



Programme jointly offered by Ghent University, TU Bergakademie Freiberg, Uppsala University

International Master of Science in Sustainable and Innovative Natural Resource Management

Language of instruction: English

Programme version 5

1 General Courses						65 credits	
1.1 Ghent University						22 credits	
Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002766	Introduction to the Circular Economy, Economics and Management of Natural Resources <i>Stijn Speelman -- Department of Agricultural Economics</i>	4		1	A:1	120
2	I002700	Clean Technology <i>Pieter Nachtergaele -- Department of Green Chemistry and Technology</i>	5		1	A:1	150
3	I002170	Environmental Inventory Techniques <i>Ellen Van De Vijver -- Department of Environment</i>	3		1	A:1	75
4	E065460	Rational Use of Materials <i>Tom Depover -- Department of Materials, Textiles and Chemical Engineering</i>	5		1	A:1	150
5	I002767	Resource Recovery and Recycling Technologies <i>Tom Hennebel -- Department of Biotechnology</i>	5		1	A:J	150
1.2 TU Bergakademie Freiberg						18 credits	
Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002768	Problems and Innovations in the Process Chain of Mineral Resources <i>Martin Bertau -- TU Bergakademie Freiberg</i>	4		1	A:1	120
2	I002174	Resources Chemistry <i>Gero Frisch -- TU Bergakademie Freiberg</i>	9		1	A:J	270
3	I002769	Literature Study and Business Plan <i>Johannes Stephan -- TU Bergakademie Freiberg</i>	5		2	A:1	150
1.3 Uppsala University						25 credits	
Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002191	Georesource Exploration and Characterisation <i>Pauline Jeanneret -- Uppsala University</i>	5		1	A:2	150
2	I002192	Raw Materials Network Seminar <i>Per Fors -- Uppsala University</i>	5		1	A:2	150
3	I002770	Innovation Management and Entrepreneurship <i>Jens Eklinger Frick -- Uppsala University</i>	10		1	A:2	300
1.3.1 Elective courses						5 credits	
Subscribe to 5 credit units from the following list. Subject to approval by the faculty.							
Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002194	Environmental Assessment <i>Benjamin Fischer -- Uppsala University</i>	5		1	A:2	150
2	I002195	Physical-Chemical Properties of Rocks, Minerals and Materials <i>Alireza Malehmir -- Uppsala University</i>	5		1	A:2	150
3	I002408	African Mineral Resources: the Science and Politics of Sustainable Extraction of Mineral Resources	5		1	A:2	150

2 Majors**15 credits**

Subscribe to 1 major from the following list. Subject to approval by the faculty.

2.1 Georesource Exploration – Uppsala University**15 credits**

Subscribe to 15 credit units from the following list.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002197	Critical Metals and Minerals <i>Erik Jonsson -- Uppsala University</i>	5		2	A:1	150
2	I002198	Exploration and Environmental Geophysics <i>Alireza Malehmir -- Uppsala University</i>	15		2	A:1	450
3	I002409	Challenges of Deep and High Stress Mining <i>Raymond Durrheim -- Uppsala University</i>	5		2	A:1	150
4	I002525	Professional Training in Earth Sciences <i>Ben Slater -- Uppsala University</i>	5		2	A:1	150
5	I002883	Applied 3D Geological Modeling and Mapping <i>Steffi Burchardt -- Uppsala University</i>	5		2	A:1	150

2.2 Resource Recovery and Sustainable Materials - Ghent University**15 credits**

Subscribe to 15 credit units from the following list, with

- 4 credit units from the courses with reference a,
- no less than 6 credit units from the courses with reference b.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002882	Sustainable Management of Resources in the Circular Economy <i>Gijs Du Laing -- Department of Green Chemistry and Technology</i>	4	a	2	A:J	120
2	E066190	Materials Science Thermodynamics <i>Inge Bellemans -- Department of Materials, Textiles and Chemical Engineering</i>	6		2	B:1	180
3	E900069	Composites <i>Wim Van Paepengem -- Department of Materials, Textiles and Chemical Engineering</i>	6	b	2	A:1	180
4	I002607	Resource Recovery Technology <i>Ramon Ganigé -- Department of Biotechnology</i>	6	b	2	A:2	180
5	E065480	Life Cycle Assessment of Materials and Structures <i>Nele De Belie -- Department of Structural Engineering and Building Materials</i>	3		2	A:2	90
6	I001571	Environmental Legislation <i>Frank Maes -- Department of European, Public and International Law</i>	3		2	A:1	75
7	I002677	Thermochemical Conversion of Biomass [nl] <i>Frederik Ronse -- Department of Green Chemistry and Technology</i>	4		2	A:2	120
8	I002679	Green Chemistry of Renewable Resources <i>Sven Mangelinckx -- Department of Green Chemistry and Technology</i>	4		2	A:1	120
9	E066661	Corrosion and Surface Technology <i>Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering</i>	6	b	2	A:2	180
10	E065471	Metal Extraction and Recycling <i>Stephanie Vervynck -- Department of Materials, Textiles and Chemical Engineering</i>	3	b	2	A:2	90
11	I002749	Metals and Metalloids in Environment and Technology <i>Filip Tack -- Department of Green Chemistry and Technology</i>	6		2	A:1	180
12	I002405	Basics of Control Engineering <i>Eveline Volcke -- Department of Green Chemistry and Technology</i>	3		2	A:1	75
13	I002406	Basics of Process Engineering <i>Frederik Ronse -- Department of Green Chemistry and Technology</i>	3		2	A:1	75
14	E071131	Sustainable Chemical Production Processes <i>Kevin Van Geem -- Department of Materials, Textiles and Chemical Engineering</i>	6		2	A:1	180
15	C003995	Geology of Building Stones <i>Veerle Cnudde -- Department of Geology</i>	6		2	A:1	176
16	C003693	Imaging Techniques of Consolidated and Unconsolidated Sediments <i>Veerle Cnudde -- Department of Geology</i>	6		2	A:1	176
17	C001505	Optical Mineralogy & Petrography [nl] <i>Veerle Cnudde -- Department of Geology</i>	5		2	A:1	150

18	I002591	Environmental Technology: Waste <i>Frederik Ronse -- Department of Green Chemistry and Technology</i>	3	b	2	A:2	90
19	E039060	Sustainable Energy and Rational Use of Energy <i>Jeroen Beeckman -- Department of Electronics and Information Systems</i>	4		2	A:2	120
20	I002771	Resource Recovery from Wastewater <i>Gijs Du Laing -- Department of Green Chemistry and Technology</i>	3	b	2	A:J	90

2.3 Sustainable Processes – TU Bergakademie Freiberg

15 credits

Subscribe to 15 credit units from the following list.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002183	Sensors and Actuators <i>Yvonne Joseph -- TU Bergakademie Freiberg</i>	4		2	A:1	120
2	I002849	Selective Separation of Strategic Elements <i>Roland Haseneder -- TU Bergakademie Freiberg</i>	5		2	A:1	150
3	I002848	Resources Chemical Technology <i>Martin Bertau -- TU Bergakademie Freiberg</i>	5		2	A:1	150
4	I002846	Biotechnology in Mining <i>Michael Schlömann -- TU Bergakademie Freiberg</i>	5		2	A:1	150
5	I002847	Microbiology for Resource Scientists: Lab Course <i>Michael Schlömann -- TU Bergakademie Freiberg</i>	3		2	A:1	75
6	I002530	Microbiology for Resource Scientists: Lecture <i>Michael Schlömann -- TU Bergakademie Freiberg</i>	3		2	A:1	90
7	I002850	Simulation of Sustainable Metallurgical Process <i>Markus Reuter -- TU Bergakademie Freiberg</i>	6		2	A:2	180
8	I002884	Analysis of High Temperature Processes in Extractive Metallurgy <i>Alexandros Charitos -- TU Bergakademie Freiberg</i>	5		2	A:1	150

2.4 Circular Societies - Ghent University

15 credits

Subscribe to 15 credit units from the following list, with 7 credit units with reference a.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002882	Sustainable Management of Resources in the Circular Economy <i>Gijs Du Laing -- Department of Green Chemistry and Technology</i>	4	a	2	A:J	120
2	I002772	Circular Cities <i>Gijs Du Laing -- Department of Green Chemistry and Technology</i>	3	a	2	A:1	90
3	I002591	Environmental Technology: Waste <i>Frederik Ronse -- Department of Green Chemistry and Technology</i>	3		2	A:2	90
4	I002771	Resource Recovery from Wastewater <i>Gijs Du Laing -- Department of Green Chemistry and Technology</i>	3		2	A:J	90
5	I001571	Environmental Legislation <i>Frank Maes -- Department of European, Public and International Law</i>	3		2	A:1	75
6	E065480	Life Cycle Assessment of Materials and Structures <i>Nele De Belie -- Department of Structural Engineering and Building Materials</i>	3		2	A:2	90
7	E039060	Sustainable Energy and Rational Use of Energy <i>Jeroen Beeckman -- Department of Electronics and Information Systems</i>	4		2	A:2	120
8	K001298	Sustainable Development <i>Bernard Mazijn -- Department of Conflict and Development Studies</i>	5		2	A:2	150
9	B001439	Urban Mobility and Logistics <i>Frank Witlox -- Department of Geography</i>	3		2	A:1	90
10	I002607	Resource Recovery Technology <i>Ramon Ganigüé -- Department of Biotechnology</i>	6		2	A:2	180
11	B001514	Transport Economics and Policy <i>Frank Witlox -- Department of Geography</i>	3		2	A:1	90

2.5 Sustainable Entrepreneurship - Uppsala University

15 credits

Subscribe to 15 credit units from the following list.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	I002885	Introduction to Sustainable Entrepreneurship in the Raw Materials Industry <i>Göran Lindström -- Uppsala University</i>	5		2	A:1	150
2	I002886	Managing Sustainable Business Development in the Raw Materials Industry	10		2	A:1	300

3 Work Placement**10 credits**

Institution where the internship is to be taken depends on the chosen major:
 - major at Uppsala University = internship coordinated by TU Bergakademie Freiberg
 - major at Ghent University = internship coordinated by TU Bergakademie Freiberg
 - major at TU Bergakademie Freiberg = internship coordinated by Ghent University

Nr	Course	CRDT	Ref	MT1	Session	Study
1	I002410 Training in Industry	10		2	A:J	300

4 Master's Dissertation**30 credits**

Subscribe to course units from the following list.

The Master's Dissertation can be taken at either Uppsala University (Sweden) ; TU Bergakademie Freiberg (Germany); Ghent University (Belgium) : to be taken at the institution that offers the chosen major.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	I002199 Master's Dissertation <i>Gijs Du Laing -- Department of Green Chemistry and Technology</i>	30		2	A:J	900

Teaching

When a course is not taught (solely) in the programme's language of instruction, the effectively used languages are indicated in square brackets following the course name, using the following ISO codes:

bg: Bulgarian	de: German	es: Spanish	ja: Japanese	pl: Polish	sh: Croatian/Serbian	zh: Chinese
cs: Czech	el: Greek	fr: French	nl: Dutch	pt: Portuguese	sl: Slovene	
da: Danish	en: English	it: Italian	no: Norwegian	ru: Russian	sv: Swedish	

Semester

Semesters are indicated by their number (1 or 2); semester 3 represents the summer period and J indicates a course spanning semesters 1 and 2. When a capital letter precedes a semester number, the course has multiple offerings. The letter indicates the offering concerned.

When a semester is shown in brackets, the course is not offered this year in the specific offering.

The offering frequency and first year of offering are indicated by the following codes:

a: bi-annually	c: annually, from 2022-2023	f: annually, from 2023-2024	i: annually, from 2024-2025
b: tri-annually	d: bi-annually, from 2022-2023	g: bi-annually, from 2023-2024	j: bi-annually, from 2024-2025
	e: tri-annually, from 2022-2023	h: tri-annually, from 2023-2024	k: tri-annually, from 2024-2025