

Block view of the study programme

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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	<i>Physical Unit Operations I</i> (english language) - - Suppl : Andreas PFENNIG - [5h Labo.] Corequisite : CHIM0022-4 - Transport phenomena	Q1	30	10	[+]	5
CHIM9300-1	<i>Physical Unit Operations II</i> (english language) - - Suppl : Andreas PFENNIG - [5h Labo.] Prerequisite : CHIM0022-4 - Transport phenomena Corequisite : CHIM9299-1 - Physical Unit Operations I	Q2	30	10	[+]	4
CHIM9277-1	<i>Chemical reactor engineering</i> - Dominique TOYE - [15h Mon. WS, 20h Proj.] Corequisite : CHIM9320-1 - Introduction au génie de la réaction chimique	Q1	30	15	[+]	5
CHIM0697-1	<i>Heterogeneous catalysis</i> (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	<i>Introduction to the Physical Chemistry of Nanomaterials</i> (english language) - Cédric GOMMES	Q2	20	10	-	3
CHIM9319-1	<i>Chemistry and technology of polymers</i> (english language) - Antoine DEBUIGNE, Klaus KECKANTOINE - [10h Proj., 12h Labo.] Corequisite : CHIM0604-2 - Chimie et matériaux organiques	Q2	30	-	[+]	5
CHIM0605-2	<i>Chemistry and inorganic materials</i> - Bénédicte VERTRUYEN - [3d Labo.]	Q2	30	-	[+]	5

Training in processes

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

Further training in chemistry

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CHIM9284-3	<i>Analytical chemistry I - Chemical analysis methods</i>	Q1				5
	- Theory - Gauthier EPPE	26	-	-		
	- Tutorials - Gauthier EPPE - [26h Mon. WS]	-	-	[+]		
	- Laboratories - Gauthier EPPE - [5d Labo.]	-	-	[+]		

Integrated project

PROJ0012-1	<i>Integrated Project (english language) - MarieNoëlle DUMONT, Samuel GENDEBIEN, Nathalie JOB, Angélique LÉONARD, Grégoire LÉONARD, Motiar RAHAMAN, Dominique TOYE - [270h Proj., 1d FW]</i>	TA	20	-	[+]	10
	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					

Block 2

Core curriculum compulsory courses

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

Focus courses

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

Choose 30 credits from:

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 ; these courses are corequisites of compulsory courses of the master.

Notice : Note: students are required to complete a work placement either through the ASTG0023-1 course or by including the placement in their final thesis.

ASTG0023-1	<i>Technical internship (8 weeks) - Benoît HEINRICHS - [40d FW]</i>	TA	-	-	[+]	5
	Corequisite :					
	GEST3162-1 - Principles of management					
CHIM0664-1	<i>Electrochemical energy conversion and storage (english language)</i>	Q1				3
	- part 1 - Nathalie JOB	15	-	-		
	- part 2 - Nathalie JOB - [15h Labo.]	-	-	[+]		
MECA0526-1	<i>High Temperature Processes in Recycling & Remanufacturing (english language) - Anne MERTENS - [1d FW]</i>	Q1	26	26	[+]	5
CHIM9303-1	<i>Water sanitation and sludge treatment - Frank DELVIGNE, Stéphanie LAMBERT, Angélique LÉONARD, Dominique TOYE - [1d FW]</i>	Q1	20	15	[+]	3
CHIM0699-2	<i>Life cycle assessment - Ecodesign (english language) - Sylvie GROSLAMBERT, Angélique LÉONARD</i>	Q1	10	30	-	3
CHIM9309-1	<i>(pas organisé en 2025-2026) Process Intensification and Hybrid Processes (english language)</i>	Q1	25	8	-	3

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MECA0450-3	<i>Renewable Energy System Design</i> (english language) - Pierre DEWALLEF - [24h Proj., 1d FW]	Q1	24	12	[+]	5
CHIM9329-1	<i>Advanced topics in chemical reactor engineering</i> - Sébastien CALVO, Dominique TOYE - [10h Labo., 30h Proj.]	Q1	30	-	[+]	6
CHIM9330-1	<i>Management and safety of industrial projects</i> - <i>Safety part</i> - Angélique LÉONARD, Dominique TOYE - [2d FW] - <i>Management part</i> - Grégoire LÉONARD - [1d FW]	Q1	15 20	- 15	[+] [+]	6
PHYS0038-2	<i>Introduction into polymer physics including plasturgy</i> (english language) - Klaus KECKANTOINE	Q1	30	-	-	3
CHIM0072-2	<i>Nanomaterials and divided materials engineering</i> - Benoît HEINRICHS, Stéphanie LAMBERT, Alexandre LÉONARD Corequisite : CHIM0698-1 - Introduction to the Physical Chemistry of Nanomaterials	Q1	15	15	-	3
CHIM9289-3	<i>Analytical chemistry III - Physical methods</i> - <i>Physico-chemical analysis methods</i> - Gauthier EPPE - <i>Electrochemical analysis methods</i> - Gauthier EPPE	Q1	15 15	- -	- -	3
GEOL0314-1	<i>Mineral processing I - basics</i> (english language) - Stoyan GAYDARDZHIEV - [30h Labo., 10h Proj., 1,5d FW]	Q1	30	-	[+]	5
BIOC0430-1	<i>Interactions materials - living systems</i> (english language) - Dorien VAN HEDE	Q1	25	-	-	3

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

Bloc d'aménagement du programme de l'année

Bridging courses for students holding a Bachelor `s degree in chemistry

Compulsory courses

MATH0066-1	<i>Complement of mathematics 2</i> - Patricia TOSSINGS	Q2	26	26	-	4
CHIM0286-1	<i>Rudiments of thermodynamics</i> - Benoît HEINRICHS	Q1	26	26	-	5
MECA0001-2	<i>Mechanics of materials</i> - JeanFrançois DEMONCEAU, Laurent DUCHENE - [2h Labo., 12h Proj.]	Q1	27	25	[+]	5
MECA0011-2	<i>Fluid Mechanics : Basics</i> - Michel PIROTON - [25h Proj.]	Q2	20	30	[+]	4
CHIM9322-1	<i>Industrial chemistry processes</i> - <i>Part 1 - the structure of the chemical industry</i> - MarieNoëlle DUMONT, Angélique LÉONARD, Dominique TOYE - <i>Part 2 - the balance approach</i> - MarieNoëlle DUMONT, Angélique LÉONARD, Dominique TOYE - [1d FW]	Q2	28 10	- 10	- [+]	5
CHIM0022-4	<i>Transport phenomena</i> (english language) - <i>Part A</i> - - Suppl : Dominique TOYE - <i>Part B</i> - - Suppl : Dominique TOYE	Q2	30 -	- 20	- -	5
CHIM0009-3	<i>Applied Chemical Thermodynamics</i> - MarieNoëlle DUMONT, Nathalie JOB, Grégoire LÉONARD	Q2	26	26	-	5
PROJ0001-1	<i>Introduction to numerical methods and project</i> - Olivier BRULS, Quentin LOUVEAUX, Frédéric NGUYEN - [2h Labo., 28h Proj.]	Q2	10	-	[+]	4
CHIM9320-1	<i>Introduction to chemical reaction engineering</i> - Nathalie JOB, Stéphanie LAMBERT, Dominique TOYE	Q1	24	24	-	5
CHIM9315-1	<i>Sustainable management of fuels: supply, synthesis and use</i> - Angélique LÉONARD, Grégoire LÉONARD - [1d FW, 10h Proj.]	Q1	50	-	[+]	5

Bridging courses for students holding a Bachelor's degree in chemistry

Compulsory courses

MATH0066-1	<i>Complement of mathematics 2</i> - Patricia TOSSINGS	Q2	26	26	-	4
CHIM0286-1	<i>Rudiments of thermodynamics</i> - Benoît HEINRICHS	Q1	26	26	-	5
MECA0001-2	<i>Mechanics of materials</i> - JeanFrançois DEMONCEAU, Laurent DUCHENE - [2h Labo., 12h Proj.]	Q1	27	25	[+]	5
MECA0011-2	(pas organisé en 2025-2026) <i>Fluid Mechanics : Basics</i> - Michel PIROTON - [25h Proj.]	Q2	20	30	[+]	4
CHIM9322-1	<i>Industrial chemistry processes</i> - <i>Part 1 - the structure of the chemical industry</i> - MarieNoëlle DUMONT, Angélique LÉONARD, Dominique TOYE - <i>Part 2 - the balance approach</i> - MarieNoëlle DUMONT, Angélique LÉONARD, Dominique TOYE - [1d FW]	Q2	28	-	-	5
CHIM0022-4	<i>Transport phenomena</i> (english language) - <i>Part A</i> - - Suppl : Dominique TOYE - <i>Part B</i> - - Suppl : Dominique TOYE	Q2	30	-	-	5
CHIM0009-3	<i>Applied Chemical Thermodynamics</i> - MarieNoëlle DUMONT, Nathalie JOB, Grégoire LÉONARD	Q2	26	26	-	5
MATH0006-3	<i>Introduction to numerical analysis</i> (english language) - Quentin LOUVEAUX	Q1	20	20	-	4
CHIM9320-1	<i>Introduction to chemical reaction engineering</i> - Nathalie JOB, Stéphanie LAMBERT, Dominique TOYE	Q1	24	24	-	5

Bridging courses Master in chemical and materials science engineering

Notice : Each student's programme will be determined by the board based on their prior academic background. If an applicant does not meet certain prerequisites, their programme may include up to 30 additional credits, mainly selected 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 ; these courses are corequisites of compulsory courses of the master.

Optional courses

[...] Choose up to 30 credits from the following list:

MATH0066-1	<i>Complement of mathematics 2</i> - Patricia TOSSINGS	Q2	26	26	-	4
CHIM0286-1	<i>Rudiments of thermodynamics</i> - Benoît HEINRICHS	Q1	26	26	-	5
MECA0001-2	<i>Mechanics of materials</i> - JeanFrançois DEMONCEAU, Laurent DUCHENE - [2h Labo., 12h Proj.]	Q1	27	25	[+]	5
MECA0011-2	<i>Fluid Mechanics : Basics</i> - Michel PIROTON - [25h Proj.]	Q2	20	30	[+]	4
CHIM9322-1	<i>Industrial chemistry processes</i> - <i>Part 1 - the structure of the chemical industry</i> - MarieNoëlle DUMONT, Angélique LÉONARD, Dominique TOYE - <i>Part 2 - the balance approach</i> - MarieNoëlle DUMONT, Angélique LÉONARD, Dominique TOYE - [1d FW]	Q2	28	-	-	5
CHIM0604-2	<i>Chemistry and organic materials</i> - Lionel DELAUDE	Q2	33	19	-	5

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CHIM0022-4	<i>Transport phenomena</i> (english language) - Part A - - Suppl : Dominique TOYE - Part B - - Suppl : Dominique TOYE	Q2	30	-	-	5
CHIM0009-3	<i>Applied Chemical Thermodynamics</i> - MarieNoëlle DUMONT, Nathalie JOB, Grégoire LÉONARD	Q2	26	26	-	5
MATH0006-3	<i>Introduction to numerical analysis</i> (english language) - Quentin LOUVEAUX	Q1	20	20	-	4
CHIM9320-1	<i>Introduction to chemical reaction engineering</i> - Nathalie JOB, Stéphanie LAMBERT, Dominique TOYE	Q1	24	24	-	5
CHIM9315-1	<i>Sustainable management of fuels: supply, synthesis and use</i> - Angélique LÉONARD, Grégoire LÉONARD - [1d FW, 10h Proj.]	Q1	50	-	[+]	5

[...] Choose a maximum of 8 off-list credits

Bridging courses Master in chemical and materials science engineering

Notice : 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 ; these courses are corequisites of compulsory courses of the master.

Optional courses

[...] Choose 31 to 60 credits from:

MATH0066-1	<i>Complement of mathematics 2</i> - Patricia TOSSINGS	Q2	26	26	-	4
CHIM0286-1	<i>Rudiments of thermodynamics</i> - Benoît HEINRICHS	Q1	26	26	-	5
MECA0001-2	<i>Mechanics of materials</i> - JeanFrançois DEMONCEAU, Laurent DUCHENE - [2h Labo., 12h Proj.]	Q1	27	25	[+]	5
MECA0011-2	<i>Fluid Mechanics : Basics</i> - Michel PIROTON - [25h Proj.]	Q2	20	30	[+]	4
CHIM9322-1	<i>Industrial chemistry processes</i> - Part 1 - the structure of the chemical industry - MarieNoëlle DUMONT, Angélique LÉONARD, Dominique TOYE - Part 2 - the balance approach - MarieNoëlle DUMONT, Angélique LÉONARD, Dominique TOYE - [1d FW]	Q2	28	-	-	5
CHIM0604-2	<i>Chemistry and organic materials</i> - Lionel DELAUDE	Q2	33	19	-	5
CHIM0022-4	<i>Transport phenomena</i> (english language) - Part A - - Suppl : Dominique TOYE - Part B - - Suppl : Dominique TOYE	Q2	30	-	-	5
CHIM0009-3	<i>Applied Chemical Thermodynamics</i> - MarieNoëlle DUMONT, Nathalie JOB, Grégoire LÉONARD	Q2	26	26	-	5
MATH0006-3	<i>Introduction to numerical analysis</i> (english language) - Quentin LOUVEAUX	Q1	20	20	-	4
CHIM9320-1	<i>Introduction to chemical reaction engineering</i> - Nathalie JOB, Stéphanie LAMBERT, Dominique TOYE	Q1	24	24	-	5
CHIM9315-1	<i>Sustainable management of fuels: supply, synthesis and use</i> - Angélique LÉONARD, Grégoire LÉONARD - [1d FW, 10h Proj.]	Q1	50	-	[+]	5

[...] Choose a maximum of 8 off-list credits