2001): Environmental Assessment. (2nd Ed.). McGraw-Hill. New York.</p>				
Form of teaching	<p>Lecture (2 Uol)</p> <p>Recitation (2 Uol)</p>				
Assessment methods	Written examination (120 min) and academic performance				
Associated study programme	MBA International Management of Resources and the Environment				
Prerequisites for participation	None				
Requirements for receiving credit points	Passing the module				

Grading system	The final grade consists of the assignment and the academic performance during the module, accounting for 50%, and the module examination accounting for 50%.
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STMA-610 – Strategic Management

Module Title	Strategic Management			Module-Code	STMA-610
Duration	1 semester	Semester	Fall Semester	Module-Start	3
Credit Points	6 CP	Workload	180 h	Contact hours	48 h
				Individual study	132 h
Module Coordinator	Dr. Ch.Enkhzaya			Language	English
Syllabus	<p>Students of this module will be instructed in the main elements of strategy development and strategy management for companies, especially those in the natural resources sector.</p> <ul style="list-style-type: none"> • What is the strategy? • Strategic purpose, resources • Business and corporate strategy • Strategy development • International strategy • Strategy and culture • Strategies for commodities • Strategies of international mineral companies • Case studies 				
Learning Outcomes	<p>On successful completion of the module, the students should be able to:</p> <ul style="list-style-type: none"> • identify and set up strategies with a focus on long-term and sustainable development • apply internal organizational structures of a corporation to design a strategy in accordance with external factors • apply appropriate elements of strategic development to the natural resources sector 				
Literature	<p>Johnson, Gerry; Scholes, Keavan; Whittington, Richard (2008): Exploring Corporate Strategy (8th Ed.). Prentice Hall. Pearson Imprint.</p> <p>MacIntosh, Robert; MacLean; Donald (2015): Strategic Management – Strategies at Work. Palgrave MacMillan.</p>				
Form of teaching	<p>Lectures (2 Uol) Recitation (2 Uol)</p>				
Assessment methods	Written examination (120 min) and academic performance				
Associated study programme	MBA International Management of Resources and the Environment				
Prerequisites for participation	None				
Requirements for receiving credit points	Passing the module				
Grading system	The final grade consists of the assignment and the academic performance during the module, accounting for 50%, and the module examination accounting for 50%.				

ENTR-510 – Entrepreneurship

	Entrepreneurship			Module-Code	ENTR-610
Duration	1 semester	Semester	Fall Semester	Module-Start	3
Credit Points	6 CP	Workload	180 h	Contact hours	48 h
				Individual study	132 h
Module Coordinator	Z.Uuganbaatar			Language	English
Syllabus	<p>The participants of this module will learn to identify the entrepreneurial skills for bringing a business idea to business practice.</p> <p>They will learn:</p> <ul style="list-style-type: none"> to develop business ideas, team building, and networking, creativity and presentation skills to mobilize resources to bring ideas to fruition to develop the practical issues: business plan, finance, customer identification, market research, product launch 				
Learning Outcomes	<p>On successful completion of the module, the students should be able to:</p> <ul style="list-style-type: none"> develop themselves as entrepreneurs use key instruments in the business set-up: product development, market research, financial models (cash flow projections), team building present business models and financial plans to investors secure the required resources for the new business use the administrative and legal requirements for setting up and maintaining a business 				
Literature	<p>Gerber, Michael E. (2004): The E-Myth Revisited: Why Most Small Businesses Don't Work and What to Do About It. HarperCollins.</p> <p>Ries, Eric (2011): The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses. Crown Business.</p> <p>Thiel, Peter; Masters, Blake (2014): Zero to One: Notes on Startups, or How to Build the Future. Crown Business / Random House Audio.</p>				
Form of teaching	<p>Lecture (2 Uol)</p> <p>Recitation (2 Uol)</p>				
Assessment methods	<p>Written examination (90 min) and academic performance (case studies and team work)</p>				
Associated study programme	<p>MBA International Management of Resources and the Environment</p>				
Prerequisites for participation	<p>None</p>				

Requirements for receiving credit points	Passing the module
Grading system	The final grade consists of the assignment and the academic performance during the module, accounting for 50%, and the module examination accounting for 50%.

NREE-610 – Natural Resource and Energy Economics

Module Title	Natural Resource and Energy Economics			Module-Code	NREE-610
Duration	1 semester	Semester	Fall Semester	Module-Start	3
Credit Points	4 CP	Workload	180 h	Contact hours	48 h
				Individual study	132 h
Module Coordinator	N.N.			Language	English
Syllabus	<p>Students will learn the economics of optimal natural resources extraction for depletable and renewable resources as a theoretical concept with applications to practical situations</p> <ul style="list-style-type: none"> • Classification of natural resources • Economics of optimal extractions modeling • Environmental economics • Energy economics • Natural resources markets • Energy markets • Recycling markets 				
Learning Outcomes	<p>On successful completion of this module, the students should be able to:</p> <ul style="list-style-type: none"> • describe the economics of optimal natural resources extraction for depletable and renewable resources • identify current and future demands • use discount factors • explain the significance of technological progress • analyze environmental impacts of resource extraction and apply these models to energy resources, markets for natural resources and recycling 				
Literature	<p>Conrad, Jon M. (2010): Resource Economics. Cambridge University Press. New York.</p> <p>Kesler, Stephen E.; Arbor, Ann; Simon, Adam C. (2015): Mineral Resources, Economics, and the Environment. Cambridge University Press.</p>				
Form of teaching	<p>Lecture (2 Uol) Recitation (2 Uol)</p>				
Assessment methods	Written examination (90 min) and academic performance				
Associated study programme	MBA International Management of Resources and the Environment				
Prerequisites for participation	None				
Requirements for receiving credit points	Passing the module				

Commented [A5]: Is it 4CP ?

Grading system	The final grade consists of the assignment and the academic performance during the module, accounting for 50%, and the module examination accounting for 50%.
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PROJ-610 – Student Project

Module Title	Student Project			Module-Code	PROJ-610
Duration	1 semester	Semester	Spring Semester	Module-Start	4
Credit Points	6 CP	Workload	180 h	Contact hours	88 h
				Individual study	92 h
Module Coordinator	Dr. Ch. Gunsmaa			Language	English
Syllabus	<p>Basic content and working methods for management problems of Resources and the Environment, including the socioeconomic, political and cultural approaches. Training for moderating (panel) discussions.</p> <p>Project fieldwork/ case studies; including laboratory work and investigations.</p> <p>Students with different backgrounds should work together as a team on the chosen research topic, supervised by a coordinator.</p>				
Learning Outcomes	<p>On successful completion of this module, students should be able to:</p> <ul style="list-style-type: none"> • describe a given management problem, • find and evaluate within the team different approaches to find a solution • apply methods in order to evaluate the obtained data • presenting solution strategies, recall strategies for moderating discussions 				
Literature	Depending on the chosen research topic.				
Form of teaching	Project course (project work of 2 weeks and 1-2 days excursion)				
Assessment methods	Written report and oral presentation for the module examination and academic performance				
Associated study programme	MBA International Management of Resources and the Environment				
Prerequisites for participation	Ecosystems Management				
Requirements for receiving credit points	Successful working in the team and passing the examinations				
Grading system	The final grade consists of the assignment and the academic performance during the module, accounting for 50%, and the module examination accounting for 50%.				

MAST-610 - Master Thesis

Module Title	Master Thesis			Module-Code	MAST-610
Duration	1 semester	Semester	Spring Semester	Module-Start	4
Credit Points	24 CP	Workload	600 h + 120 h	Contact hours	
				Individual study	
Module Coordinator				Language	English
Syllabus	Current research topic from a specific research area				
Learning Outcomes	<p>On successful completion of the Masters' thesis, students should be able to:</p> <ol style="list-style-type: none"> 1. Pose scientific questions in a structured manner using interdisciplinary methods of science, technology and business administration 2. Critically evaluate and assess outcomes 3. Apply outcomes to practical and real-life problems. 4. Present results in written and oral forms in a scientifically acknowledged manner. 				
Literature	Depending on the topic				
Form of teaching	Thesis supervision				
Assessment methods	Written thesis (14 weeks writing period) and defense (30 min presentation followed by a 30 min discussion)				
Associated study programme	MBA International Management of Resources and the Environment				
Prerequisites for participation	Completion of the third semester and at least 90 CP earned				
Requirements for receiving credit points	Passing the thesis and the presentation				
Grading system	The final grade for the Master thesis consists of the grade of the thesis and the grade performance in the thesis defense with a weighting of 4:1, provided that the thesis was graded as "passed" (1.0).				

Commented [A6]: Questions are posed, stated or answered, not solved. Problems are solved!

ENGL - 610 – Academic Writing (elective)

Module Title	Electives			Module-Code	ENGL-610
Duration	1 semester	Semester	Fall/Spring	Module-Start	1, 2
Credit Points	4 CP	Workload	90 h	Contact hours	24 h
				Individual study	66 h
Module Coordinator	Dr. S.Kim			Language	English
Syllabus	The students can choose between courses from disciplines such as <ul style="list-style-type: none"> • language • non-technical • technical / engineering 				
Learning Outcomes					
Literature					
Form of teaching					
Assessment methods					
Associated study programme	MBA International Management of Resources and the Environment				
Prerequisites for participation	None				
Requirements for receiving credit points	Passing the module				
Grading system	The final grade consists of the assignment and the academic performance during the module, accounting for 50%, and the module examination accounting for 50%.				

PPRS-610 – Production Planning and Planning for the Resource Sector (elective)

Commented [A7]: It's not mentioned in the semester schedule

Module Title	Production Planning and Planning for the Resource Sector			Module-Code	PPRS-610
Duration	1 semester	Semester	Fall Semester	Module-Start	3
Credit Points	4 CP	Workload	120 h	Contact hours	48 h
				Individual study	72 h
Module Coordinator	Prof. Jan C. Bongaerts			Language	English
Syllabus	<p>Students will learn the theoretical concepts of production planning and apply them to projects and operations in the natural resource sector.</p> <p>Part 1: Projects for the natural resource sector</p> <ul style="list-style-type: none"> • Project planning and management • PERT, CPM, • Budget-restricted project planning • Time-restricted project planning • Combined time-restricted and budget-restricted project planning • Project performance monitoring and management • Costing of project planning <p>Part 2 Production in the natural resource sector</p> <ul style="list-style-type: none"> • Production processes • Capacity planning • Inventory management • Materials requirements planning • ERP (Enterprise resources planning) • Lean management • Internal and external logistics • Performance monitoring and control 				
Learning Outcomes	<p>On successful completion of this module, students should be able to:</p> <ul style="list-style-type: none"> • Design and set up a project • Plan and operate a project • Use instruments for project planning and management • Apply budgetary limitations in project management • Monitor project performance • Design and set up a production process • Plan capacity for the process (ERP) • Apply instruments for materials requirement and inventory • Apply instruments for internal and external logistics • Monitor process performance • Take corrective action 				
Literature	<p>Mukhopahyay, S. K. (2007): Production Planning and Control. PHI Learning.</p> <p>Jacobs, F. Robert; Berry, William Lee; Whybark, David Clay (2010): Manufacturing Planning and Control for Supply Chain Management (6th Ed.). McGraw-Hill Education.</p> <p>Roberts, Paul (2013): Guide to Project Management. The Economist.</p>				

	Bhattacharya, Jayanta (2003): Principles of Mine Planning. Allied Publishers Pvt. Ltd. (Department of Mining Engineering, India Institute of Technology, Kharagpur).
Form of teaching	Lecture (2 Uol) Recitation (1 Uol)
Assessment methods	Written examination (120 min), course assignments, and academic performance
Associated study programme	MBA International Management of Resources and the Environment
Prerequisites for participation	None
Requirements for receiving credit points	Passing the module
Grading system	The final grade c The final grade consists of the assignment and the academic performance during the module, accounting for 50%, and the module examination accounting for 50%.