Cycle view of the study programme

Depending on your educational background or depending on the focus, it is possible that the prerequisites / corequisites for the 1st year of the programme are presented in the block 2. You are therefore invited to read through the list of courses in block 2 even if you are registering for the first time in this master.

As part of the Master in chemical and materials engineering, students must follow or approve 90 core training credits (including placement and final dissertation) and 30 credits from one of the two professional focuses.
Ideally, students taking the Masters will have acquired the skills and knowledge corresponding to 40 credits for the specific technical classes in the field of "chemistry and material sciences" organised as part of the Bachelor in civil engineering.

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

Further training in chemistry

		Bl	Or	Th	Pr	Au	Cr
CHIM0015-3	*Analytical chemistry II, physical methods* - Gauthier EPPE **Corequisite :** CHIM0606-2 - Chimie analytique	B1	Q1	36	-	-	**4**
CHIM9298-1	*Industrial internchip in Analytical Chemistry* - Gauthier EPPE - [60h Labo.] **Corequisite :** CHIM0015-3 - Chimie analytique II, méthodes physiques	B1	Q2	-	-	[+]	**2**

Training in processes

		Bl	Or	Th	Pr	Au	Cr
CHIM0081-3	*Industrial Chemistry Processes, structure of chemical industry* - Angélique LÉONARD - [1d FW]	B1	Q1	30	-	[+]	**3**
CHIM0695-2	*Introduction to the modelling of chemical processes* (english language) - Grégoire LÉONARD **Corequisite :** CHIM0009-3 - Thermodynamique chimique appliquée	B1	Q1	20	45	-	**4**
CHIM0696-1	*Static and dynamic modelling of large chemical processes* (english language) - MarieNoëlle DUMONT, Grégoire LÉONARD **Corequisite :** CHIM0695-2 - Introduction to the modelling of chemical processes	B1	Q2	30	15	-	**4**
CHIM0080-2	*Energy carriers and sustainable development* - Angélique LÉONARD	B1	Q2	20	-	-	**2**
PROJ0012-1	*Integrated project* (english language) - MarieNoëlle DUMONT, Nathalie JOB, Angélique LÉONARD, Grégoire LÉONARD, Andreas PFENNIG, Dominique TOYE - [270h Proj.] **Corequisite :** CHIM9300-1 - Physical Unit Operations II CHIM9299-1 - Physical Unit Operations I CHIM9277-1 - Génie chimique (étude des réacteurs II) CHIM0697-1 - Heterogeneous catalysis CHIM0696-1 - Static and dynamic modelling of large chemical processes CHIM0695-2 - Introduction to the modelling of chemical processes CHIM0081-3 - Procédés de chimie industrielle CHIM0080-2 - Vecteurs énergétiques et développement durable	B1	TA	10	-	[+]	**10**

Chemical engineering training

		Bl	Or	Th	Pr	Au	Cr
CHIM0697-1	*Heterogeneous catalysis* (english language) - Nathalie JOB - [10h Proj.]	B1	Q2	20	20	[+]	**4**
CHIM9277-1	*Chemical Reactor Engineering II* - Dominique TOYE - [15h Labo.]	B1	Q1	30	4	[+]	**4**
CHIM9307-1	*Applied chemical thermodynamics (part II)* - Grégoire LÉONARD	B1	Q1	10	15	-	**2**
CHIM9299-1	*Physical Unit Operations I* (english language) - Andreas PFENNIG - [5h Labo.] **Corequisite :** CHIM0022-4 - Transport phenomena	B1	Q1	30	10	[+]	**4**
CHIM9300-1	*Physical Unit Operations II* (english language) - Andreas PFENNIG - [5h Labo.]	B1	Q2	30	10	[+]	**4**

Corequisite :
CHIM9299-1 - Physical Unit Operations I
CHIM0022-4 - Transport phenomena

Training in materials

CHIM0698-1	*Physical Chemistry of Interfaces* (english language) - Cédric GOMMES	B1	Q2	20	10	-	**3**
CHIM0675-1	*Macromolecular Chemistry* - AnneSophie DUWEZ - [20h Labo.] **Corequisite :** CHIM0604-2 - Chimie et matériaux organiques	B1	Q1	20	-	[+]	**3**
CHIM0676-1	*Polymerisation processes* (english language) - Klaus KECKANTOINE **Corequisite :** CHIM0675-1 - Chimie macromoléculaire	B1	Q2	20	-	-	**2**
CHIM0666-2	*Inorganic materials : manufacturing procedures and propriety* - Stéphanie LAMBERT - [30h Labo., 1d FW] **Corequisite :** CHIM0605-2 - Chimie et matériaux inorganiques	B1	Q2	30	-	[+]	**5**
GEST3162-1	*Principles of management* (english language) - Michael GHILISSEN, François PICHAULT, Thierry PIRONET, Didier VAN CAILLIE - Suppl : Fanny FOX	B2	Q1	25	25	-	**5**
ATFE0004-1	*Final Work (including an introduction to research methodology)* - COLLÉGIALITÉ, Angélique LÉONARD - [750h Proj.]	B2	TA	-	-	[+]	**25**

Optional courses (B2 : 30Cr)

Single focus (B2 : 30Cr)

Professional Focus (B2 : 30Cr)

Choose 3 credits among : (B2 : 3Cr)

ASTG0022-1	*4-week Observation internship (functional analysis)* - Benoît HEINRICHS - [20d FW] **Corequisite :** GEST3162-1 - Principles of management	B2	TA	-	-	[+]	**3**
GEST3772-1	*Appendix "functional analysis" in the final thesis done in a company* - Benoît HEINRICHS **Corequisite :** ATFE0004-1 - Travail de fin d'études (en ce compris une introduction à la méthodologie de la recherche) à l'ULg GEST3162-1 - Principles of management	B2	TA	-	-	-	**3**
GEST3781-1	*Appendix "functional analysis" in a technical intership* - Benoît HEINRICHS **Corequisite :** GEST3162-1 - Principles of management ASTG0023-1 - Stage technique (8 semaines)	B2	TA	-	-	-	**3**

Choose minimum 27 credits of elective courses from the technical internship and from maximum 3 modules (B2 : 27Cr)

ASTG0023-1	*Technical internship (8 weeks)* - Benoît HEINRICHS - [40d FW] **Corequisite :** GEST3162-1 - Principles of management	B2	TA	-	-	[+]	**5**
INGE0012-1	*Scientific research in engineering and its impact on innovation* (english language) - Rodolphe SEPULCHRE	B2	Q2	30	30	-	**5**
PROJ0011-1	*Personal student project* (english language) - Bernard BOIGELOT, COLLÉGIALITÉ - [150h Proj.]	B2	TA	-	-	[+]	**5**

Chemical engineering bases

Students who have not followed the courses CHIM0022-4, CHIM0009-3, CHIM0606-2, CHIM0605-2 and

CHIM0604-2 from the option "Chemistry and material sciences" from bachelor in civil engineering programme or acquired the equivalent knowledge and skills have to choose in priority these five courses in their study programme ; theses courses are corequisites of compulsory courses of the master.

CHIM0022-4	*Transport phenomena* (english language) - Andreas PFENNIG	B2	Q2	30	20	-	**5**
CHIM0009-3	*Applied Chemical Thermodynamics* - Nathalie JOB, Grégoire LÉONARD	B2	Q1	30	30	-	**5**
CHIM0606-2	*Analytical Chemistry* - Gauthier EPPE - [5d Labo.]	B2	Q1	20	15	[+]	**5**
CHIM0605-2	*Chemistry and inorganic materials* - Bénédicte VERTRUYEN - [3d Labo.]	B2	Q2	30	15	[+]	**5**
CHIM0604-2	*Chemistry and organic materials* - Lionel DELAUDE - [5d Labo.]	B2	Q2	30	15	[+]	**5**

Sustainable development : energy and environment

MECA0450-3	*Renewable energies* (english language) - Pierre DEWALLEF - [24h Proj., 1d FW]	B2	Q1	24	12	[+]	**5**
CHIM0664-1	*Electrochemical energy conversion and storage* (english language) - Nathalie JOB - [15h Labo.]	B2	Q1	15	-	[+]	**3**
CHIM0071-4	*Reduction of pollutants from combustion* - Angélique LÉONARD - [1d FW]	B2	Q1	30	-	[+]	**3**
GEOL0281-4	*Environmental impact of industrial and mining activities* - Stoyan GAYDARDZHIEV - [1d FW, 25h Labo., 5h Proj.]	B2	Q1	25	-	[+]	**5**
CHIM9303-1	*Advanced Question in Chemical Engineering : water sanitation and sludge treatment* - Angélique LÉONARD, Dominique TOYE - [1d FW]	B2	Q1	20	15	[+]	**3**
CHIM0699-2	*Life cycle analysis - ecodesign* - Sandra BELBOOM, Angélique LÉONARD **Corequisite :** CHIM0071-4 - Réduction des polluants en combustion	B2	Q1	10	30	-	**3**

Biotechnology and Chemistry

CHIM0055-1	*Chemical Engineering of Polyphase Systems* - JeanMarc SCHWEITZER **Prerequisite :** CHIM0697-1 - Heterogeneous catalysis CHIM9277-1 - Génie chimique (étude des réacteurs II) **Corequisite :** CHIM9300-1 - Physical Unit Operations II	B2	Q1	20	30	-	**4**
CHIM0668-1	*Agitation and Mixture* - Dominique TOYE - [5h Labo.] **Prerequisite :** CHIM9277-1 - Génie chimique (étude des réacteurs II)	B2	Q1	20	5	[+]	**3**
CHIM9302-1	*Advanced Question in Chemical Engineering : Biotechnology* - Frank DELVIGNE, Aurore RICHEL, Dominique TOYE - [30h Proj., 1d FW]	B2	Q1	30	10	[+]	**5**

Procedures

CHIM0054-2	*Introduction to economic analysis, application to industrial processes* (english language) - Grégoire LÉONARD - [90h Proj.] **Prerequisite :** PROJ0012-1 - Integrated project	B2	Q1	10	-	[+]	**4**
CHIM9301-1	*Advanced Question in Chemical Engineering: Industrial project management* - Angélique LÉONARD, Grégoire LÉONARD - [2d FW] **Prerequisite :** PROJ0012-1 - Integrated project	B2	Q1	20	15	[+]	**4**

CHIM0074-2	*Seminars on industrial security* - JeanLuc BOZET, Angélique LÉONARD, Dominique TOYE - [2d FW] **Prerequisite :** CHIM9277-1 - Génie chimique (étude des réacteurs II)	B2	Q1	15	-	[+]	**2**
GEST0188-1	*Determination and Recognition of Quality and Conformity* - JeanMichel COMPÈRE, Pierre DEWALLEF **Corequisite :** MECA0521-1 - Gestion QSHE	B2	Q1	30	-	-	**3**
MECA0521-1	*HSE management, Part 2 : Practical aspects of HSE management* - Pierre DEWALLEF - [10h Proj., 1d FW] **Corequisite :** MECA0051-2 - Gestion QSHE	B2	TA	20	10	[+]	**2**
GEOL0314-1	*Mineral processing I - basics* (english language) - Stoyan GAYDARDZHIEV - [30h Labo., 10h Proj., 1,5d FW]	B2	Q1	30	-	[+]	**5**
GEOL0315-1	*Solid Waste and by products processing* (english language) - Stoyan GAYDARDZHIEV - [20h Labo., 7h Proj., 1,5d FW]	B2	Q1	20	-	[+]	**5**

Materials Science

CHIM0072-1	*Nanomaterials and divided materials engineering* - Benoît HEINRICHS, Stéphanie LAMBERT - [15h Labo.] **Prerequisite :** CHIM0698-1 - Physical chemistry of interfaces CHIM0666-2 - Matériaux inorganiques: procédés de fabrication et propriétés d'usage	B2	Q1	20	-	[+]	**3**
PHYS0038-2	*Introduction into polymer physics including plasturgy* - Klaus KECKANTOINE **Prerequisite :** CHIM0676-1 - Polymerisation processes	B2	Q1	30	-	-	**3**
MECA0462-2	*Materials selection* (english language) - Davide RUFFONI - [30h Proj., 1d FW]	B2	Q1	30	30	[+]	**5**
BIOC0430-1	*Interaction of living material* - Christian GRANDFILS	B2	Q1	25	-	-	**3**
MECA0516-1	*Mechanical properties of biological and bioinspired materials* (english language) - Davide RUFFONI - [3h Labo.]	B2	Q1	15	12	[+]	**3**

Organising the materials

MECA0464-1	*Large deformation of solids* (english language) - JeanPhilippe PONTHOT - [60h Proj.] **Corequisite :** MECA0023-1 - Advanced solid mechanics	B2	Q1	30	30	[+]	**5**
MECA0023-1	*Advanced solid mechanics* (english language) - JeanPhilippe PONTHOT - [30h Proj.]	B2	Q1	30	30	[+]	**5**
MECA0473-1	*Metallic materials Engineering*	B2	Q1	30	30	-	**5**
MECA0139-1	*Techniques of additive manufacturing and 3D printing* - Thierry DORMAL, Anne MERTENS	B2	Q1	15	15	-	**5**

Research Focus (B2 : 30Cr)

Aimed at students who have taken this focus in 2015-2016.

Additional ECTS Master in chemical and materials science engineering

Optional courses (B0 : 60Cr)

Each student¿s programme will be determined by the jury depending on their prior training. If an applicant does not meet certain prerequisites, his or her programme may include up to 60 additional course credits essentially taken from the list

below : (B0 : 60Cr)

MATH0066-1	*Complement of mathematics* - Patricia TOSSINGS	B0	Q2	30	30	-	**4**
CHIM0286-1	*Rudiments of thermodynamics* - Benoît HEINRICHS	B0	Q1	30	30	-	**5**
MECA0001-2	*Mechanics of materials* - JeanPierre JASPART - [2h Labo., 12h Proj.]	B0	Q1	30	28	[+]	**5**
MECA0011-2	*Fluid Mechanics : Basics* - Michel PIROTTON - [25h Proj.]	B0	Q2	20	30	[+]	**4**
CHIM9306-1	*Introduction to chemical engineering and industrial processes* - MarieNoëlle DUMONT, Nathalie JOB, Dominique TOYE - [20h Proj.]	B0	Q2	30	25	[+]	**5**
CHIM0604-2	*Chemistry and organic materials* - Lionel DELAUDE - [5d Labo.]	B0	Q2	30	15	[+]	**5**
CHIM0022-4	*Transport phenomena* (english language) - Andreas PFENNIG	B0	Q2	30	20	-	**5**
CHIM0009-3	*Applied Chemical Thermodynamics* - Nathalie JOB, Grégoire LÉONARD	B0	Q1	30	30	-	**5**
CHIM0606-2	*Analytical Chemistry* - Gauthier EPPE - [5d Labo.]	B0	Q1	20	15	[+]	**5**
CHIM0605-2	*Chemistry and inorganic materials* - Bénédicte VERTRUYEN - [3d Labo.]	B0	Q2	30	15	[+]	**5**

[...] Choose maximum 12 credits to complete the curriculum

Master en ingénieur civil en chimie et science des matériaux, à finalité - Programme aménagé pour les bacheliers en sciences chimiques