## First Year

### Compulsory courses

| | | | | | |
|---|---|---|---|---|---|
| CHIM0603-1 | *Chemistry* - Benoît HEINRICHS - [15h Labo.] | 50 | 40 | [+] | **9** |
| ECON0323-1 | *First principles of economics* - Bernard JURION | 30 | - | - | **3** |
| INFO2009-1 | *Introduction to computer science* - Benoît DONNET | 25 | 20 | - | **4** |
| INFO0061-3 | *Computers organization* - Bernard BOIGELOT | 25 | 20 | - | **5** |
| LANG0038-1 | *English* - Christine FILOT, ISLV | 60 | - | - | **5** |
| MATH0001-2 | *Graphic Communication* - Eric BÉCHET | 20 | 20 | - | **4** |
| MATH0002-3 | *Mathematical Analysis I* - Eric DELHEZ | 50 | 40 | - | **9** |
| MATH0003-1 | *Geometry* - Pierre LECOMTE | 25 | 15 | - | **4** |
| MATH0013-1 | *Algebra* - Eric DELHEZ | 30 | 20 | - | **5** |
| PHYS2020-1 | *Physics 1 : Mechanics* - Hervé CAPS | 20 | 20 | - | **4** |
| PHYS2021-1 | *Physics 2 : Electricity and electromagnetism* - Hervé CAPS | 30 | 30 | - | **5** |
| PROJ0001-1 | *Introduction to numerical methods and project* - Olivier BRULS, Quentin LOUVEAUX, Frédéric NGUYEN | 10 | 30 | - | **3** |

Engineering jobs and careers : compulsory seminars
A visit to a business

*Notice* : Compulsory buiness visits envisaged for the 2nd smester in 1st BAC and the Ist semester of BAC 2 are organised so that students can better become acquainted with the engineering professions and to help them choose thire options and Masters. They are not graded and thus have no ECTS value.

## Second Year

### Compulsory courses

| | | | | | |
|---|---|---|---|---|---|
| CHIM0286-1 | *Rudiments of thermodynamics* - Benoît HEINRICHS | 30 | 30 | - | **5** |
| GENV0001-1 | *Environmental Engineering* - Alain DASSARGUES, Benjamin DEWALS, Angélique LÉONARD | 30 | - | - | **4** |
| LANG0039-2 | *English 2* (english language) - Christine FILOT, ISLV | 30 | - | - | **3** |
| MATH0006-3 | *Introduction to numerical analysis* - Quentin LOUVEAUX | 20 | 20 | - | **4** |
| MATH0007-4 | *Mathematical analysis II* - Françoise BASTIN | 30 | 30 | - | **5** |
| MECA0001-1 | *Mechanics of materials* - JeanPierre JASPART | 30 | 30 | - | **5** |
| MECA0003-2 | *Rational Mechanics* - Eric DELHEZ | 20 | 30 | - | **4** |
| MECA0011-2 | *Fluid Mechanics : Basics* - Michel PIROTTON | 20 | 30 | - | **4** |
| PHYS2022-2 | *Physics 3 : Waves and quanta* - Geoffroy LUMAY | 20 | 10 | - | **3** |
| MATH0062-1 | *Elements of probability calculus* - Kristel VAN STEEN, Louis WEHENKEL | 15 | 15 | - | **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 | *Physics of materials* - Jacqueline LECOMTEBECKERS - [1d FW] | 30 | 30 | [+] | **5** |
| CHIM0680-1 | *Introduction to industrial processes* - Dominique TOYE | 10 | 15 | - | **2** |
| CHIM0012-3 | *Chemical Kinetics* - JeanPaul PIRARD | 20 | 15 | - | **3** |

#### Option Mechanics

| | | | | | |
|---|---|---|---|---|---|
| MECA0445-1 | *Heat transfer* - Michel HOGGE | 30 | 30 | - | **5** |
| MECA0012-5 | *Solid mechanics* - Laurent DUCHENE | 30 | 30 | - | **5** |

#### Option Physics

| | | | | | |
|---|---|---|---|---|---|
| PHYS2026-1 | *Physics 4 : Microscopic physics (partime a : waves optics, partime b : introduction to nuclear physics)* - Ngoc Duy NGUYEN | 30 | 30 | - | **5** |
| MECA0445-1 | *Heat transfer* - Michel HOGGE | 30 | 30 | - | **5** |

**Option Electricity and Electronics**

| | | | | | |
|---|---|---|---|---|---|
| ELEC0053-2 | *Electric circuits* - Patricia ROUSSEAUX | 30 | 30 | - | **5** |
| ELEN0040-1 | *Digital Electronics* - Jacques DESTINÉ | 30 | 30 | - | **5** |

**Option Computing**

| | | | | | |
|---|---|---|---|---|---|
| INFO0902-1 | *Data structures and algorithms* - Pierre GEURTS | 30 | 30 | - | **5** |
| INFO0062-1 | *Object-Oriented Programming* - Bernard BOIGELOT | 30 | 30 | - | **5** |

**Option Building**

| | | | | | |
|---|---|---|---|---|---|
| GCIV0184-5 | *Building Materials* - Luc COURARD - [1d FW] | 30 | 30 | [+] | **5** |
| MECA0012-5 | *Solid mechanics* - Laurent DUCHENE | 30 | 30 | - | **5** |

**Option Geological Engineering**

| | | | | | |
|---|---|---|---|---|---|
| GEOL0001-1 | *Geology and Geology for Engineers* - Alain DASSARGUES - [2d FW] | 35 | 25 | [+] | **5** |
| GEOL0021-7 | *Geophysical exploration* - Lucien HALLEUX, Frédéric NGUYEN - [5d FW] | 30 | 30 | [+] | **5** |

**Option Biomedical Engineering**

| | | | | | |
|---|---|---|---|---|---|
| BIOC0002-1 | *Biochemistry* - Paulette CHARLIER | 30 | 30 | - | **5** |
| GBIO0001-1 | *Biophysics* (english language) - Liesbet GERIS | 30 | 30 | - | **5** |

**Option Architecture**

| | | | | | |
|---|---|---|---|---|---|
| ARCH0067-5 | *Architecture history* - N... - Suppl : Michel PRÉGARDIEN, Jacques TELLER | 45 | - | - | **5** |
| GCIV2030-2 | *Structural Design of Buildings* - JeanMarie BLEUS | 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 | *Law and engineering* - Christine BIQUET, Jacques CLESSE, Pascale LECOCQ - Suppl : Daisy CHICHOYAN, Déborah GOL, Bernard VANBRABANT, Cécile VERCHEVAL | 30 | - | - | **2** |
| GENV0002-1 | *Sustainable energy* (english language) - Pierre DEWALLEF, Damien ERNST, Christine FILOT, Nathalie JOB, Sigrid REITER | 30 | - | - | **3** |
| MATH0487-1 | *Elements of statistics* (english language) - Kristel VAN STEEN, Louis WEHENKEL | 15 | 15 | - | **3** |
| SYST0002-1 | *Linear systems* - Rodolphe SEPULCHRE | 30 | 30 | - | **5** |
| MATH0488-1 | *Elements of stochastic processes* - Maarten ARNST, Vincent DENOËL, Pierre GEURTS, Louis WEHENKEL | 10 | 20 | - | **2** |

**Optional courses**

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

**Option Chemistry and Material Sciences**

| | | | | | |
|---|---|---|---|---|---|
| CHIM0022-2 | *Introduction to Chemical Engineering* - Michel CRINE | 30 | 30 | - | **5** |
| CHIM0009-2 | *Applied chemical thermodynamics* - Georges HEYEN | 20 | 15 | - | **3** |
| CHIM0023-3 | *Chemical Engineering (Reactor Study)* - Dominique TOYE | 20 | 15 | - | **3** |
| CHIM0606-2 | *Analytical Chemistry* - Gauthier EPPE | 30 | 15 | - | **4** |

**Option Mechanics**

| | | | | | |
|---|---|---|---|---|---|
| MECA0445-1 | *Heat transfer* - Michel HOGGE | 30 | 30 | - | **5** |
| MECA0155-1 | *Dynamics of Mechanical Systems* - JeanClaude GOLINVAL | 30 | 30 | - | **5** |
| PHYS0904-4 | *Physics of materials* - Jacqueline LECOMTEBECKERS - [1d FW] | 30 | 30 | [+] | **5** |

**Option Physics**

| | | | | | |
|---|---|---|---|---|---|
| PHYS0211-3 | *Quantum Mechanics* - John MARTIN | 30 | 30 | - | **5** |
| ELEN0076-1 | *Electromagnetism* - Patricia ROUSSEAUX, Benoît VANDERHEYDEN | 30 | 30 | - | **5** |
| MECA0445-1 | *Heat transfer* - Michel HOGGE | 30 | 30 | - | **5** |

**Option Electricity and Electronics**

| | | | | | |
|---|---|---|---|---|---|
| ELEC0052-1 | *Analysis and Design of Electrical Measuring Systems* - Philippe VANDERBEMDEN | 30 | 30 | - | **5** |
| ELEC0431-1 | *Electromagnetic energy transformation* - Christophe GEUZAINE | 30 | 30 | - | **5** |
| ELEN0076-1 | *Electromagnetism* - Patricia ROUSSEAUX, Benoît VANDERHEYDEN | 30 | 30 | - | **5** |

**Option Computing**

| | | | | | |
|---|---|---|---|---|---|
| INFO0012-1 | *Computation structures* (english language) - Pierre WOLPER | 30 | 30 | - | **5** |
| INFO0030-5 | *Programming Projects* - Benoît DONNET | 6 | 20 | - | **2** |
| INFO0004-1 | *Object-oriented programming projects II* (english language) - Laurent MATHY | 8 | 30 | - | **3** |
| INFO0940-1 | *Operating systems* (english language) - Laurent MATHY | 30 | 30 | - | **5** |

**Option Building**

| | | | | | |
|---|---|---|---|---|---|
| GCIV0604-2 | *Hydraulics* - Michel PIROTTON | 20 | 20 | - | **4** |
| GCIV0603-2 | *Geotechnics and infrastructure* - Robert CHARLIER, JeanPol RADU - [1d FW] | 30 | 30 | [+] | **5** |
| GCIV0097-1 | *Steel and concrete constructions* - JeanPierre JASPART, Boyan MIHAYLOV - Suppl : François KAISER | 35 | 35 | - | **6** |

**Option Geological Engineering**

| | | | | | |
|---|---|---|---|---|---|
| GEOL0020-7 | *Mineral resources* - Eric PIRARD - [1d FW] | 30 | 30 | [+] | **5** |
| GEOL0013-5 | *Hydrogeology* - Alain DASSARGUES - [1d FW] | 30 | 30 | [+] | **5** |
| GCIV0603-2 | *Geotechnics and infrastructure* - Robert CHARLIER, JeanPol RADU - [1d FW] | 30 | 30 | [+] | **5** |

**Option Architecture**

| | | | | | |
|---|---|---|---|---|---|
| ARCH0070-1 | *Workshops in architecture 1* - Jacques TELLER | - | 90 | - | **7** |
| ARCH0003-4 | *Method of construction of buildings I (Part 1)* - N... - Suppl : Mauro BACCARINI - [2,5d FW] | 30 | 30 | [+] | **5** |
| ARCH0069-1 | *Project management I* - N... - Suppl : Pierre LECLERCQ, Dimitri SCHMITZ - [2,5d FW] | 15 | 15 | [+] | **3** |

**Option Biomedical Engineering**

| | | | | | |
|---|---|---|---|---|---|
| GBIO0002-1 | *Genetics and molecular biology* - Michel GEORGES, N... - Suppl : Marc MULLER | 30 | 30 | - | **5** |
| GBIO0020-1 | *Physiology* - Philippe KOLH, Olivier PEULEN | 30 | 30 | - | **5** |
| GBIO0005-1 | *Introduction to neurosciences* - Shibeshih BELACHEW, Pierre MAQUET - Suppl : Pierre LEPRINCE, Gilles VANDEWALLE | 30 | 30 | - | **5** |

***Choose one advanced study option out of the following :***

**Option Chemistry and Material Sciences, further study**

| | | | | | |
|---|---|---|---|---|---|
| | Prerequisite "Option Chimie et science des matériaux" | | | | |
| CHIM0063-2 | *General principles of biology and biochemistry* - Paulette CHARLIER | 10 | 10 | - | **2** |
| CHIM0604-2 | *Chemistry and organic materials* - Lionel DELAUDE | 30 | 30 | - | **5** |
| CHIM0605-2 | *Chemistry and inorganic materials* - Bénédicte VERTRUYEN | 30 | - | - | **3** |
| CHIM0681-1 | *Combined Chemistry Laboratories* - COLLÉGIALITÉ | - | 120 | - | **5** |

**Option Mechanics (Advanced Study)**

| | | | | | |
|---|---|---|---|---|---|
| | Prerequisite "Option Mécanique" | | | | |
| MECA0018-1 | *Industrial Forming Processes* - JeanFrançois DEBONGNIE | 30 | 30 | - | **5** |

| | | | | | |
|---|---|---|---|---|---|
| MECA0025-1 | *Fluid Mechanics* - Eric DELHEZ | 30 | 30 | - | **5** |
| MECA0036-1 | *Finite Element Method* (english language) - JeanPhilippe PONTHOT | 30 | 30 | - | **5** |

**Option Physics (Advanced Study)**

| | Prerequisite "Option Physique" | | | | |
|---|---|---|---|---|---|
| MECA0446-1 | *Continuum Mechanics* - JeanPhilippe PONTHOT | 30 | 30 | - | **5** |
| PHYS0055-1 | *Introduction to Condensed Matter Physics* - Matthieu VERSTRAETE | 30 | 30 | - | **5** |
| MECA0025-1 | *Fluid Mechanics* - Eric DELHEZ | 30 | 30 | - | **5** |

**Option Electricity and Electronics (Advanced Study)**

| | Prerequisite "Option Electricité et électronique" | | | | |
|---|---|---|---|---|---|
| ELEN0070-1 | *Signal Processing* - Jacques VERLY | 30 | 30 | - | **5** |
| ELEN0075-1 | *Analog Electronics* - Benoît VANDERHEYDEN | 30 | 30 | - | **5** |
| ELEN0008-1 | *Principles of analog and digital telecommunications systems* - Marc VAN DROOGENBROECK | 30 | 30 | - | **5** |

**Option Computing (Advanced Study)**

| | Prerequisite "Option Informatique" | | | | |
|---|---|---|---|---|---|
| INFO0054-1 | *Functional programming* - Pascal GRIBOMONT | 30 | 30 | - | **5** |
| INFO0010-1 | *Introduction to computer networking* (english language) - Guy LEDUC | 30 | 30 | - | **5** |
| ELEN0040-1 | *Digital Electronics* - Jacques DESTINÉ | 30 | 30 | - | **5** |

**Option Building (Advanced Study)**

| | Prerequisite "Option Constructions" | | | | |
|---|---|---|---|---|---|
| GCIV0607-1 | *Structural mechanics* - JeanMarc FRANSSEN | 30 | 30 | - | **5** |
| GCIV0608-1 | *Integrated building projet* - Frédéric COLLIN, JeanMarc FRANSSEN, JeanPierre JASPART, Boyan MIHAYLOV, Michel PIROTTON | - | 60 | - | **3** |
| GEOL0001-1 | *Geology and Geology for Engineers* - Alain DASSARGUES - [2d FW] | 35 | 25 | [+] | **5** |
| GCIV0623-2 | *Experimental geotechnics* - Frédéric COLLIN, Séverine LEVASSEUR | 10 | 10 | - | **2** |

**Option Advanced Studies in Geological Engineering**

| | Prerequisite "Option Génie géologique" | | | | |
|---|---|---|---|---|---|
| META0431-2 | *Mineral processing (processes)* - Stoyan GAYDARDZHIEV - [1d FW] | 30 | 30 | [+] | **5** |
| BIOL0212-1 | *Introduction to environmental microbiology* - Monique CARNOL - Suppl : Olivier GUILLITTE | 30 | - | - | **2** |
| GEOL1026-1 | *Complement of geology* | | | | **5** |
| | *- 1st part : elements of mineralogy* - Frédéric HATERT | 20 | 20 | - | |
| | *- 2nd part : Elements of Magmatic and metamorphic petrology* - Jacqueline VANDER AUWERA | 10 | 10 | - | |
| GEOL0249-2 | *Personal project work in documentary research* - Annick ANCEAU, Eric PIRARD | 5 | 25 | - | **3** |

**Biomedical engineering option, in-depth approach**

| | Prerequisite "Option Génie biomédical" | | | | |
|---|---|---|---|---|---|
| GBIO0021-1 | *Practical work in biomedical engineering* - Eric BULLINGER, Liesbet GERIS | - | 60 | - | **5** |

One of the following courses :

| | | | | | |
|---|---|---|---|---|---|
| ELEN0040-1 | *Digital Electronics* - Jacques DESTINÉ | 30 | 30 | - | **5** |
| MECA0012-5 | *Solid mechanics* - Laurent DUCHENE | 30 | 30 | - | **5** |
| PHYS0904-4 | *Physics of materials* - Jacqueline LECOMTEBECKERS - [1d FW] | 30 | 30 | [+] | **5** |

One of the following courses :

| | | | | | |
|---|---|---|---|---|---|
| INFO0062-1 | *Object-Oriented Programming* - Bernard BOIGELOT | 30 | 30 | - | **5** |
| MECA0009-1 | *Introduction to microtechnologies* (english language) - Tristan GILET | 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.