Two-Year Master Program (120 ECTS)

First Year

Compulsory courses

		Or	Th	Pr	Au	Cr
CHIM0004-3	*Analytical chemistry* - Gauthier EPPE - [30h Labo.]	TA	30	-	[+]	**5**
GEOL0289-1	*Determinative mineralogy* - Frédéric HATERT	Q2	20	20	-	**3**
GEOL0006-3	*Rocks and sedimentary processes* - Frédéric BOULVAIN - [1d FW, 8h Labo.]	Q1	30	-	[+]	**3**
GEOL0279-1	*Geological mapping* - HansBalder HAVENITH - [2d FW, 10h Labo., 50h Proj.]	TA	10	20	[+]	**5**
GEOL0029-4	*Tectonics* - Olivier BOLLE - [2d FW]	Q1	15	15	[+]	**3**
GEOL0284-1	*Geology of Wallonia* - Frédéric BOULVAIN - [6d FW]	Q2	20	-	[+]	**3**
GCIV0184-4	*Building Materials* - Luc COURARD - [1d FW, 12h Labo.]	Q2	28	4	[+]	**3**
GCIV0185-7	*Numerical methods in Civil and Geological Engineering, Linear methods* - Laurent DUCHENE, Michel PIROTTON - [30h Proj.]	Q1	20	30	[+]	**4**
GEOL0097-2	*Geostatistics* (english language) - Eric PIRARD - [30h Labo.]	Q1	30	-	[+]	**5**
GEOL0260-2	*Applied geophysics* - Frédéric NGUYEN - [5d FW, 80h Proj.]	Q2	8	20	[+]	**5**
GEOL0083-3	*Groundwater modelling* (english language) - Alain DASSARGUES - [30h Labo., 30h Proj.]	Q1	30	-	[+]	**5**
GCIV0045-4	*Rock mechanics, tunnels, rock slopes, rock foundations* - Robert CHARLIER - [1d FW, 50h Proj.]	Q2	20	4	[+]	**5**
GEOL0277-1	*Groundwater quality and protection* - Serge BROUYÈRE - [1d FW, 35h Proj.]	Q1	20	20	[+]	**3**
GEOL0237-2	*Exploiting deposits, quarries and mines* - Jacques TACK - [1d FW]		20	10	[+]	**2**
GEOL0276-4	*Solid waste processing* - Stoyan GAYDARDZHIEV - [1,5d FW, 20h Labo., 7h Proj.]	Q2	20	-	[+]	**3**
GEOL1028-1	*Site investigation* - Serge BROUYÈRE, Frédéric NGUYEN - [5d FW, 60h Proj.]	Q2	12	-	[+]	**3**

Notice : The master¿s is `bilingual French/English¿. Therefore, students who actively master French and/or English and another language passively will be capable of following the classes.
On a practical level, students can communicate with staff in both languages. Course material exists in both French and English (pdf, ppt and reference books). Students must indicate in which language they would like the questions to be.

Notice : Students who have, in their BAC studies, already taken one or more compulsory courses in this Master's programme are obliged to replace them by other courses in this Masters programme or courses in the programme of the Applied Sciences Faculty or of the Sciences Faculty ; this choice must be approved by the President of the cycle's Jury.

Second year

Compulsory courses

		Or	Th	Pr	Au	Cr
GEOL0234-3	*Modelling and inversion in geophysics* - Frédéric NGUYEN - [15h Proj.]	Q1	20	20	[+]	**3**
GEOL0236-2	*Remote sensing and geological imaging* - Eric PIRARD - [50h Proj.]	Q1	30	10	[+]	**5**
ATFE0011-1	*Final Work (including an introduction to research methodology)* - COLLÉGIALITÉ	TA	-	-	-	**20**

Optional courses

Choose one of the following courses :

GEOL0008-1	*Origin and production of hydrocarbons* - Pierre CORNET, Xavier LIMPENS (Even years)	Q1	30	-	-	**2**
GCIV0090-2	*Introduction to free surface flows* - Michel PIROTTON		15	10	-	**2**

Final year trip: at the beginning of the academic year, prior to the organisation of the courses, guided tours to companies,

geological sites (optional).

Choose one focus from the following :

Research Focus

Compulsory courses

GCIV2058-1	*Environmental geotechnics* (english language) - Frédéric COLLIN - [1d FW, 10h Labo., 15h Proj.]	Q1	20	10	[+]	**3**
GEOL0310-1	*Integrated project in geological engineering* - COLLÉGIALITÉ, Frédéric NGUYEN - [4d FW, 10h Labo., 90h Proj.]	Q1	10	-	[+]	**5**
	Notice : If the president of the cycle¿s panel agrees, in particular regarding the technical content, the master¿s integrated project can be part of an interdisciplinary project (e.g. project engineer, Eurobot, Eco-Shell Marathon, etc.). It is possible to have done the project between the third year of the bachelor¿s degree and the second year of the master's.					
GCIV0615-2	*Recycling of wastes and industrial by-products in civil engineering* (english language) - Luc COURARD - [1d FW, 20h Proj.]	Q1	20	-	[+]	**3**
GEOL0270-2	*Natural risk* - HansBalder HAVENITH - [1d FW, 5h Labo., 15h Proj.]	Q1	20	5	[+]	**3**
GEOL0281-4	*Environmental aspects of industrial and mining activities* - Stoyan GAYDARDZHIEV - [1d FW, 25h Labo., 5h Proj.]	Q1	25	-	[+]	**4**
GEOL0282-2	*Sedimentary and environmental geochemistry* - Nathalie FAGEL - [10h Proj.]	Q1	20	20	[+]	**3**
ASTG0017-1	*Placement* - Serge BROUYÈRE	TA	-	-	-	**5**

Choose one course from the following :

GEOL0312-1	*Process mineralogy* (english language) - Eric PIRARD - [25h Labo., 15h Proj.]		25	-	[+]	**4**
GEOL0313-1	*Remediation of contaminated sites* - Serge BROUYÈRE - [2d FW, 40h Proj.]	Q1	24	24	[+]	**4**

Professional focus in management

Notice : The specialisation in management will be taught for the last time in 2014-2015.

Compulsory courses

GEST3001-1	*People management and organisation* - Jocelyne ROBERT	Q1	24	24	-	**4**
GEST3002-1	*Human Resources* - Jocelyne ROBERT	Q1	24	-	-	**2**
GEST3003-1	*Competitive strategy in the marketplace* (english language) - Michael GHILISSEN	Q1	16	16	-	**3**
GEST3004-1	*Marketing (operations and management)* (english language) - Michael GHILISSEN	Q1	16	16	-	**3**
GEST3005-2	*Accountancy and Finance* - Jacques BERWART		24	24	-	**4**
GEST3006-1	*Operations and supply chain management I* (english language) - Yasemin ARDA	Q1	16	16	-	**3**
GSTG3001-1	*Business plan* - COLLÉGIALITÉ		-	30	-	**4**
GSTG3002-1	*Functional analysis of a company* - COLLÉGIALITÉ - [30h Internship]		-	-	[+]	**4**

Optional courses

Choose one of the following courses :

GEST3010-1	*Operations and supply chain management II* - Sabine LIMBOURG	Q1	16	16	-	**3**
GEST3011-2	*ICT for Business* - Alain DUBOIS	Q1	16	16	-	**3**
GEST3012-1	*Financial and actuarial modelling* - Louis ESCH	Q1	16	16	-	**3**

Adjusted programme for student of the Bachelors in Civil Engineering who have not taken the " Geological Engineering" option

First Year

Compulsory prerequisites

Les bacheliers ingénieurs civils qui n'ont pas choisi l'option appropriée :
- doivent suivre tous les cours (ou leur équivalent) dits "prérequis" figurant ci-après, s'ils ne les ont pas suivis en 1er cycle. Ces cours doivent être suivis pendant le 1er master et certains cours obligatoires de 1re année doivent être reportés en 2e année.
- doivent réduire en conséquence le nombre de cours au choix à suivre en 2e master. Si tous les cours "prérequis" doivent être suivis, il leur sera impossible de suivre ces cours au choix.
- n'ont pas la possibilité de choisir la finalité spécialisée "gestion".
Le programme adapté de ces étudiants doit recevoir l'accord préalable du Jury.

GEOL0001-1	*Geology and Geology for Engineers* - Alain DASSARGUES - [2d FW]	Q2	35	25	[+]	**5**
GEOL0021-7	*Geophysical prospecting* - Lucien HALLEUX, Frédéric NGUYEN - [5d FW, 10h Proj.]	Q2	30	20	[+]	**5**
GEOL0020-8	*Mineral resources* (english language) - Eric PIRARD - [1d FW, 32h Proj.]		30	-	[+]	**5**
GEOL0013-5	*Hydrogeology* - Alain DASSARGUES - [1d FW, 10h Proj.]	Q1	30	25	[+]	**5**
GCIV0603-2	*Geotechnics and infrastructure* - Robert CHARLIER, JeanPol RADU - [0,5d FW, 2h Labo.]	Q2	26	26	[+]	**5**

Adjusted programme for bachelors in geology Science

This programme is defined in relation with the BAC in geological sciences organised by the University of Liège's Faculty of Sciences.
It is likely to be greatly modified for students with a BAC in geological sciences from other institutions, in terms of the knowledge gained, whilst remaining within the limits of 68+60 credits.

First Year

Compulsory courses

MATH0006-1	*Introduction to numerical analysis* (english language) - Quentin LOUVEAUX	Q1	30	30	-	**5**
MECA0001-2	*Mechanics of materials* - JeanPierre JASPART - Suppl : Laurent DUCHENE - [2h Labo., 12h Proj.]	Q1	30	28	[+]	**5**
MECA0011-2	*Fluid Mechanics : Basics* - Michel PIROTTON - [25h Proj.]	Q2	20	30	[+]	**4**
GEOL0021-7	*Geophysical prospecting* - Lucien HALLEUX, Frédéric NGUYEN - [5d FW, 10h Proj.]	Q2	30	20	[+]	**5**
GEOL0020-7	*Mineral resources* (english language) - Eric PIRARD - [1d FW, 30h Labo., 32h Proj.]	Q1	30	-	[+]	**5**
GCIV0603-2	*Geotechnics and infrastructure* - Robert CHARLIER, JeanPol RADU - [0,5d FW, 2h Labo.]	Q2	26	26	[+]	**5**
META0431-4	*Mineral processing (processes)* - Stoyan GAYDARDZHIEV - [30h Labo., 10h Proj.]	Q2	30	-	[+]	**5**
GCIV0184-4	*Building Materials* - Luc COURARD - [1d FW, 12h Labo.]	Q2	28	4	[+]	**3**
GEOL0097-1	*Geostatistics* (english language) - Eric PIRARD - [30h Labo., 30h Proj.]		30	-	[+]	**5**
GEOL0260-2	*Applied geophysics* - Frédéric NGUYEN - [5d FW, 80h Proj.]	Q2	8	20	[+]	**5**
GCIV0045-4	*Rock mechanics, tunnels, rock slopes, rock foundations* - Robert CHARLIER - [1d FW, 50h Proj.]	Q2	20	4	[+]	**5**
GEOL0277-1	*Groundwater quality and protection* - Serge BROUYÈRE - [1d FW, 35h Proj.]	Q1	20	20	[+]	**3**
GEOL0237-2	*Exploiting deposits, quarries and mines* - Jacques TACK - [1d FW]		20	10	[+]	**2**
GEOL1028-1	*Site investigation* - Serge BROUYÈRE, Frédéric NGUYEN - [5d FW, 60h Proj.]	Q2	12	-	[+]	**3**
PROJ0001-1	*Introduction to numerical methods and project* - Olivier BRULS, Quentin LOUVEAUX, Frédéric NGUYEN - [2h Labo., 28h Proj.]	Q2	10	-	[+]	**3**
GEOL0083-3	*Groundwater modelling* (english language) - Alain DASSARGUES - [30h Labo., 30h Proj.]	Q1	30	-	[+]	**5**

Second year

Compulsory courses

GEOL0234-3	*Modelling and inversion in geophysics* - Frédéric NGUYEN - [15h Proj.]	Q1	20	20	[+]	**3**
GEOL0236-2	*Remote sensing and geological imaging* - Eric PIRARD - [50h Proj.]	Q1	30	10	[+]	**5**
ATFE0011-1	*Final Work (including an introduction to research methodology)* - COLLÉGIALITÉ	TA	-	-	-	**20**

Optional courses

Choose one course from the following :

GEOL0008-1	*Origin and production of hydrocarbons* - Pierre CORNET, Xavier LIMPENS (Even years)	Q1	30	-	-	**2**
GCIV0090-2	*Introduction to free surface flows* - Michel PIROTTON		15	10	-	**2**

Final year trip: at the beginning of the academic year, prior to the organisation of the courses, guided tours to companies, geological sites (optional).

Research Focus

Compulsory courses

GCIV2058-1	*Environmental geotechnics* (english language) - Frédéric COLLIN - [1d FW, 10h Labo., 15h Proj.]	Q1	20	10	[+]	**3**
GCIV0615-2	*Recycling of wastes and industrial by-products in civil engineering* (english language) - Luc COURARD - [1d FW, 20h Proj.]	Q1	20	-	[+]	**3**
GEOL0270-2	*Natural risk* - HansBalder HAVENITH - [1d FW, 5h Labo., 15h Proj.]	Q1	20	5	[+]	**3**
GEOL0281-4	*Environmental aspects of industrial and mining activities* - Stoyan GAYDARDZHIEV - [1d FW, 25h Labo., 5h Proj.]	Q1	25	-	[+]	**4**
GEOL0310-1	*Integrated project in geological engineering* - COLLÉGIALITÉ, Frédéric NGUYEN - [4d FW, 10h Labo., 90h Proj.]	Q1	10	-	[+]	**5**

Choose one course from the following :

GEOL0312-1	*Process mineralogy* (english language) - Eric PIRARD - [25h Labo., 15h Proj.]		25	-	[+]	**4**
GEOL0313-1	*Remediation of contaminated sites* - Serge BROUYÈRE - [2d FW, 40h Proj.]	Q1	24	24	[+]	**4**
GEOL0276-4	*Solid waste processing* - Stoyan GAYDARDZHIEV - [1,5d FW, 20h Labo., 7h Proj.]	Q2	20	-	[+]	**3**
ASTG0017-1	*Placement* - Serge BROUYÈRE	TA	-	-	-	**5**

Adjusted programme for Bachelors in engineering sciences, bioengineering orientation

This programme is defined in relation with the Bachelor in Bioengineering organized by the Faculty of Gembloux Agro-Bio Tech of the ULg, by the Faculty of Sciences and Technology of the UCL and by the Faculty of Applied Sciences of the ULB. It is likely to be greatly modified in the Bachelor in Bioengineering from other institutions depending on their knowledge and courses not followed whilst remaining within the limits of 75-60 ECTS.

First Year

Compulsory prerequisites

Programme organised for engineering sciences undergraduates by the University of Liège¿s Faculty of Gembloux Agro-Bio Tech, the Catholic University of Louvain¿s Faculty of Science and Technology and by the Free University of Brussels Faculty of Applied Sciences.
It is likely to be significantly modified for undergraduates in engineering sciences, specialising in bioengineering from other institutions, according to what they have and haven¿t already learnt, while remaining within the limits of the 75+60 credits.
Undergraduates in engineering sciences, specialising in bioengineering:
- must attend all the required courses (or their equivalent) mentioned hereafter, if they didn¿t do so during the first cycle. These courses must be taken during the first year of the master¿s degree and certain compulsory first-year courses must be transferred to the second year.
- must subsequently reduce the number of courses chosen during the second year of the master¿s. If all the ¿required¿ courses must be taken, they won¿t be able to choose which courses they take.

- can¿t choose ¿management¿ as a specialisation.

GEOL0001-1	*Geology and Geology for Engineers* - Alain DASSARGUES - [2d FW]	Q2	35	25	[+]	**5**
GEOL0021-8	*Geophysical prospecting* - Lucien HALLEUX, Frédéric NGUYEN - [5d FW, 10h Proj.]	Q2	30	30	[+]	**5**
GEOL0020-8	*Mineral resources* (english language) - Eric PIRARD - [1d FW, 32h Proj.]		30	-	[+]	**5**
GEOL0013-5	*Hydrogeology* - Alain DASSARGUES - [1d FW, 10h Proj.]	Q1	30	25	[+]	**5**
GCIV0603-2	*Geotechnics and infrastructure* - Robert CHARLIER, JeanPol RADU - [0,5d FW, 2h Labo.]	Q2	26	26	[+]	**5**