Block view of the study programme

		Or	Th	Pr	Au	Cr

Block 1

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.

Within the framework of their Master in Chemical and Materials Science Engineering, all students must follow or validate the 90 credits of joint training and the 30 credits of the professional focus.
Ideally, students studying for the master¿s degree will have acquired the competences and knowledge corresponding to the 40 credits of technical courses specific to the field of 'Chemical and Materials Science', taught within the framework of the Bachelor in Civil Engineering.

Core curriculum compulsory courses

Chemical engineering training

CHIM9299-1	*Physical Unit Operations I* (english language) - Sébastien CALVO - [5h Labo.] **Corequisite :** CHIM0022-4 - Transport phenomena	Q1	30	10	[+]	**5**
CHIM9300-1	*Physical Unit Operations II* (english language) - Sébastien CALVO - [5h Labo.] **Prerequisite :** CHIM0022-4 - Transport phenomena **Corequisite :** CHIM9299-1 - Physical Unit Operations I	Q2	30	10	[+]	**4**
CHIM9277-1	*Génie des réacteurs chimiques* - Dominique TOYE - [15h Proj.] **Corequisite :** CHIM9320-1 - Introduction au génie de la réaction chimique	Q1	30	15	[+]	**5**
CHIM0697-1	*Heterogeneous catalysis* (english language) - Nathalie JOB, Motiar RAHAMAN - [10h Proj.] **Corequisite :** CHIM9320-1 - Introduction au génie de la réaction chimique CHIM0022-4 - Transport phenomena	Q1	20	20	[+]	**5**

Training in materials

CHIM0698-1	*Introduction to the Physical Chemistry of Nanomaterials* (english language) - Cédric GOMMES	Q2	20	10	-	**3**
CHIM9319-1	*Chemistry and technology of polymers* (english language) - Antoine DEBUIGNE, Klaus KECKANTOINE - [10h Proj., 12h Labo.] **Corequisite :** CHIM0604-2 - Chimie et matériaux organiques	Q2	30	-	[+]	**5**
CHIM0605-2	*Chemistry and inorganic materials* - Bénédicte VERTRUYEN - [3d Labo.]	Q2	30	-	[+]	**5**

Training in processes

CHIM0695-2	*Modelling of chemical & energy processes* (english language) - Grégoire LÉONARD **Corequisite :** CHIM0009-3 - Thermodynamique chimique appliquée	Q1	20	32	-	**5**
CHIM0696-1	*Static and dynamic modelling of large chemical processes* (english language) - Grégoire LÉONARD - [1d FW] **Corequisite :** CHIM0695-2 - Modelling of chemical & energy processes	Q2	20	32	[+]	**4**
MECA0528-1	*Practical fluid mechanics for the process industry* (english language) - Koen HILLEWAERT - [4h Labo.]	Q2	35	7	[+]	**4**

Further training in chemistry

CHIM9284-3	*Chimie analytique I - Méthodes chimiques d'analyse* - *Théorie* - Gauthier EPPE - *Travaux dirigés* - Gauthier EPPE - *Laboratoires* - Gauthier EPPE - [5d Labo.]	Q1	26 - -	- 26 -	- - [+]	**5**

Integrated project

PROJ0012-1	*Integrated Project* (english language) - MarieNoëlle DUMONT, Samuel GENDEBIEN, Nathalie JOB, Angélique LÉONARD, Grégoire LÉONARD, Motiar RAHAMAN, Dominique TOYE - [270h Proj., 1d FW] **Prerequisite :** CHIM0009-3 - Thermodynamique chimique appliquée CHIM0022-4 - Transport phenomena **Corequisite :** CHIM0695-2 - Modelling of chemical & energy processes CHIM0696-1 - Static and dynamic modelling of large chemical processes CHIM0697-1 - Heterogeneous catalysis CHIM9277-1 - Génie des réacteurs chimiques CHIM9299-1 - Physical Unit Operations I CHIM9300-1 - Physical Unit Operations II	TA	20	-	[+]	**10**

Block 2

Core curriculum compulsory courses

GEST3162-1	*Principles of management* (english language) - Michaël PARMENTIER, Willem STANDAERT - [25h Proj.]	Q1	30	-	[+]	**5**
ATFE0004-1	*Master Thesis (including an introduction to research methodology)* - COLLÉGIALITÉ, Angélique LÉONARD - [750h Proj.]	TA	-	-	[+]	**25**

Focus courses

Notice : Optional courses only take place if there are a minimum number of students registered.

Choose 30 credits from:

[...] Students may also choose courses for a maximum of 10 credits in other masters of the faculty or du catalogue UNIC.

Notice : students must carry out an internship within a company either through the ASTG0023-1 course or by including the internship in their final dissertation.

ASTG0023-1	*Technical internship (8 weeks)* - Benoît HEINRICHS - [40d FW] **Corequisite :** GEST3162-1 - Principles of management	TA	-	-	[+]	**5**
CHIM0664-1	*Electrochemical energy conversion and storage* (english language) - *partim 1* - Nathalie JOB - *partim 2* - Nathalie JOB - [15h Labo.]	Q1	15 -	- -	- [+]	**3**
MECA0526-1	*High Temperature Processes in Recycling & Remanufacturing* (english language) - Anne MERTENS - [1d FW]	Q1	26	26	[+]	**5**
CHIM9303-1	*Epuration des eaux et traitement des boues* - Frank DELVIGNE, Stéphanie LAMBERT, Angélique LÉONARD, Dominique TOYE - [1d FW, 20h Proj.]	Q1	20	15	[+]	**3**
CHIM0699-2	*Life cycle assessment - Ecodesign* (english language) - Sylvie GROSLAMBERT, Angélique LÉONARD - [30h Proj.]	Q1	10	8	[+]	**3**
CHIM9309-1	(pas organisé en 2026-2027) *Process Intensification and Hybrid Processes* (english language)	Q1	25	8	-	**3**
MECA0450-3	*Renewable Energy System Design* (english language) - Pierre DEWALLEF - [24h Proj., 1d FW]	Q1	24	12	[+]	**5**
CHIM9329-1	*Questions avancées en génie des réacteurs chimiques* - Sébastien CALVO,	Q1	30	-	[+]	**6**

	Dominique TOYE - [10h Labo., 20h Proj.]					
CHIM9330-1	*Management and safety of industrial processes* (english language) - *Partim "Safety"* - Angélique LÉONARD, Grégoire LÉONARD, Dominique TOYE, Dominique TOYE - [2d FW] - *Partim "Management"* - Angélique LÉONARD, Grégoire LÉONARD - [1d FW]	Q1	25 15	- -	[+] [+]	**5**
PHYS0038-2	*Introduction into polymer physics including plasturgy* (english language) - Klaus KECKANTOINE	Q1	30	-	-	**3**
CHIM0072-2	*Nanomaterials and divided materials engineering* - Benoît HEINRICHS, Stéphanie LAMBERT, Alexandre LÉONARD **Corequisite :** CHIM0698-1 - Introduction to the Physical Chemistry of Nanomaterials	Q1	15	15	-	**3**
CHIM9289-3	*Chimie analytique III, Méthodes physico-chimiques d'analyse* - Gauthier EPPE	Q1	30	-	-	**3**
GEOL0314-1	*Mineral processing I - basics* (english language) - Stoyan GAYDARDZHIEV - [30h Labo., 10h Proj., 1,5d FW]	Q1	30	-	[+]	**5**
BIOC0430-1	*Interactions materials - living systems* (english language) - Dorien VAN HEDE	Q1	25	-	-	**3**
CHIM9337-1	*Chemical Process Design Project* (english language) - Grégoire LÉONARD - [50h Proj.]	Q1	5	10	[+]	**4**
CHIM9338-2	*Advanced (bio)materials* (english language) - *Partim A : Theory and Supervised exercices* - Stéphanie LAMBERT - [0,5h FW] - *Partim Laboratoire* - Stéphanie LAMBERT - [12h Labo.]	Q1	20 -	12 -	[+] [+]	**3**
ENRG0004-1	*CO2 capture, utilisation and storage* (english language) - Motiar RAHAMAN - [4d FW]	Q2	26	22	[+]	**5**
ENRG0005-1	*Power-to-fuel systems* (english language) - Motiar RAHAMAN - [4d FW]	Q1	26	22	[+]	**5**

Chemical engineering bases

Students who have not followed the courses CHIM0022-4, CHIM0009-3, CHIM9320-1 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 four courses in their study programme ; theses courses are corequisites of compulsory courses of the master.

Bloc d'aménagement du programme de l'année

Bridging courses Master in chemical and materials science engineering

Optional courses

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 credits of bridging courses, essentially taken from the list below :

Notice : students who have not followed the courses CHIM0022-4, CHIM0009-3, CHIM9320-1 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.

MATH0066-1	*Complement of mathematics 2* - Patricia TOSSINGS	Q2	26	26	-	**4**
CHIM0286-1	*Rudiments of thermodynamics* - Benoît HEINRICHS	Q1	26	26	-	**5**
MECA0001-2	*Mechanics of materials* - JeanFrançois DEMONCEAU, Laurent DUCHENE	Q1	27	25	[+]	**5**

	- [2h Labo., 12h Proj.]					
MECA0011-2	(pas organisé en 2026-2027) *Fluid Mechanics : Basics* - Michel PIROTTON - [25h Proj.]	Q2	20	30	[+]	**4**
CHIM9322-1	*Procédés de chimie industrielle* - *Partim 1 - Structure de l'industrie chimique* - MarieNoëlle DUMONT, Angélique LÉONARD, Dominique TOYE - [1d FW] - *Partim 2 - Approche bilantaire* - MarieNoëlle DUMONT, Angélique LÉONARD, Dominique TOYE	Q2	 28 10	 - 10	 [+] -	**5**
CHIM0604-2	*Chemistry and organic materials* - Lionel DELAUDE	Q2	33	19	-	**5**
CHIM0022-4	*Transport phenomena* (english language) - *Part A* - *Part B*	Q2	 30 -	 - 20	 - -	**5**
CHIM0009-3	*Thermodynamique chimique appliquée* - MarieNoëlle DUMONT, Nathalie JOB, Grégoire LÉONARD - [44h Proj.]	Q2	26	26	[+]	**5**
MATH0006-3	*Introduction to numerical analysis* (english language) - Quentin LOUVEAUX	Q1	20	20	-	**4**
CHIM9320-1	*Introduction au génie de la réaction chimique* - Stéphanie LAMBERT, Dominique TOYE - [35h Proj.]	Q1	24	24	[+]	**5**
CHIM9315-1	*Gestion durable des combustibles : approvisionnement, synthèse et utilisation* - Angélique LÉONARD, Grégoire LÉONARD - [1d FW, 25h Proj.]	Q1	44	4	[+]	**5**