

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 7

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 Stijn Speelman -- Department of Agricultural Economics	4		1	A:1	120
2	I002700 Clean Technology Sophie Huysveld -- Department of Green Chemistry and Technology	5		1	A:1	150
3	I002919 Sustainable Development and Multicriteria Decision-making Gijs Du Laing -- Department of Green Chemistry and Technology	3		1	A:1	75
4	E065460 Rational Use of Materials Tom Depover -- Department of Materials, Textiles and Chemical Engineering	5		1	A:1	150
5	I002767 Resource Recovery and Recycling Technologies Tom Hennebel -- Department of Biotechnology	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 TU Bergakademie Freiberg, Martin Bertau	4		1	A:1	120
2	I002174 Resources Chemistry TU Bergakademie Freiberg, Gero Frisch	9		1	A:J	270
3	I002920 Financial and Sustainability Reporting, Financial Planning and Business Valuation TU Bergakademie Freiberg, Karina Sopp	5		2	A:J	150

1.3 Uppsala University 25 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	I002921 Mineral Exploration Uppsala University, Pauline Jeanneret	10		1	A:2	300
2	I002770 Innovation Management and Entrepreneurship Uppsala University, Jens Eklinder Frick	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 Uppsala University, Benjamin Fischer	5		1	A:2	150
2	I002195 Physical-Chemical Properties of Rocks, Minerals and Materials Uppsala University, Alireza Malehmir	5		1	A:2	150
3	I002408 African Mineral Resources: the Science and Politics of Sustainable Extraction of Mineral Resources Uppsala University, Musa Manzi	5		1	A:2	150
4	I002922 Geological Field Project Uppsala University, Jaroslaw Majka	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 Uppsala University, Erik Jonsson	5		2	A:1	150
2	I002198 Exploration and Environmental Geophysics Uppsala University, Alireza Malehmir	15		2	A:1	450
3	I002409 Challenges of Deep and High Stress Mining Uppsala University, Raymond Durrheim	5		2	A:1	150
4	I002883 Applied 3D Geological Modeling and Mapping Uppsala University, Steffi Burchardt	5		2	A:1	150
5	I002923 Exploration Geochemistry Uppsala University, Hannes Mattsson	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 Gijs Du Laing -- Department of Green Chemistry and Technology	4	a	2	A:J	120
2	E900069 Composites Wim Van Paepegem -- Department of Materials, Textiles and Chemical Engineering	6	b	2	A:1	180
3	I002607 Resource Recovery Technology Ramon Ganigué -- Department of Biotechnology	6	b	2	A:2	180
4	E065480 Life Cycle Assessment of Materials and Structures Nele De Belie -- Department of Structural Engineering and Building Materials	3	b	2	A:2	90
5	I001571 Environmental Legislation Hendrik Schoukens -- Department of European, Public and International Law	3		2	A:1	75
6	I002677 Thermochemical Conversion of Biomass [nl] Frederik Ronsse -- Department of Green Chemistry and Technology	4		2	A:2	120
7	I002679 Green Chemistry of Renewable Resources Sven Mangelinckx -- Department of Green Chemistry and Technology	4		2	A:1	120
8	E066662 Environmentally Assisted Degradation of Materials Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering	6	b	2	A:2	180
9	E065472 Metal Extraction and Recycling Inge Bellemans -- Department of Materials, Textiles and Chemical Engineering	6	b	2	A:2	180
10	I002749 Metals and Metalloids in Environment and Technology Filip Tack -- Department of Green Chemistry and Technology	6		2	A:1	180
11	I002406 Basics of Process Engineering Frederik Ronsse -- Department of Green Chemistry and Technology	3		2	A:2	75
12	E071131 Sustainable Chemical Production Processes Kevin Van Geem -- Department of Materials, Textiles and Chemical Engineering	6		2	A:1	180
13	E035421 Sustainable Energy Jan Mertens -- Department of Electromechanical, Systems and Metal Engineering	3		2	A:1	90
14	C003693 Imaging Techniques of Consolidated and Unconsolidated Sediments Veerle Cnudde -- Department of Geology	6		2	A:1	176
15	I002591 Environmental Technology: Waste Frederik Ronsse -- Department of Green Chemistry and Technology	3	b	2	A:2	90
16	I002771 Resource Recovery from Wastewater Gijs Du Laing -- Department of Green Chemistry and Technology	3	b	2	A:J	90
17	I002776 Processes in Practice Eveline Volcke -- Department of Green Chemistry and Technology	3		2	A:1	90
18	I002752 Advanced Wastewater Treatment Process Design Eveline Volcke -- Department of Green Chemistry and Technology	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
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1	I002183	Sensors and Actuators TU Bergakademie Freiberg, Yvonne Joseph	4		2	A:J	120
2	I002849	Selective Separation of Strategic Elements TU Bergakademie Freiberg, Roland Haseneder	5		2	A:J	150
3	I002848	Resources Chemical Technology TU Bergakademie Freiberg, Martin Bertau	5		2	A:J	150
4	I002847	Microbiology for Resource Scientists: Lab Course TU Bergakademie Freiberg, Michael Schlömann	4		2	A:J	120
5	I002850	Simulation of Sustainable Metallurgical Process TU Bergakademie Freiberg, Markus Reuter	6		2	A:J	180
6	I002884	Analysis of High Temperature Processes in Extractive Metallurgy TU Bergakademie Freiberg, Alexandros Charitos	5		2	A:J	150
7	I002924	Biotechnology in Metal Extraction and Recycling TU Bergakademie Freiberg, Sabrina Hedrich	4		2	A:J	120
8	I002925	Classifying Machines, Crushers, Mills TU Bergakademie Freiberg, Holger Lieberwirth	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 Gijs Du Laing -- Department of Green Chemistry and Technology	4	a	2	A:J	120
2	I002772 Circular Cities Gijs Du Laing -- Department of Green Chemistry and Technology	3	a	2	A:1	90
3	I002591 Environmental Technology: Waste Frederik Ronsse -- Department of Green Chemistry and Technology	3		2	A:2	90
4	I002771 Resource Recovery from Wastewater Gijs Du Laing -- Department of Green Chemistry and Technology	3		2	A:J	90
5	I001571 Environmental Legislation Hendrik Schoukens -- Department of European, Public and International Law	3		2	A:1	75
6	E065480 Life Cycle Assessment of Materials and Structures Nele De Belie -- Department of Structural Engineering and Building Materials	3		2	A:2	90
7	E035421 Sustainable Energy Jan Mertens -- Department of Electromechanical, Systems and Metal Engineering	3		2	A:1	90
8	K001298 Sustainable Development Bernard Mazijn -- Department of Conflict and Development Studies	5		2	A:2	150
9	B001439 Urban Mobility and Logistics Frank Witlox -- Department of Geography	3		2	A:1	90
10	I002607 Resource Recovery Technology Ramon Ganigué -- Department of Biotechnology	6		2	A:2	180
11	B001514 Transport Economics and Policy Frank Witlox -- Department of Geography	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 Uppsala University, Göran Lindström	5		2	A:1	150
2	I002886 Managing Sustainable Business Development in the Raw Materials Industry Uppsala University, Göran Lindström	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 TU Bergakademie Freiberg	10		2	A:J	300

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 Gijs Du Laing -- Department of Green Chemistry and Technology	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: Kroatian/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 2024-2025	f: annually, from 2025-2026	i: annually, from 2026-2027
b: tri-annually	d: bi-annually, from 2024-2025	g: bi-annually, from 2025-2026	j: bi-annually, from 2026-2027
	e: tri-annually, from 2024-2025	h: tri-annually, from 2025-2026	k: tri-annually, from 2026-2027