

**Cycle view of the study programme**

B1 Or Th Pr Au Cr

**Compulsory courses (B1 : 60Cr, B2 : 30Cr)**

**Additional technical training**

CHIM0015-3	<i>Analytical chemistry II, physical methods</i> - Gauthier EPPE	B1	Q1	30	-	-	<b>4</b>
CHIM9298-1	<i>Industrial internship in Analytical Chemistry</i> - Gauthier EPPE - [60h Labo.]	B1	Q2	-	-	[+]	<b>2</b>
<b>Corequisite :</b> CHIM0015-3 - Chimie analytique II, méthodes physiques							
ELEC0431-2	<i>Electromagnetic energy conversion</i> (english language) - Christophe GEUZAIN - [15h Labo.]	B1	Q2	30	15	[+]	<b>5</b>

**Training in processes**

CHIM0081-3	<i>Industrial Chemistry Processes, structure of chemical industry</i> - Angélique LÉONARD - [1d FW]	B1	Q1	30	-	[+]	<b>3</b>
CHIM0695-2	<i>Introduction to the modelling of chemical processes</i> (english language) - MarieNoëlle DUMONT, Grégoire LÉONARD	B1	Q1	20	45	-	<b>5</b>
CHIM0696-1	<i>Static and dynamic modelling of large chemical processes</i> (english language) - Grégoire LÉONARD	B1	Q2	30	15	-	<b>4</b>
<b>Corequisite :</b> CHIM0695-2 - Introduction to the modelling of chemical processes							
CHIM0080-2	<i>Energy carriers and sustainable development</i> - Angélique LÉONARD	B1	Q2	20	-	-	<b>2</b>
PROJ0012-1	<i>integrated project</i> - MarieNoëlle DUMONT, Cédric GOMMES, Nathalie JOB, Stéphanie LAMBERT, Angélique LÉONARD, Grégoire LÉONARD, Andreas PFENNIG, Dominique TOYE - [120h Proj.]	B1	TA	10	-	[+]	<b>10</b>
<b>Corequisite :</b> CHIM0080-2 - Vecteurs énergétiques et développement durable CHIM0081-3 - Procédés de chimie industrielle CHIM0695-2 - Introduction to the modelling of chemical processes CHIM0696-1 - Static and dynamic modelling of large chemical processes CHIM0697-1 - Heterogeneous catalysis CHIM9277-1 - Génie chimique (étude des réacteurs II) CHIM9299-1 - Physical Unit Operations I CHIM9300-1 - Physical Unit Operations II							

*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.

**Chemical engineering training**

CHIM0697-1	<i>Heterogeneous catalysis</i> (english language) - Nathalie JOB	B1	Q1	20	20	-	<b>3</b>
CHIM9277-1	<i>Chemical Reactor Engineering II</i> - Dominique TOYE - [12h Labo.]	B1	Q1	20	4	[+]	<b>3</b>
CHIM9299-1	<i>Physical Unit Operations I</i> (english language) - Andreas PFENNIG - [5h Labo.]	B1	Q1	30	10	[+]	<b>4</b>
CHIM9300-1	<i>Physical Unit Operations II</i> (english language) - Andreas PFENNIG - [5h Labo.]	B1	Q2	30	10	[+]	<b>4</b>
<b>Corequisite :</b> CHIM9299-1 - Physical Unit Operations I							

**Training in materials**

CHIM0698-1	<i>Physical Chemistry of Interfaces</i> - Cédric GOMMES	B1	Q2	20	10	-	<b>2</b>
CHIM0675-1	<i>Macromolecular Chemistry</i> - AnneSophie DUWEZ - [20h Labo.]	B1	Q1	20	-	[+]	<b>3</b>
CHIM0676-1	<i>Polymerisation processes</i> (english language) - Klaus KECK	B1	Q2	20	-	-	<b>2</b>

#### Corequisite :

CHIM0675-1 - Chimie macromoléculaire

CHIM0666-2 *Inorganic materials : manufacturing procedures and propriety* - B1 Q1 30 - [+] **4**  
Stéphanie LAMBERT - [15h Labo., 1d FW]

*Notice* : Students who have taken one or more of the compulsory courses included in the master's programme, within the framework of their bachelor's degree, are required to replace them with one or more courses chosen from among courses available in this master's programme or from among the courses of the other programmes at the faculty; this choice must first be approved by the president of the cycle's jury

GEST3162-1 *Principles of management (english language)* - Michael GHILISSEN, B2 Q1 25 25 - **5**  
François PICHAULT, Thierry PIRONET, Didier VAN CAILLIE

ATFE0004-1 *Final Work (including an introduction to research methodology)* - B2 TA - - - **25**  
COLLÉGIALITÉ

#### Optional courses (B2 : 30Cr)

##### Single focus (B2 : 30Cr)

##### Research Focus (B2 : 30Cr)

Choose one of the following courses : (B2 : 3Cr)

ASTG0022-1 *4-week Observation internship (functional analysis)* - B2 TA - - - **3**  
Angélique LÉONARD

#### Corequisite :

GEST3162-1 - Principles of management

GEST3772-1 *Appendix "functional analysis" in a technical intership or final thesis done in company* - B2 TA - - - **3**  
Angélique LÉONARD

#### Corequisite :

GEST3162-1 - Principles of management

ATFE0004-1 - Travail de fin d'études (en ce compris une introduction à la méthodologie de la recherche) à l'ULg

Choose courses totalling 27 ECTS amongst : (B2 : 27Cr)

*Notice* : Choose courses from the courses of "Advanced question in chemical engineering", the technical internship and amongst maximum 3 modules

ASTG0023-1 *Technical internship (6-8 weeks)* - Angélique LÉONARD B2 TA - - - **5**

#### Corequisite :

GEST3162-1 - Principles of management

CHIM9301-1 *Advanced Question in Chemical Engineering: Industrial project management* - Angélique LÉONARD B2 Q1 20 15 - **3**

#### Prerequisite :

PROJ0012-1 - Projet intégré

CHIM9302-1 (pas organisé en 2015-2016) *Advanced Question in Chemical Engineering: Theme 2* B2 Q1 20 15 - **3**

CHIM9303-1 (pas organisé en 2015-2016) *Advanced Question in Chemical Engineering: Theme 3* B2 Q1 20 15 - **3**

#### Sustainable development : energy and environment

CHIM0056-2 *Energy Aspects of Physical Unit Operations - N... - Suppl :* B2 Q1 15 - - **2**  
Laurent FRAIKIN, Angélique LÉONARD

MECA0450-3 *Renewable energies (english language)* - Pierre DEWALLEF - B2 Q1 24 12 [+] **5**  
[24h Proj., 1d FW]

CHIM0664-1 *Electrochemical energy conversion and storage (english language)* - Nathalie JOB B2 Q1 15 15 - **3**

CHIM0071-4 *Reduction of pollutants from combustion* - B2 Q1 30 - [+] **3**

ÉONARD - [1d FW]

GEOL0281-4	<i>Environmental aspects of industrial and mining activities - Stoyan GAYDARDZHIEV - [1d FW, 25h Labo., 5h Proj.]</i>	B2	Q1	25	-	[+]	<b>4</b>
CHIM9304-1	<i>Chemical Environmental Engineering - N... - Suppl : Laurent FRAIKIN, Angélique LÉONARD - [8h Labo.]</i>	B2	Q1	15	8	[+]	<b>3</b>
CHIM0699-2	<i>Life cycle analysis - ecodesign - Sandra BELBOOM, Angélique LÉONARD</i> <b>Corequisite :</b> CHIM0071-4 - Réduction des polluants en combustion	B2	Q1	10	30	-	<b>3</b>

#### Biotechnology and Chemistry

CHIM0055-1	<i>Chemical Engineering of Polyphase Systems - JeanMarc SCHWEITZER</i> <b>Prerequisite :</b> CHIM9277-1 - Génie chimique (étude des réacteurs II) CHIM0697-1 - Heterogeneous catalysis <b>Corequisite :</b> CHIM9305-1 - Systèmes particuliers	B2	Q1	20	30	-	<b>4</b>
CHIM9305-1	<i>particulate systems - Dominique TOYE - [15h Labo.]</i>	B2	Q1	15	-	[+]	<b>3</b>
CHIM0668-1	<i>Agitation and Mixture - Dominique TOYE - [5h Labo.]</i> <b>Prerequisite :</b> CHIM9277-1 - Génie chimique (étude des réacteurs II)	B2	Q1	20	5	[+]	<b>3</b>
BIOC9240-1	<i>Microbial biotechnology - Frank DELVIGNE - [10h Proj.]</i> <b>Corequisite :</b> CHIM0063-2 - Principes généraux de la biologie et de la biochimie	B2		15	-	[+]	<b>2</b>
CHIM0063-2	<i>General principles of biology and biochemistry - Paulette CHARLIER</i>	B2	Q2	10	10	-	<b>2</b>

#### Procedures

CHIM0054-2	<i>Process design workshop : economic optimization</i> <b>Prerequisite :</b> PROJ0012-1 - Projet intégré	B2		10	45	-	<b>4</b>
CHIM0074-2	<i>Seminars on industrial security - JeanLuc BOZET, Angélique LÉONARD, Dominique TOYE - [2d FW]</i> <b>Prerequisite :</b> CHIM9277-1 - Génie chimique (étude des réacteurs II)	B2	Q1	15	-	[+]	<b>2</b>
MECA0051-2	<i>QSHE Management (Quality - Safety - Health - Environment) - JeanMichel COMPÈRE, Pierre DEWALLEF</i>	B2	Q1	30	30	-	<b>5</b>
MTRA2008-1	<i>Safety at work : technology and prevention - N...</i>	B2		12	-	-	<b>3</b>

[...] One of the two courses below :

GEOL0314-1	<i>Mineral processing I - basics (english language) - Stoyan GAYDARDZHIEV - [30h Labo., 10h Proj., 1,5d FW]</i>	B2	Q1	30	-	[+]	<b>5</b>
GEOL0315-1	<i>Solid Waste and by products processing (english language) - Stoyan GAYDARDZHIEV - [20h Labo., 7h Proj., 1,5d FW]</i>	B2	Q1	20	-	[+]	<b>5</b>

#### Materials Science

CHIM0072-1	<i>Nanomaterials and divided materials Ingeneering - Benoît HEINRICHS, Stéphanie LAMBERT</i> <b>Prerequisite :</b> CHIM0666-2 - Matériaux inorganiques: procédés de fabrication et propriétés d'usage CHIM0698-1 - Physical chemistry of interfaces	B2	Q1	20	15	-	<b>3</b>
PHYS0038-2	<i>Introduction into polymer physics including plasturgy - Klaus KECK</i>	B2	Q1	30	-	-	<b>3</b>

**Prerequisite :**

CHIM0676-1 - Polymerisation processes

MECA0462-2	<i>Materials selection</i> (english language) - Jacqueline LECOMTEBECKERS, Davide RUFFONI - [30h Proj., 1d FW]	B2	Q1	30	30	[+]	5
BIOC0430-1	<i>Interaction of living material</i> - Christian GRANDFILS	B2	Q1	25	-	-	3
MECA0516-1	<i>Mechanical properties of biological and bioinspired materials</i> (english language) - Davide RUFFONI - [3h Labo.]	B2	Q1	15	12	[+]	3

**Organising the materials**

MECA0464-1	<i>Large deformation of solids</i> (english language) - JeanPhilippe PONTHOT - [60h Proj.]	B2	Q1	30	30	[+]	5
<b>Corequisite :</b> MECA0023-1 - Advanced solid mechanics							
MECA0023-1	<i>Advanced solid mechanics</i> (english language) - JeanPhilippe PONTHOT - [20h Proj.]	B2	Q1	30	30	[+]	5
MECA0473-1	<i>Metallic materials Engineering</i> - Jacqueline LECOMTEBECKERS	B2	Q1	30	30	-	5
MECA0139-1	<i>Techniques of additive manufacturing and 3D printing</i> - Thierry DORMAL	B2	Q1	15	15	-	5

**Programme transitoire à destination des étudiants ayant réussi leur master 1 de  
"Master en ingénieur civil en chimie et science des matériaux, à finalité approfondie"  
en 2014-2015**

**Optional courses (B1 : 30Cr)**

**Single focus (B1 : 30Cr)**

**Research Focus (B1 : 30Cr)**

Choose one of the following courses : (B1 : 1Nbr)

ASTG0022-1	<i>4-week Observation internship (functional analysis)</i> - Angélique LÉONARD	B1	TA	-	-	-	3
GEST3772-1	<i>Appendix "functional analysis" in a technical intership or final thesis done in company</i> - Angélique LÉONARD	B1	TA	-	-	-	3

Choose 27 ECTS of optional courses from "Advanced question in chemical engineering", the technical internship and amongst maximum 3 modules

ASTG0023-1	<i>Technical internship (6-8 weeks)</i> - Angélique LÉONARD	B1	TA	-	-	-	5
CHIM9301-1	<i>Advanced Question in Chemical Engineering: Industrial project management</i> - Angélique LÉONARD	B1	Q1	20	15	-	3

**Sustainable development : energy and environment**

CHIM0056-2	<i>Energy Aspects of Physical Unit Operations</i> - N... - Suppl : Laurent FRAIKIN, Angélique LÉONARD	B1	Q1	15	-	-	2
MECA0450-3	<i>Renewable energies</i> (english language) - Pierre DEWALLEF - [24h Proj., 1d FW]	B1	Q1	24	12	[+]	5
CHIM0664-1	<i>Electrochemical energy conversion and storage</i> (english language) - Nathalie JOB	B1	Q1	15	15	-	3
CHIM0071-4	<i>Reduction of pollutants from combustion</i> - Angélique LÉONARD - [1d FW]	B1	Q1	30	-	[+]	3
GEOL0281-4	<i>Environmental aspects of industrial and mining activities</i> -	B1	Q1	25	-	[+]	4

	Stoyan GAYDARDZHIEV - [1d FW, 25h Labo., 5h Proj.]								
CHIM9304-1	<i>Chemical Environmental Engineering</i> - N... - Suppl : Laurent FRAIKIN, Angélique LÉONARD - [8h Labo.]	B1	Q1	15	8	[+]	3		
CHIM0699-2	<i>Life cycle analysis - ecodesign</i> - Sandra BELBOOM, Angélique LÉONARD	B1	Q1	10	30	-	3		
<b>Biotechnology and Chemistry</b>									
CHIM0055-1	<i>Chemical Engineering of Polyphase Systems</i> - JeanMarc SCHWEITZER	B1	Q1	20	30	-	4		
CHIM9305-1	<i>particulate systems</i> - Dominique TOYE - [15h Labo.]	B1	Q1	15	-	[+]	3		
CHIM0668-1	<i>Agitation and Mixture</i> - Dominique TOYE - [5h Labo.]	B1	Q1	20	5	[+]	3		
BIOC9240-1	<i>Microbial biotechnology</i> - Frank DELVIGNE - [10h Proj.]	B1		15	-	[+]	2		
CHIM0063-2	<i>General principles of biology and biochemistry</i> - Paulette CHARLIER	B1	Q2	10	10	-	2		
<b>Procedures</b>									
CHIM0054-2	<i>Process design workshop : economic optimization</i>	B1		10	45	-	4		
CHIM0074-2	<i>Seminars on industrial security</i> - JeanLuc BOZET, Angélique LÉONARD, Dominique TOYE - [2d FW]	B1	Q1	15	-	[+]	2		
MECA0051-2	<i>QSHE Management (Quality - Safety - Health - Environment)</i> - JeanMichel COMPÈRE, Pierre DEWALLEF	B1	Q1	30	30	-	5		
MTRA2008-1	<i>Safety at work : technology and prevention</i> - N...	B1		12	-	-	3		
[...]	One of the two courses below :								
GEOL0314-1	<i>Mineral processing I - basics</i> (english language) - Stoyan GAYDARDZHIEV - [30h Labo., 10h Proj., 1,5d FW]	B1	Q1	30	-	[+]	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		
<b>Materials Science</b>									
CHIM0072-1	<i>Nanomaterials and divided materials Ingeneering</i> - Benoit HEINRICHS, Stéphanie LAMBERT	B1	Q1	20	15	-	3		
PHYS0038-2	<i>Introduction into polymer physics including plasturgy</i> - Klaus KECK	B1	Q1	30	-	-	3		
MECA0462-2	<i>Materials selection</i> (english language) - Jacqueline LECOMTEBECKERS, Davide RUFFONI - [30h Proj., 1d FW]	B1	Q1	30	30	[+]	5		
BIOC0430-1	<i>Interaction of living material</i> - Christian GRANDFILS	B1	Q1	25	-	-	3		
MECA0516-1	<i>Mechanical properties of biological and bioinspired materials</i> (english language) - Davide RUFFONI - [3h Labo.]	B1	Q1	15	12	[+]	3		
<b>Organising the materials</b>									
MECA0464-1	<i>Large deformation of solids</i> (english language) - JeanPhilippe PONTHOT - [60h Proj.]	B1	Q1	30	30	[+]	5		
MECA0023-1	<i>Advanced solid mechanics</i> (english language) - JeanPhilippe PONTHOT - [20h Proj.]	B1	Q1	30	30	[+]	5		
MECA0473-1	<i>Metallic materials Engineering</i> - Jacqueline LECOMTEBECKERS	B1	Q1	30	30	-	5		
MECA0139-1	<i>Techniques of additive manufacturing and 3D printing</i> - Thierry DORMAL	B1	Q1	15	15	-	5		

#### Compulsory courses (B1 : 30Cr)

GEST3162-1	<i>Principles of management</i> (english language) - Michael GHILISSEN,	B1	Q1	25	25	-	5		
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François PICHAULT, Thierry PIRONET, Didier VAN CAILLIE

ATFE0004-1

*Final Work (including an introduction to research methodology)* -  
COLLÉGIALITÉ

B1 TA - - - 25