

Programme jointly offered by Ghent University, KU Leuven

Master of Science in Geology

Language of instruction: English

Programme version 15

## 1 Majors

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

1.1. Major Past & Futureproof Earth: all courses are taught at UGent

1.2. Major Geosciences: all courses are taught at KU Leuven.

### 1.1 Major Past & Futureproof Earth

65 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C004628 Evolution of Earth & Life – Field Records <i>Thijs Vandenbroucke -- Department of Geology</i>	4		1	A:1	100
2	C004635 Evolution of Earth & Life – Sedimentary Archives <i>Maarten Van Daele -- Department of Geology</i>	8		1	A:1	240
3	C004630 Methods: Advanced Rock Characterization Techniques <i>Veerle Cnudde -- Department of Geology</i>	8		1	A:1	235
4	C004259 Applied Geophysics <i>Thomas Hermans -- Department of Geology</i>	4		1	B:1	100
5	C004631 Groundwater Modelling <i>Thomas Hermans -- Department of Geology</i>	5		1	A:1	125
6	C004632 Advanced Subsurface Modelling for Sustainable Geo-energy <i>Tom Bultreys -- Department of Physics and Astronomy</i>	5		1	A:2	130
7	C004633 Evolution of Landscapes & Tectonics – Geochronology <i>Johan De Grave -- Department of Geology</i>	4		1	A:2	100
8	C004634 Research Project Design <i>David Van Rooij -- Department of Geology</i>	5		1	A:J	150
9	C004636 Evolution of Landscapes & Tectonics – Field Records <i>Johan De Grave -- Department of Geology</i>	4		2	A:1	100
10	C004637 Mineral Resources, Economics & the Environment <i>Stijn Dewaele -- Department of Geology</i>	8		2	A:1	200
11	C004629 Paleoclimatology, Carbon Cycle and Proxies <i>Joost Frieling -- Department of Geology</i>	5		2	A:1	150
12	C004638 Geo- and Climate Hazards <i>Maarten Van Daele -- Department of Geology</i>	5		2	A:1	150

### 1.2 Major Geosciences

57 credits

Subscribe to 57 credit units from the following list, with 36 credit units with reference a.

Distributed over the first standard learning path as follows: 18 credit units with ref. a in year 1, 18 credit units with ref a in year 2.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003391 Geology and Society <i>Philippe Muchez -- KU Leuven</i>	3		1	A:1	90
2	C004474 Research Methods <i>Gert Jan Weltje -- KU Leuven</i>	3		1	A:1	75
3	C004475 Sedimentary Systems Analysis <i>Gert Jan Weltje -- KU Leuven</i>	6		1	A:1	150
4	C003393 International Integrated Field Course <i>Gert Jan Weltje -- KU Leuven</i>	3		1	A:2	75

5	C004476	Geological Mapping <i>Manuel Sintubin -- KU Leuven</i>	6		2	A:1	150
6	C002528	Applied Mineralogy <i>Jan Elsen -- KU Leuven</i>	6	a		A:1	150
7	C002530	Ore-forming Processes <i>Philippe Muchez -- KU Leuven</i>	6	a		A:1	150
8	C003396	Environmental change <i>Nils Broothaerts -- KU Leuven</i>	6	a		A:1	150
9	C004090	Archaeometry <i>Patrick Degryse -- KU Leuven</i>	6	a		A:1	150
10	C004361	Microtectonics <i>Manuel Sintubin -- KU Leuven</i>	6	a		A:1	150
11	C004657	Magmatic Processes on Planetary Bodies <i>Olivier Namur -- KU Leuven</i>	6	a		A:1 <sup>a</sup>	150
12	C002607	Micropaleontology and Paleo-environmental Reconstruction <i>Stephen Louwye -- Department of Geology</i>	6	a		A:2	150

## 2 Elective Courses

Subscribe to no less than 1 and no more than 2 modules from the following list. Subject to approval by the faculty.

The students, registered at UGent, following the major Past & Futureproof Earth, choose for 25 credit units:

### 1 Option UGent Major

- Subscribe to no less than 10 and no more than 25 credit units from the different options.
- Subscribe to no more than 5 credit units from the programmes of the higher education institutes of the Flemish Community.

### 2 Elective Course List

- Subscribe to no more than 15 credit units from the Elective Course List.

The students, registered at KU Leuven, following the major Geosciences, choose for 33 credit units:

### 1 Option KU Leuven Major

- Subscribe to no more than 30 credit units.

### 2 Elective Course List

- Subscribe to no more than 33 credit units from the Elective Course List.

## 2.1 Option UGent Major

Choose one option for no less than 10 credit units and add 15 credits from the same or other options or elective courses.

### 2.1.1 Option Coastal & Marine Studies

Subscribe to no more than 25 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003873 Oceanography <i>Griet Neukermans -- Department of Biology</i>	6			A:1	150
2	C002499 Environmental Impact Assessment <i>Steven Degraer -- Department of Biology</i>	3			A:1	90
3	C004492 Marine Extreme Systems <i>Ellen Pape -- Department of Biology</i>	4			A:1	120
4	C004621 Introduction to Geotechnics, Dredging and Offshore Constuctions <i>Bruno Stuyts -- Department of Civil Engineering</i>	3			A:2	90
5	C004189 Hydrographic Surveying <i>Alain De Wulf -- Department of Geography</i>	5			A:2	150
6	C004489 In-situ and Remote Sensing Tools in Aquatic Sciences <i>Vera Van Lancker -- Department of Geology</i>	4			A:2	120

### 2.1.2 Option Water & Soils

Subscribe to no more than 26 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	I002657 Soil Physics <i>Wim Cornelis -- Department of Environment</i>	5			A:1	150
2	C002615 Environmental Impact Assessment <i>Marieke Paepen -- Department of Geology</i>	6			A:1	150
3	C004643 Hydrogeophysics Project <i>Guillaume Blanchy</i>	5				125
4	I002708 Soil Water Management <i>Wim Cornelis -- Department of Environment</i>	5			A:2	150

5	I002699	Land Evaluation <i>Ann Verdoodt -- Department of Environment</i>	5		A:2	150
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### 2.1.3 Option Evolution & Palaeobiology

Subscribe to no more than 22 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C003310 Taxonomy and Systematics <i>Koen Sabbe -- Department of Biology</i>	4			A:1	120
2	C004526 Evolutionary Genomics <i>Frederik Hendrickx -- Department of Biology</i>	6			A:1	180
3	C004527 Spatial Processes and Patterns in Biodiversity <i>Dries Bonte -- Department of Biology</i>	4			A:1	120
4	C004274 Evolutionary Morphology <i>Lars Chatrou -- Department of Biology</i>	5			A:1	150
5	C004082 Evolution of Primates and Paleo-anthropology <i>Dominique Adriaens -- Department of Biology</i>	3			A:2 <sup>a</sup>	75

### 2.1.4 Option Landscapes & Archaeology

Subscribe to no more than 25 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C004539 Fluvial Processes and Management <i>Amaury Frankl -- Department of Geography</i>	5			A:1	150
2	C003539 Landscape Genesis [nl] <i>Veerle Van Eetvelde -- Department of Geography</i>	5			A:1	150
3	A003304 General Introduction to Archaeology [nl] <i>Hans Vandendriessche -- Department of Archaeology</i>	5			A:1	150
4	A006817 Archaeobotany and Archaeology [nl, en] <i>Koen Deforce -- Department of Archaeology</i>	5			A:1	150
5	C003859 Introduction to Soil Science [nl] <i>Stefaan Dondeyne -- Department of Geography</i>	5			A:2	150

### 2.1.5 Option Sustainable Natural Resources Management

Subscribe to no more than 25 credit units from the following list.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	I002919 Sustainable Development and Multicriteria Decision-making <i>Gijs Du Laing -- Department of Green Chemistry and Technology</i>	3			A:1	75
2	I003016 Metals and Metalloids in Environment and Technology <i>Filip Tack -- Department of Green Chemistry and Technology</i>	5			A:1	150
3	I002718 Economics and Management of Natural Resources <i>Stijn Speelman -- Department of Agricultural Economics</i>	4			A:2	120
4	E065480 Life Cycle Assessment of Materials and Structures <i>Nele De Belie -- Department of Structural Engineering and Building Materials</i>	3			A:2	90
5	E065472 Metal Extraction and Recycling <i>Inge Bellemans -- Department of Materials, Textiles and Chemical Engineering</i>	6			A:2	180
6	I002882 Sustainable Management of Resources in the Circular Economy <i>Gijs Du Laing -- Department of Green Chemistry and Technology</i>	4			A:J	120

### 2.1.6 Elective Courses UGent and other Universities

Subscribe to no more than 5 credit units from UGent courses, including the [Ghent University elective courses](#), or courses from the programmes of the higher education institutes of the Flemish Community, or [Erasmus+ partner universities](#) including the [ENLIGHT](#) (online) elective courses. Subject to approval by the faculty.

## 2.2 Option KU Leuven Major

Choose one of the following options.

### 2.2.1 General Option

In the second semester of the first year the student can choose to do an Erasmus Exchange (courses or internship) for 30 credits or they can choose an extra 30 credits from the list elective courses.

### 2.2.2 Option Professionalisation

Both courses are compulsory.

Nr	Course	CRDT	Ref	MT1	Session	Study
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1	C004478	Professional Internship Geology: Assignment <i>Jan Elsen -- KU Leuven</i>	15		A:2	375
2	C004479	Professional Internship Geology: Report <i>Jan Elsen -- KU Leuven</i>	15		A:2	375

### 2.2.3 Research Option

Students do the research internship for 12 credits and add 18 credits from the list elective courses.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C004482 Research Internship Geology: Assignment <i>Jan Elsen -- KU Leuven</i>	6			A:2	150
2	C004480 Research Internship Geology: Report <i>Jan Elsen -- KU Leuven</i>	6			A:2	150

### 2.3 Elective Course List: UGent & KU Leuven

The students, registered at UGent, subscribe to no more than 15 credit units from the following list.

The students, registered at KU Leuven, subscribe to no more than 33 credit units from the following list.

Courses 1 to 8 are offered at UGent, 9 to 22 at KU Leuven.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C002651 Geographic Information Systems <i>Nico Van de Weghe -- Department of Geography</i>	6			A:1	150
2	C004180 3D Acquisition and Modelling [nl] <i>Alain De Wulf -- Department of Geography</i>	5			A:1	150
3	C003794 Advanced Biological Data Analysis <i>Tom Wenseleers -- KU Leuven</i>	6			A:1	150
4	I002586 Multidisciplinary Analysis of Climate Change <i>Pascal Boeckx -- Department of Green Chemistry and Technology</i>	3			A:2	90
5	C004538 Geospatial Artificial Intelligence <i>Nico Van de Weghe -- Department of Geography</i>	5			A:2	150
6	C004602 Multivariate Analysis of Biological Data <i>Koen Sabbe -- Department of Biology</i>	3			(A:2) <sup>d</sup>	90
7	C004009 History and Philosophy of Sciences [nl] <i>Maarten Van Dyck -- Department of Philosophy and Moral Sciences</i>	3			B:2	90
8	C004183 Practical Skills in Academic Geo-education [nl] <i>Nico Van de Weghe -- Department of Geography</i>	3			A:J	90
9	C004361 Microtectonics <i>Manuel Sintubin -- KU Leuven</i>	6			A:1	150
10	C003406 Environmental Law [nl] <i>Kurt Deketelaere -- KU Leuven</i>	4			A:1	100
11	C003410 Metals: Production and Recycling <i>Bart Blanpain -- KU Leuven</i>	6			A:1	150
12	C003404 Earth Observation <i>Gabriëlle De Lannoy -- KU Leuven</i>	5			A:1	125
13	C003828 Biogeography and Macro-ecology <i>Luc Brendonck -- KU Leuven</i>	6			A:2	150
14	C004483 Leadership for Geoscientists <i>Jos Decler -- KU Leuven</i>	3			A:2	75
15	C003393 International Integrated Field Course <i>Gert Jan Weltje -- KU Leuven</i>	3			A:2	75
16	C003417 Soil Mechanics and Foundation Engineering [nl] <i>Noël Huybrechts -- KU Leuven</i>	6			A:2	150
17	C004387 Global Sustainability Challenges [nl]	3			A:2	90
18	C003397 Global Biogeochemical Cycles <i>Steven Bouillon -- KU Leuven</i>	4			A:2	100
19	C004003 Management of Soil and Groundwater Contamination [en, nl] <i>Jan Vanderborght -- KU Leuven</i>	4			A:2	120
20	C004639 Science Talent for an Inclusive Global Community [nl] <i>Philippe Muchez -- KU Leuven</i>	3			A:J	75
21	C004640 Statistical Data Analysis for Scientists and Engineers <i>Externe lesgever -- KU Leuven</i>	3			A:J	75

### 3 Master's Dissertation

30 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C002954 Master's Dissertation	30		2	B: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 2027-2028	f: annually, from 2028-2029	i: annually, from 2029-2030
b: tri-annually	d: bi-annually, from 2027-2028	g: bi-annually, from 2028-2029	j: bi-annually, from 2029-2030
	e: tri-annually, from 2027-2028	h: tri-annually, from 2028-2029	k: tri-annually, from 2029-2030