

Or Th Pr Au Cr

1st year (Block 1)

Compulsory courses

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|------------|--|----|----|----|-----|---|
| CHIM9272-2 | <i>Chemistry 1</i> - Benoît HEINRICHS - [4h Labo.] | Q1 | 25 | 20 | [+] | 4 |
| CHIM9273-1 | <i>Chemistry 2</i> - Benoît HEINRICHS - [12h Labo.] | Q2 | 25 | 20 | [+] | 5 |
| ECON0323-1 | <i>First principles of economics</i> - Bernard JURION | Q1 | 30 | - | - | 3 |
| INFO2009-2 | <i>Introduction to computer science</i> - Benoît DONNET - [8h Labo.] | Q1 | 24 | 14 | [+] | 4 |
| INFO0061-3 | <i>Computers organization</i> - Bernard BOIGELOT | Q2 | 25 | 20 | - | 5 |
| LANG0038-1 | <i>English</i> - Christine FILOT, ISLV - [5h Proj.] | TA | 20 | 60 | [+] | 5 |
| MATH0001-2 | <i>Graphic Communication</i> - Eric BÉCHET | Q1 | 20 | 20 | - | 4 |
| MATH0002-4 | <i>Mathematical analysis I</i> - Eric DELHEZ | Q1 | 24 | 24 | - | 5 |
| MATH0502-1 | <i>Mathematical Analysis 2</i> - Eric DELHEZ | Q2 | 20 | 22 | - | 4 |
| MATH0003-1 | <i>Geometry</i> - Pierre LECOMTE | Q2 | 25 | 15 | - | 4 |
| MATH0013-1 | <i>Algebra</i> - Eric DELHEZ | Q1 | 30 | 20 | - | 5 |
| PHYS2020-1 | <i>Physics 1 : Mechanics</i> - Hervé CAPS | Q1 | 20 | 20 | - | 4 |
| PHYS2021-1 | <i>Physics 2 : Electricity and electromagnetism</i> - Hervé CAPS | Q2 | 30 | 30 | - | 5 |
| PROJ0001-1 | <i>Introduction to numerical methods and project</i> - Olivier BRULS, Quentin LOUVEAUX, Frédéric NGUYEN - [2h Labo., 28h Proj.] | Q2 | 10 | - | [+] | 3 |

Engineering jobs and careers : compulsory seminars

A visit to a business

Notice : Compulsory business visits are organised so that students can better become acquainted with the engineering professions and to help them choose their options and Masters. They are not graded and thus have no ECTS value. However, student participation is a formal requirement.

Second year

Compulsory courses

| | | | | | | |
|------------|--|----|----|----|-----|---|
| CHIM0286-1 | <i>Rudiments of thermodynamics</i> - Benoît HEINRICHS | Q1 | 30 | 30 | - | 5 |
| GENV0001-1 | <i>Environmental Engineering</i> - Alain DASSARGUES, Benjamin DEWALS, Angélique LÉONARD - [30h Proj.] | Q1 | 30 | - | [+] | 4 |
| LANG0039-2 | <i>English 2</i> (english language) - Christine FILOT, ISLV - [20h Proj.] | TA | - | 30 | [+] | 3 |
| MATH0006-3 | <i>Introduction to numerical analysis</i> (english language) - Quentin LOUVEAUX | Q1 | 20 | 20 | - | 4 |
| MATH0007-4 | <i>Mathematical analysis III</i> - Françoise BASTIN | Q1 | 30 | 30 | - | 5 |
| MECA0001-2 | <i>Mechanics of materials</i> - JeanPierre JASPART - Suppl : Laurent DUCHENE - [2h Labo., 12h Proj.] | Q1 | 30 | 28 | [+] | 5 |
| MECA0003-2 | <i>Rational Mechanics</i> - Eric DELHEZ | Q1 | 20 | 30 | - | 4 |
| MECA0011-2 | <i>Fluid Mechanics : Basics</i> - Michel PIROTTON - [25h Proj.] | Q2 | 20 | 30 | [+] | 4 |
| PHYS2022-2 | <i>Physics 3 : Waves and quanta</i> - Geoffroy LUMAY | Q2 | 20 | 10 | - | 3 |
| MATH0062-1 | <i>Elements of probability calculus</i> - Louis WEHENKEL - [25h Proj.] | Q2 | 15 | 10 | [+] | 3 |

A visit to a business

Optional courses

Choose two of the following options :

Notice : One will be your minor option. The other, linked to your 3rd year further study option, will be your major option. Minor / major combinations must be endorsed by the Jury.

Option Chemistry and Material Sciences

| | | | | | | |
|------------|--|----|----|----|-----|---|
| PHYS0904-4 | <i>Physics of materials</i> - Jacqueline LECOMTEBECKERS - [1d FW] | Q2 | 30 | 30 | [+] | 5 |
| CHIM0680-1 | <i>Introduction to industrial processes</i> - MarieNoëlle DUMONT, Dominique TOYE - [5h Proj.] | Q2 | 10 | 10 | [+] | 2 |
| CHIM0012-5 | <i>Chemical kinetics</i> - Nathalie JOB - [15h Proj.] | Q2 | 20 | 15 | [+] | 3 |

Option Mechanics

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|------------|---|----|----|----|-----|---|
| MECA0445-2 | <i>Heat transfer</i> - Pierre DEWALLEF, Vincent TERRAPON - [4h Labo., 9h Proj.] | Q2 | 30 | 26 | [+] | 5 |
| MECA0012-6 | <i>Solid mechanics</i> - Laurent DUCHENE - [15h Proj.] | Q2 | 30 | 30 | [+] | 5 |

Option Physics

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|------------|--|----|----|----|-----|---|
| PHYS2026-2 | <i>Physics 4 : Microscopic physics (part a : waves optics, part b : introduction to nuclear physics)</i> - Ngoc Duy NGUYEN - [15h Labo.] | Q2 | 30 | 15 | [+] | 5 |
|------------|--|----|----|----|-----|---|

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|------------|---|----|----|----|-----|---|
| MECA0445-2 | <i>Heat transfer</i> - Pierre DEWALLEF, Vincent TERRAPON - [4h Labo., 9h Proj.] | Q2 | 30 | 26 | [+] | 5 |
|------------|---|----|----|----|-----|---|

Option Electricity and Electronics

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|------------|--|----|----|----|---|---|
| ELEC0053-2 | <i>Electric circuits</i> - Patricia ROUSSEAU | Q2 | 30 | 30 | - | 5 |
|------------|--|----|----|----|---|---|

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|------------|--|----|----|----|---|---|
| ELEN0040-1 | <i>Digital Electronics</i> - Michael KRAFT - Suppl : Patricia ROUSSEAU | Q2 | 30 | 30 | - | 5 |
|------------|--|----|----|----|---|---|

Option Computing

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|------------|---|----|----|----|-----|---|
| INFO0902-1 | <i>Data structures and algorithms</i> - Pierre GEURTS - [40h Proj.] | Q2 | 30 | 20 | [+] | 5 |
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|------------|---|----|----|----|-----|---|
| INFO0062-1 | <i>Object-Oriented Programming</i> - Bernard BOIGELOT - [20h Proj.] | Q2 | 30 | 24 | [+] | 5 |
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Option Building

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|------------|---|----|----|---|-----|---|
| GCIV0184-5 | <i>Building Materials</i> - Luc COURARD - [0,5d FW, 12h Labo., 12h Proj.] | Q2 | 36 | 4 | [+] | 5 |
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|------------|--|----|----|----|-----|---|
| MECA0012-6 | <i>Solid mechanics</i> - Laurent DUCHENE - [15h Proj.] | Q2 | 30 | 30 | [+] | 5 |
|------------|--|----|----|----|-----|---|

Option Geological Engineering

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|------------|---|----|----|----|-----|---|
| GEOL0001-1 | <i>Geology and Geology for Engineers</i> - Alain DASSARGUES - [2d FW] | Q2 | 35 | 25 | [+] | 5 |
|------------|---|----|----|----|-----|---|

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|------------|---|----|----|----|-----|---|
| GEOL0021-7 | <i>Geophysical prospecting</i> - Lucien HALLEUX, Frédéric NGUYEN - [5d FW, 10h Proj.] | Q2 | 30 | 20 | [+] | 5 |
|------------|---|----|----|----|-----|---|

Option Biomedical Engineering

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|------------|--|----|----|----|---|---|
| GBIO0025-1 | <i>General and cell biology</i> - Olivier PEULEN | Q2 | 30 | 30 | - | 5 |
|------------|--|----|----|----|---|---|

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|------------|---|----|----|----|---|---|
| GBIO0026-1 | <i>Systems physiology</i> - Philippe KOLH | Q2 | 30 | 30 | - | 5 |
|------------|---|----|----|----|---|---|

Option Architecture

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|------------|--|----|----|---|-----|---|
| ARCH0067-5 | <i>Architectural History</i> - Catherine ELSÉN - [10h Proj.] | Q2 | 45 | - | [+] | 5 |
|------------|--|----|----|---|-----|---|

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|------------|---|----|----|----|-----|---|
| GCIV2030-2 | <i>Structural Design of Buildings</i> - JeanMarie BLEUS - [40h Proj.] | Q2 | 15 | 30 | [+] | 5 |
|------------|---|----|----|----|-----|---|

Notice : Students who follow options which have one or more courses in common complete their programme by choosing one or more courses from BAC programme for Engineering Sciences - Civil Engineering or language courses organised by the Ulg in other education pathways. The resulting programme must equal 60 credits and be approved by the Jury.

Third year

Compulsory courses

| | | | | | | |
|------------|--|----|----|---|---|---|
| DROI0724-1 | <i>Law and engineering</i> - Christine BIQUET, Jacques CLESSE, Pascale LECOCQ, Bernard VANBRABANT - Suppl : Daisy CHICHOYAN, Déborah GOL, Cécile VERCHEVAL | Q1 | 30 | - | - | 2 |
|------------|--|----|----|---|---|---|

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| GENV0002-1 | <i>Sustainable energy (english language)</i> - Pierre DEWALLEF, Damien ERNST, Christine FILOT, Nathalie JOB, Sigrid REITER - [20h Proj.] | Q2 | 30 | 8 | [+] | 3 |
|------------|--|----|----|---|-----|---|

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|------------|--|----|----|----|-----|---|
| MATH0487-2 | <i>Elements of statistics</i> - Louis WEHENKEL - [25h Proj.] | Q1 | 15 | 10 | [+] | 3 |
|------------|--|----|----|----|-----|---|

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|------------|--|----|----|----|-----|---|
| SYST0002-2 | <i>Modelling and analysis of systems</i> - Rodolphe SEPULCHRE - Suppl : Erik QUAEGBEUR - [15h Proj.] | Q1 | 30 | 30 | [+] | 5 |
|------------|--|----|----|----|-----|---|

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|------------|--|----|----|----|-----|---|
| MATH0488-1 | <i>Elements of stochastic processes</i> - Maarten ARNST, Vincent DENOËL, Pierre GEURTS, Louis WEHENKEL - [30h Proj.] | Q2 | 10 | 10 | [+] | 2 |
|------------|--|----|----|----|-----|---|

Optional courses

The follow-up to the two options begun in the second year :

Option Chemistry and Material Sciences

| | | | | | | |
|------------|---|----|----|----|-----|---|
| CHIM0022-2 | <i>Transport phenomena</i> (english language) - Andreas PFENNIG | Q2 | 30 | 30 | - | 5 |
| CHIM0009-3 | <i>Applied chemical thermodynamics</i> - Nathalie JOB - [10h Proj.] | Q1 | 20 | 15 | [+] | 3 |
| CHIM0023-3 | <i>Chemical Engineering (Reactor Study), étude des réacteurs I</i> - Dominique TOYE | Q1 | 20 | 15 | - | 3 |
| CHIM0606-2 | <i>Analytical Chemistry</i> - Gauthier EPPE | Q1 | 30 | 15 | - | 4 |

Option Mechanics

| | | | | | | |
|------------|---|----|----|----|-----|---|
| MECA0002-1 | <i>Applied Thermodynamics and Introduction to Heat Engines</i> - Olivier LÉONARD | Q1 | 30 | 30 | - | 5 |
| MECA0155-2 | <i>Dynamics of Mechanical Systems</i> - JeanClaude GOLINVAL - [5h Labo., 10h Proj.] | Q1 | 30 | 30 | [+] | 5 |
| PHYS0904-4 | <i>Physics of materials</i> - Jacqueline LECOMTEBECKERS - [1d FW] | Q2 | 30 | 30 | [+] | 5 |

Option Physics

| | | | | | | |
|------------|---|----|----|----|-----|---|
| PHYS0211-3 | <i>Quantum Mechanics</i> - John MARTIN | Q1 | 30 | 30 | - | 5 |
| ELEN0076-1 | <i>Electromagnetism</i> - Patricia ROUSSEAUX, Benoît VANDERHEYDEN | Q1 | 30 | 30 | - | 5 |
| MECA0446-2 | <i>Continuum Mechanics</i> - JeanPhilippe PONTHOT - [50h Proj.] | Q2 | 30 | 30 | [+] | 5 |

Option Electricity and Electronics

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|------------|--|----|----|----|-----|---|
| ELEC0052-2 | <i>Analysis and Design of Electrical Measuring Systems</i> - Philippe VANDERBEMDEN - [24h Labo.] | Q1 | 30 | 6 | [+] | 5 |
| ELEC0431-2 | <i>Electromagnetic energy conversion</i> (english language) - Christophe GEUZAIN - [15h Labo.] | Q2 | 30 | 15 | [+] | 5 |
| ELEN0076-1 | <i>Electromagnetism</i> - Patricia ROUSSEAUX, Benoît VANDERHEYDEN | Q1 | 30 | 30 | - | 5 |

Option Computing

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|------------|--|----|----|----|-----|---|
| INFO0012-3 | <i>Computation structures</i> (english language) - Pierre WOLPER - [50h Proj.] | Q1 | 30 | 25 | [+] | 5 |
| INFO0004-2 | <i>Object-oriented programming projects</i> (english language) - Laurent MATHY - [90h Proj.] | Q1 | 20 | - | [+] | 5 |
| INFO0009-1 | <i>Database (general organisation)</i> - Pierre WOLPER - [25h Proj.] | Q2 | 30 | 25 | [+] | 5 |

Option Building

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|------------|---|----|----|----|-----|---|
| GCIV0604-3 | <i>Hydraulics</i> - Michel PIROTTON - [1d FW, 15h Proj.] | Q1 | 20 | 25 | [+] | 4 |
| GCIV0603-2 | <i>Geotechnics and infrastructure</i> - Robert CHARLIER, JeanPol RADU - [0,5d FW, 2h Labo.] | Q2 | 26 | 26 | [+] | 5 |
| GCIV0097-1 | <i>Steel and concrete constructions</i> - JeanPierre JASPART, Boyan MIHAYLOV - [40h Proj.] | Q1 | 35 | 35 | [+] | 6 |

Option Geological Engineering

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|------------|---|----|----|----|-----|---|
| GEOL0020-7 | <i>Mineral resources</i> (english language) - Eric PIRARD - [1d FW, 30h Labo., 32h Proj.] | Q1 | 30 | - | [+] | 5 |
| GEOL0013-5 | <i>Hydrogeology</i> - Alain DASSARGUES - [1d FW, 10h Proj.] | Q1 | 30 | 25 | [+] | 5 |
| GCIV0603-2 | <i>Geotechnics and infrastructure</i> - Robert CHARLIER, JeanPol RADU - [0,5d FW, 2h Labo.] | Q2 | 26 | 26 | [+] | 5 |

Option Architecture

| | | | | | | |
|------------|--|----|----|----|-----|---|
| ARCH3264-1 | <i>Introduction to the architectural composition I</i> - Catherine ELSSEN - [1d FW, 85h Proj.] | TA | - | 90 | [+] | 7 |
| ARCH0003-7 | <i>Building construction techniques I, elements</i> - Shady ATTIA - [2,5d FW] | Q1 | 30 | 30 | [+] | 5 |
| ARCH0069-1 | <i>Project management I</i> - Shady ATTIA - [2,5d FW] | Q2 | 15 | 15 | [+] | 3 |

Option Biomedical Engineering

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|------------|---|----|----|----|---|---|
| GBIO0002-1 | <i>Genetics and bioinformatics</i> - Franck DEQUIEDT, Michel GEORGES, Kristel VAN STEEN | Q1 | 30 | 30 | - | 5 |
| GBIO0013-1 | <i>Transport phenomena in biology</i> - Dominique TOYE | Q1 | 30 | 30 | - | 5 |
| GBIO0005-1 | <i>Introduction to cognitive neurosciences</i> - Pierre LEPRINCE, Gilles VANDEWALLE | Q2 | 30 | 30 | - | 5 |

Choose one advanced study option out of the following :

Option Chemistry and Material Sciences, further study

| | <u>Prerequisite</u> | "Option Chimie et science des matériaux" | | | | | | |
|------------|--|--|----|----|----|---|-----|---|
| CHIM0063-2 | <i>General principles of biology and biochemistry</i> - Paulette CHARLIER | | Q2 | 10 | 10 | - | | 2 |
| CHIM0604-2 | <i>Chemistry and organic materials</i> - Lionel DELAUDE | | Q2 | 30 | 30 | - | | 5 |
| CHIM0605-2 | <i>Chemistry and inorganic materials</i> - Bénédicte VERTRUYEN | | Q2 | 30 | - | - | | 3 |
| CHIM0681-1 | <i>Combined Chemistry Laboratories</i> - Lionel DELAUDE, Gauthier EPPE, Bénédicte VERTRUYEN - [120h Labo.] | | Q2 | - | - | | [+] | 5 |

Option Mechanics (Advanced Study)

| | <u>Prerequisite</u> | "Option Mécanique" | | | | | | |
|------------|--|--------------------|----|----|----|--|-----|---|
| MECA0018-2 | <i>Industrial Forming Processes</i> - JeanFrançois DEBONGNIE - [15h Labo., 0,5d FW, 11h Proj.] | | Q2 | 30 | - | | [+] | 5 |
| MECA0025-3 | <i>Fluid Mechanics</i> - Eric DELHEZ - [30h Proj.] | | Q2 | 30 | 30 | | [+] | 5 |
| MECA0036-2 | <i>Finite Element Method</i> (english language) - JeanPhilippe PONTHOT - [40h Proj.] | | Q2 | 30 | 30 | | [+] | 5 |

Option Physics (Advanced Study)

| | <u>Prerequisite</u> | "Option Physique" | | | | | | |
|------------|--|-------------------|----|----|----|---|-----|---|
| MECA0009-2 | <i>Introduction to microtechnology</i> (english language) - Tristan GILET - [12h Labo., 18h Proj.] | | Q2 | 14 | 16 | | [+] | 5 |
| PHYS0055-1 | <i>Introduction to Condensed Matter Physics</i> - Matthieu VERSTRAETE | | Q2 | 30 | 30 | - | | 5 |
| MECA0025-3 | <i>Fluid Mechanics</i> - Eric DELHEZ - [30h Proj.] | | Q2 | 30 | 30 | | [+] | 5 |

Option Electricity and Electronics (Advanced Study)

| | <u>Prerequisite</u> | "Option Electricité et électronique" | | | | | | |
|------------|---|--------------------------------------|----|----|----|---|-----|---|
| ELEN0070-2 | <i>Signal processing</i> (english language) - Jacques VERLY - [40h Proj.] | | Q2 | 45 | 15 | | [+] | 5 |
| ELEN0075-3 | <i>Analog Electronics</i> - Benoît VANDERHEYDEN - [16h Labo.] | | Q2 | 30 | 24 | | [+] | 5 |
| ELEN0008-1 | <i>Principles of analog and digital telecommunications systems</i> - Marc VAN DROOGENBROECK | | Q2 | 30 | 30 | - | | 5 |

Option Computing (Advanced Study)

| | <u>Prerequisite</u> | "Option Informatique" | | | | | | |
|------------|---|-----------------------|----|----|----|--|-----|---|
| INFO0054-1 | <i>Functional programming</i> - Pascal GRIBOMONT - [15h Proj.] | | Q2 | 30 | 25 | | [+] | 5 |
| INFO0010-4 | <i>Introduction to computer networking</i> (english language) - Guy LEDUC - [40h Proj.] | | Q2 | 35 | 15 | | [+] | 5 |
| INFO0940-1 | <i>Operating systems</i> (english language) - Laurent MATHY - [80h Proj.] | | Q2 | 30 | 6 | | [+] | 5 |

Option Building (Advanced Study)

| | <u>Prerequisite</u> | "Option Constructions" | | | | | | |
|------------|--|------------------------|----|----|----|---|--|---|
| GCIV0607-2 | <i>Structural mechanics</i> - JeanMarc FRANSSSEN | | Q2 | 35 | 35 | - | | 6 |
| GCIV0608-1 | <i>Integrated building project</i> - Frédéric COLLIN, JeanFrançois DEMONCEAU, JeanMarc FRANSSSEN, JeanPierre JASPART, Boyan MIHAYLOV, Michel PIROTON | | Q2 | - | 60 | - | | 3 |

Notice : If the president of the cycle's panel agrees, in particular regarding the technical content, the integrated project can be part of an interdisciplinary project (e.g. project engineer, etc.).

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|------------|---|--|----|----|----|--|-----|---|
| GEOL0001-3 | <i>Geology and Geology for Engineers</i> - Alain DASSARGUES - [1d FW] | | Q2 | 25 | 25 | | [+] | 4 |
| GCIV0623-2 | <i>Experimental geotechnics</i> - Frédéric COLLIN - [10h Labo.] | | Q2 | 10 | - | | [+] | 2 |

Option Advanced Studies in Geological Engineering

| | <u>Prerequisite</u> | "Option Génie géologique" | | | | | | |
|------------|---|---------------------------|----|----|---|--|-----|---|
| META0431-3 | <i>Mineral processing (processes)</i> - Stoyan GAYDARDZHIEV - [1d FW, 30h Labo., 10h Proj.] | | Q2 | 30 | - | | [+] | 5 |

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|------------|--|----|----|---|-----|----------|
| GEOL1026-1 | <i>Complement of geology</i> | Q2 | | | | 5 |
| | - 1st part : <i>elements of mineralogy</i> - Frédéric HATERT | 20 | 20 | - | | |
| | - 2nd part : <i>Elements of Magmatic and metamorphic petrology</i> - Jacqueline VANDER AUWERA | 10 | 10 | - | | |
| GEOL1032-1 | <i>Geocomputing and geocommunication</i> - Annick ANCEAU, Serge BROUYÈRE, Eric PIRARD - [20h Labo., 120h Proj.] | Q2 | 10 | - | [+] | 5 |

Biomedical engineering option, in-depth approach

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|------------|---|---------------------------|----|----|---|----------|
| | <u>Prerequisite</u> | "Option Génie biomédical" | | | | |
| GBIO0021-1 | <i>Laboratory project</i> - Thomas DESAIVE, Liesbet GERIS | Q2 | - | 60 | - | 5 |
| GBIO0020-1 | <i>Physiology</i> - Philippe KOLH, Olivier PEULEN | Q1 | 30 | 30 | - | 5 |
| GBIO0011-1 | <i>Modeling of biological systems</i> - Pierre DAUBY, Liesbet GERIS | Q2 | 30 | 30 | - | 5 |

Notice : Students who follow options which have one or more courses in common complete their programme by choosing one or more courses from BAC programme for Engineering Sciences - Civil Engineering or language courses organised by the Ulg in other education pathways.

Particularly, students can choose between the two courses below, that are specific to engineers.

- * LANG1957-1 *Dutch Engineering* (Mrs C. COLIN, 60h, 5 ECTS)
- * LANG1958-1 *Germand Engineering* (Mrs F. CARL, 60 h, 5 ECTS)

The resulting programme must total at least 60 ECTS and must be approved by the cycle's Jury President.