

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 8

## 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>Sophie Huysveld -- Department of Green Chemistry and Technology</i>	5		1	A:1	150
3	I002919 Sustainable Development and Multicriteria Decision-making <i>Gijs Du Laing -- Department of Green Chemistry and Technology</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	I002920 Financial and Sustainability Reporting, Financial Planning and Business Valuation <i>Karina Sopp -- TU Bergakademie Freiberg</i>	5		2	A:J	150
2	I003018 Chemical Principles and Sustainable Technologies along the Raw Materials Value Chain <i>Gero Frisch -- TU Bergakademie Freiberg</i>	13		1	A:J	390

### 1.3 Uppsala University 25 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	I002921 Mineral Exploration <i>Daniel Buczek -- Uppsala University</i>	10		1	A:2	300
2	I002770 Innovation Management and Entrepreneurship <i>Jens Eklinder 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>Christian Zdanowicz -- Uppsala University</i>	5		1	A:2	150
2	I002195 Physical-Chemical Properties of Rocks, Minerals and Materials <i>Bjarne Almqvist -- Uppsala University</i>	5		1	A:2	150
3	I002922 Geological Field Project <i>Jaroslav Majka -- Uppsala University</i>	5		1	A:2	150
4	I003019 Technological Developments for Economic Valuation and Sustainability of Mineral Resources <i>Glen Nwaila -- Uppsala University</i>	5		1	A:2	150

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	I002409 Challenges of Deep and High Stress Mining <i>Raymond Durrheim -- Uppsala University</i>	5		2	A:1	150
3	I002883 Applied 3D Geological Modeling and Mapping <i>Steffi Burchardt -- Uppsala University</i>	5		2	A:1	150
4	I002923 Exploration Geochemistry <i>Abigail Barker -- Uppsala University</i>	5		2	A:1	150
5	I003020 Applied Geophysics and Rock Physics <i>Alireza Malehmir -- Uppsala University</i>	15		2	A:1	450

## 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	E900069 Composites <i>Wim Van Paepegem -- Department of Materials, Textiles and Chemical Engineering</i>	6	b	2	A:1	180
3	I002607 Resource Recovery Technology <i>Ramon Ganigüé -- Department of Biotechnology</i>	6	b	2	A:2	180
4	E065480 Life Cycle Assessment of Materials and Structures <i>Nele De Belie -- Department of Structural Engineering and Building Materials</i>	3	b	2	A:2	90
5	I001571 Environmental Legislation <i>Hendrik Schoukens -- Department of European, Public and International Law</i>	3		2	A:1	75
6	I002677 Thermochemical Conversion of Biomass [nl] <i>Frederik Ronsse -- Department of Green Chemistry and Technology</i>	4		2	A:2	120
7	I002679 Green Chemistry of Renewable Resources <i>Sven Mangelinckx -- Department of Green Chemistry and Technology</i>	4		2	A:1	120
8	E066662 Environmentally Assisted Degradation of Materials <i>Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering</i>	6	b	2	A:2	180
9	E065472 Metal Extraction and Recycling <i>Inge Bellemans -- Department of Materials, Textiles and Chemical Engineering</i>	6	b	2	A:2	180
10	I003016 Metals and Metalloids in Environment and Technology <i>Filip Tack -- Department of Green Chemistry and Technology</i>	5		2	A:1	150
11	I002406 Basics of Process Engineering <i>Frederik Ronsse -- Department of Green Chemistry and Technology</i>	3		2	A:2	75
12	E071131 Sustainable Chemical Production Processes <i>Kevin Van Geem -- Department of Materials, Textiles and Chemical Engineering</i>	6		2	A:1	180
13	E035421 Sustainable Energy <i>Jan Mertens -- Department of Electromechanical, Systems and Metal Engineering</i>	3		2	A:1	90
14	C003693 Imaging Techniques of Consolidated and Unconsolidated Sediments <i>Veerle Cnudde -- Department of Geology</i>	6		2	A:1	176
15	I002591 Environmental Technology: Waste <i>Frederik Ronsse -- Department of Green Chemistry and Technology</i>	3	b	2	A:2	90
16	I002771 Resource Recovery from Wastewater <i>Gijs Du Laing -- Department of Green Chemistry and Technology</i>	3	b	2	A:J	90
17	I002776 Processes in Practice <i>Eveline Volcke -- Department of Green Chemistry and Technology</i>	3		2	A:1	90
18	I002752 Advanced Wastewater Treatment Process Design <i>Eveline Volcke -- Department of Green Chemistry and Technology</i>	3		2	A:1	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:J	120
2	I002849 Selective Separation of Strategic Elements <i>Roland Haseneder -- TU Bergakademie Freiberg</i>	5		2	A:J	150
3	I002848 Resources Chemical Technology <i>Martin Bertau -- TU Bergakademie Freiberg</i>	5		2	A:J	150
4	I002847 Microbiology for Resource Scientists: Lab Course <i>Michael Schlömann -- TU Bergakademie Freiberg</i>	4		2	A:J	120
5	I002850 Simulation of Sustainable Metallurgical Process <i>Markus Reuter -- TU Bergakademie Freiberg</i>	6		2	A:J	180
6	I002884 Analysis of High Temperature Processes in Extractive Metallurgy <i>Alexandros Charitos -- TU Bergakademie Freiberg</i>	5		2	A:J	150
7	I002924 Biotechnology in Metal Extraction and Recycling <i>Sabrina Hedrich -- TU Bergakademie Freiberg</i>	4		2	A:J	120
8	I002925 Classifying Machines, Crushers, Mills <i>Holger Lieberwirth -- TU Bergakademie Freiberg</i>	5		2	A:J	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:J	90
3	I002591 Environmental Technology: Waste <i>Frederik Ronsse -- 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>Hendrik Schoukens -- 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	E035421 Sustainable Energy <i>Jan Mertens -- Department of Electromechanical, Systems and Metal Engineering</i>	3		2	A:1	90
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>Giovanni Circella -- 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	I003037 Organising Knowledge-Intensive Work <i>Michał Zawadzki -- Uppsala University</i>	5		2	A:1	150
2	I003038 Technology-Based Entrepreneurship <i>Serdar Temiz -- Uppsala University</i>	5		2	A:1	150
3	I003039 Technology-Based Business Models for Circularity <i>Serdar Temiz -- Uppsala University</i>	5		2	A:1	150

## 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 <i>Gero Frisch -- TU Bergakademie Freiberg</i>	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 2025-2026	f: annually, from 2026-2027	i: annually, from 2027-2028
b: tri-annually	d: bi-annually, from 2025-2026	g: bi-annually, from 2026-2027	j: bi-annually, from 2027-2028
	e: tri-annually, from 2025-2026	h: tri-annually, from 2026-2027	k: tri-annually, from 2027-2028