

The program of the first two terms is identical to the program of Block 1 of the Master's degree in Civil Mining Engineering and Geology :

- 30 compulsory course credits

- 30 elective credits: the elective courses will be chosen in agreement with the president of the jury who will ensure the coherence of the program. For Block 2, the focus started at ULiège will be completed at the Polytechnic University of Madrid.

Compulsory Courses (B1 : 30Cr)

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|------------|--|----|----|----|----|-----|---|
| CHIM9284-2 | <i>Analytical chemistry I - Chemical analysis methods, Theory -</i> Gauthier EPPE | B1 | Q1 | 26 | - | - | 2 |
| CHIM0740-2 | <i>Analytical chemistry II - Physicochemical techniques of analysis, Part A -</i> Gauthier EPPE | B1 | Q2 | 10 | 30 | - | 3 |
| GEOL0006-4 | <i>Rocks and sedimentary processes (partie 1) -</i> Frédéric BOULVAIN - [4h Labo.] | B1 | Q1 | 30 | - | [+] | 2 |
| GEOL0284-1 | <i>Geology of Wallonia -</i> Frédéric BOULVAIN - [6d FW] | B1 | Q2 | 20 | - | [+] | 3 |
| GEOL1051-1 | <i>Geological imaging and remote sensing (english language) -</i> Eric PIRARD - [30h Proj.] | B1 | Q2 | 26 | 26 | [+] | 5 |
| GCIV0045-4 | <i>Rock mechanics, tunnels, rock slopes, rock foundations -</i> Bertrand FRANÇOIS - [1d FW, 50h Proj.] | B1 | Q2 | 20 | 4 | [+] | 5 |
| GEOL0097-2 | <i>Geostatistics (english language) -</i> Eric PIRARD - [30h Labo.] | B1 | Q1 | 30 | - | [+] | 5 |
| GEOL0286-2 | <i>Geological mapping</i> - <i>From theory to fieldwork -</i> HansBalder HAVENITH - [2d FW] - <i>Project -</i> HansBalder HAVENITH - [20h Proj.] | B1 | Q2 | 5 | 20 | [+] | 5 |
| | | | | - | - | [+] | |

Optional courses (B1 : 30Cr, B2 : 60Cr)

Choose 10 credits between: (B1 : 10Cr)

Courses programme at University of Liège

| | | | | | | | |
|------------|--|----|----|----|----|-----|---|
| GEOL0021-7 | <i>Geophysical prospecting -</i> Frédéric NGUYEN - [5d FW, 20h Proj.] | B1 | Q2 | 26 | 20 | [+] | 5 |
| GEOL0020-7 | <i>Mineral resources (english language) -</i> Eric PIRARD - [1d FW, 26h Labo., 32h Proj.] | B1 | Q1 | 26 | - | [+] | 5 |
| GEOL0319-2 | (pas organisé en 2023-2024) <i>Geological hazard and risk assessment</i> (english language) - <i>From theory to field work -</i> HansBalder HAVENITH - [2d FW] - <i>Project -</i> HansBalder HAVENITH - [20h Proj.] | B1 | Q2 | 25 | 10 | [+] | 5 |
| | | | | - | - | [+] | |
| GEOL0013-5 | <i>Hydrogeology</i> - <i>Part A -</i> Alain DASSARGUES - [1d FW] - <i>Part B -</i> [10h Proj.] | B1 | Q1 | 26 | 20 | [+] | 5 |
| | | | | - | - | [+] | |
| GCIV0603-2 | <i>Geotechnics and infrastructure -</i> Bertrand FRANÇOIS - [1d FW, 2h Labo.] | B1 | Q2 | 26 | 26 | [+] | 5 |
| GEOL0314-1 | <i>Mineral processing I - basics (english language) -</i> Stoyan GAYDARDZHIEV - [30h Labo., 10h Proj., 1,5d FW] | B1 | Q1 | 30 | - | [+] | 5 |
| GEOL1026-1 | <i>Complement of geology</i> - <i>Part 1 : Elements of mineralogy -</i> Frédéric HATERT - <i>Part 2 : Elements of magmatic and metamorphic petrology -</i> Jacqueline VANDER AUWERA | B1 | Q2 | 18 | 18 | - | 5 |
| | | | | 8 | 8 | - | |
| GCIV0185-7 | <i>Linear numerical methods in Civil and Geological Engineering -</i> Laurent DUCHENE, Michel PIROTTON - [30h Proj.] | B1 | Q1 | 22 | 30 | [+] | 5 |
| GEOL0008-4 | <i>Hydrocarbons and energy transition - Exploration, Energy context and exploration of hydrocarbons -</i> Pierre CORNET | B1 | Q1 | 15 | - | - | 2 |

Master of Science (MSc) in Geological and Mining Engineering (joint-degree programme with the "Universidad polytechnica de Madrid")

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|--|---|----|----|----|----|-----|---|
| GEOL1050-1 | <i>Hydrocarbons and the energy transition - Techniques for extracting hydrocarbons and reducing emissions</i> - Xavier LIMPENS | B1 | Q1 | 15 | - | - | 3 |
| GEOL0029-4 | <i>Tectonics</i> - Part A - Olivier BOLLE - Field work - Olivier BOLLE - [2d FW] | B1 | Q1 | 30 | 20 | - | 5 |
| MECA0526-1 | <i>High Temperature Processes in Recycling & Remanufacturing</i> (english language) - Anne MERTENS - [1d FW] | B1 | Q1 | 26 | 26 | [+] | 5 |
| or among the courses listed below related to the theme "Urban and Environmental Engineering" | | | | | | | |
| UEEN0001-1 | <i>Water and energy in urban environment</i> (english language) - Pierre DEWALLEF, Benjamin DEWALS - [2d FW] | B1 | Q1 | 26 | 26 | [+] | 5 |
| UEEN0002-1 | <i>Land rehabilitation in urban environments</i> (english language) - Serge BROUYÈRE, Frédéric COLLIN - [10h Labo., 20h Proj., 2d FW] | B1 | Q1 | 20 | 10 | [+] | 5 |
| UEEN0003-1 | <i>Urban resilience</i> (english language) - Manal GINZARLY, Jacques TELLER - [60h Proj., 1d FW] | B1 | Q1 | 36 | 16 | [+] | 5 |
| UEEN0004-1 | <i>Urban planning and transportation</i> (english language) - Mario COOLS, Jacques TELLER - [1d FW] | B1 | Q1 | 26 | 26 | [+] | 5 |
| UEEN0005-1 | <i>Participatory Design at an Urban Scale</i> (english language) - Catherine ELSÉN, Clémentine SCHELINGS - [20h Proj., 1d FW] | B1 | Q1 | 20 | 10 | [+] | 2 |
| UEEN0006-1 | <i>UEE Integrated Project</i> (english language) - Luc COURARD - [100h Proj., 1d FW] | B1 | Q1 | - | 90 | [+] | 5 |
| GEOG2053-1 | <i>Introduction to Urban GIS</i> (english language) - Roland BILLEN | B1 | Q1 | 12 | 20 | - | 3 |

Choose between these two focus: (B1 : 20Cr, B2 : 10Cr)

Environmental and Geological Engineering (B1 : 20Cr, B2 : 10Cr)

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|------------|--|----|----|----|----|-----|---|
| GEOL0083-3 | <i>Groundwater modelling</i> (english language) - Alain DASSARGUES - [30h Labo., 30h Proj.] | B1 | Q1 | 30 | - | [+] | 5 |
| GEOL1028-1 | <i>Site investigation</i> - Serge BROUYÈRE, Frédéric NGUYEN - [40d Proj., 40h Labo., 5d FW] | B1 | Q2 | 5 | - | [+] | 5 |
| GEOL1046-1 | <i>Geothermal energy</i> (english language) - Alain DASSARGUES, Bertrand FRANÇOIS - [40h Proj., 1d FW] | B1 | Q2 | 18 | 15 | [+] | 5 |
| GEOL0277-1 | <i>Groundwater quality and protection</i> (english language) - Serge BROUYÈRE - [1d FW, 35h Proj.] | B1 | Q1 | 20 | 20 | [+] | 5 |

Choose 10 credits from this list to complete your focus: (B2 : 10Cr)

[...] Management of the Natural Environment Specialty

| | | | | | | | |
|------------|---|----|----|---|---|---|---|
| HULG9434-1 | <i>Recursos Hidrogeológicos</i> (spanish language) | B2 | Q1 | - | - | - | 6 |
| HULG9435-1 | <i>Riesgos Geológicos</i> (spanish language) | B2 | Q1 | - | - | - | 6 |
| HULG9436-1 | <i>Ingeniería de Costas y puertos</i> (spanish language) | B2 | Q1 | - | - | - | 6 |
| HULG9437-1 | <i>Hidráulica e Ingeniería Fluvial</i> (spanish language) | B2 | Q1 | - | - | - | 6 |
| HULG9438-1 | <i>Sismología e ingeniería Sísmica</i> (spanish language) | B2 | Q1 | - | - | - | 6 |

Mineral Resources & recycling (B1 : 20Cr, B2 : 10Cr)

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|------------|---|----|----|----|----|-----|---|
| GEOL0289-1 | <i>Analytic mineralogy</i> (english language) - Frédéric HATERT - [15h Labo.] | B1 | Q2 | 30 | 15 | [+] | 5 |
| GEOL0315-1 | <i>Solid Waste and by products processing</i> (english language) - Stoyan GAYDARDZHIEV - [20h Labo., 7h Proj., 1,5d FW] | B1 | Q1 | 20 | - | [+] | 5 |
| GEOL0237-2 | <i>Exploitation of mineral deposits</i> (english language) - Nicolas VASBINDER - [2d FW] | B1 | Q1 | 25 | 15 | [+] | 5 |
| GEOL0312-1 | <i>Process mineralogy</i> (english language) - Hassan BOUZHAAH, | B1 | Q1 | 25 | - | [+] | 5 |

Choose 10 credits from this list to complete your focus: (B2 : 10Cr)

[...] Research and Management of Mineral Resources Specialty

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|------------|--|----|----|---|---|---|-----|
| HULG9439-1 | <i>Economía de los Recursos Minerales</i> (spanish language) | B2 | Q1 | - | - | - | 3 |
| HULG9440-1 | <i>Mineralogía Avanzada</i> (spanish language) | B2 | Q1 | - | - | - | 4,5 |
| HULG9441-1 | <i>Técnicas de Investigación y Caracterización de Yacimientos Minerales</i> (spanish language) | B2 | Q1 | - | - | - | 3 |
| HULG9442-1 | <i>Exploración y Evaluación de Yacimientos Minerales</i> (spanish language) | B2 | Q1 | - | - | - | 6 |
| HULG9443-1 | <i>Yacimientos Minerales</i> (spanish language) | B2 | Q1 | - | - | - | 6 |
| HULG9444-1 | <i>Investigación y Gestión de Recursos Energéticos</i> (spanish language) | B2 | Q1 | - | - | - | 3 |
| HULG9445-1 | <i>Petrología y Modelización de Recursos Minerales</i> (spanish language) | B2 | Q1 | - | - | - | 4,5 |

Choose the remaining credits in your specialty (B2 : 20Cr)

[...] Research and Management of Mineral Resources Specialty or Research and Management of Mineral Resources Specialty

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|------------|--|----|----|---|---|---|-----|
| HULG9434-1 | <i>Recursos Hidrogeológicos</i> (spanish language) | B2 | Q1 | - | - | - | 6 |
| HULG9435-1 | <i>Riesgos Geológicos</i> (spanish language) | B2 | Q1 | - | - | - | 6 |
| HULG9436-1 | <i>Ingeniería de Costas y puertos</i> (spanish language) | B2 | Q1 | - | - | - | 6 |
| HULG9437-1 | <i>Hidráulica e Ingeniería Fluvial</i> (spanish language) | B2 | Q1 | - | - | - | 6 |
| HULG9438-1 | <i>Sismología e ingeniería Sísmica</i> (spanish language) | B2 | Q1 | - | - | - | 6 |
| HULG9439-1 | <i>Economía de los Recursos Minerales</i> (spanish language) | B2 | Q1 | - | - | - | 3 |
| HULG9440-1 | <i>Mineralogía Avanzada</i> (spanish language) | B2 | Q1 | - | - | - | 4,5 |
| HULG9441-1 | <i>Técnicas de Investigación y Caracterización de Yacimientos Minerales</i> (spanish language) | B2 | Q1 | - | - | - | 3 |
| HULG9442-1 | <i>Exploración y Evaluación de Yacimientos Minerales</i> (spanish language) | B2 | Q1 | - | - | - | 6 |
| HULG9443-1 | <i>Yacimientos Minerales</i> (spanish language) | B2 | Q1 | - | - | - | 6 |
| HULG9444-1 | <i>Investigación y Gestión de Recursos Energéticos</i> (spanish language) | B2 | Q1 | - | - | - | 3 |
| HULG9445-1 | <i>Petrología y Modelización de Recursos Minerales</i> (spanish language) | B2 | Q1 | - | - | - | 4,5 |

Choose between third semester at Liège or Madrid: (B2 : 30Cr)

Third semester at Université de Liège: (B2 : 30Cr)

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|------------|--|----|----|----|---|-----|----|
| ATFE0011-1 | <i>Master Thesis (including an introduction to research methodology)</i> - Serge BROUYÈRE, COLLÉGIALITÉ - [600h Proj.] | B2 | TA | - | - | [+] | 20 |
| ASTG0017-1 | <i>Internship</i> - Serge BROUYÈRE | B2 | TA | - | - | - | 5 |
| GEST3162-1 | <i>Principles of management</i> (english language) - François PICHAULT, Willem STANDAERT - [25h Proj.] | B2 | Q1 | 30 | - | [+] | 5 |

Third semester at Universidad Politécnica de Madrid (B2 : 30Cr)

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|------------|--|----|---|---|---|---|----|
| HULG9446-1 | <i>Master Thesis</i> (spanish language) | B2 | - | - | - | - | 18 |
| HULG9447-1 | <i>Internship</i> (spanish language) | B2 | - | - | - | - | 6 |
| HULG9448-1 | <i>Elective courses</i> (spanish language) | B2 | - | - | - | - | 6 |