

**At Louvain-la-Neuve - 60 credits - 1 year - Day schedule - In English**Dissertation/Graduation Project : **YES** - Internship : **NO**Activities in English: **YES** - Activities in other languages : **NO**Activities on other sites : **NO**Main study domain : **Sciences**Organized by: **Faculty of Science (SC)**Programme acronym: **CHIM2M1** - Francophone Certification Framework: 7**Table of contents**

Introduction .....	2
Teaching profile .....	3
Learning outcomes .....	3
Programme structure .....	3
Programme .....	4
Detailed programme by subject .....	4
Supplementary classes .....	6
The programme's courses and learning outcomes .....	7
Information .....	8
Access Requirements .....	8
Teaching method .....	10
Evaluation .....	10
Possible trainings at the end of the programme .....	10
Contacts .....	10

## CHIM2M1 - Introduction

### Introduction

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## CHIM2M1 - Teaching profile

### Learning outcomes

The Master in Chemistry (60 credits) is clearly different from the 120 credit Master in Chemistry ; although it only takes a year of study, it is inspired by the same objectives, but aims in a more modest way to build on and refine the training in the bachelor's degree.

On successful completion of this programme, each student is able to :

1. Maîtriser un ensemble de « savoirs scientifiques » permettant de résoudre des problématiques complexes de chimie
  - 1.1 Exploiter de manière intégrée les connaissances « essentielles » des sciences fondamentales : biologie, chimie, mathématique, physique pour résoudre une problématique donnée
  - 1.2 Exploiter de manière intégrée les savoirs « spécialisés » de la chimie : organique, inorganique, analytique, physique pour résoudre une problématique disciplinaire complexe
2. Mener à son terme une démarche scientifique, théorique ou expérimentale, complète appliquée à l'appréhension, à l'analyse ou au développement d'une réaction chimique
  - 2.1 Intervenir efficacement et résoudre des problèmes complexes dans le domaine de la chimie en utilisant des termes scientifiques rigoureux et en proposant les solutions les plus appropriées
  - 2.2 Utiliser efficacement les connaissances acquises pour la formulation du problème en termes d'hypothèses permettant de proposer une solution innovante et pertinente à un problème chimique posé
  - 2.3 Quantifier les propriétés d'une molécule : thérapeutique, optique, électrique, magnétique, tensio-active, colorante, etc. et établir les relations structure-propriété entre les concepts et les résultats (structure-propriété pour une molécule donnée)
  - 2.4 Réaliser des expériences (en laboratoire) menant à une ou des solutions au problème chimique posé : observer, analyser, interpréter, discuter, comparer, planifier
  - 2.5 Optimiser les résultats d'une réaction chimique : isoler, purifier et vérifier la structure d'une molécule, mesurer ses propriétés et sa concentration
  - 2.6 Exploiter de manière efficace une méthode de synthèse ou un plan d'analyse en vue d'obtenir une molécule donnée ou de déterminer sa concentration.
  - 2.7 Utiliser des solutions efficaces permettant de minimiser les risques, l'impact énergétique et environnemental d'une nouvelle réaction chimique dans le respect des règles de l'art de la chimie
3. Communiquer oralement et par écrit en français et en anglais en vue de mener à son terme un projet scientifique en chimie
  - 3.1 Synthétiser et exploiter des documents scientifiques et techniques spécialisés en vue de résoudre un problème complexe de chimie
  - 3.2 Rédiger un projet en chimie dans sa globalité en planifiant les étapes de travail
  - 3.3 Formuler des conclusions de manière synthétique et critique pour la rédaction rigoureuse d'un rapport en s'appuyant sur une démarche autonome et critique
  - 3.4 Communiquer oralement et par écrit sous forme synthétique, graphique et schématique les résultats et conclusions d'une étude sur un problème chimique en utilisant les techniques modernes de communication
4. Apprendre et agir de manière autonome
  - 4.1 Intégrer de manière autonome de nouvelles connaissances et compétences et les utiliser de manière efficace et innovante pour résoudre de nouveaux problèmes en chimie
  - 4.2 Gérer de façon autonome sa formation et l'organisation de son travail
  - 4.3 S'auto-évaluer en connaissant ses compétences et les limites de sa propre expertise
5. Faire preuve d'analyse critique et de rigueur scientifique
  - 5.1 Exploiter efficacement des documents scientifiques et techniques en vue de résoudre un problème de chimie de manière autonome et/ou en équipe.
  - 5.2 Témoigner d'une ouverture d'esprit, proposer des approches innovantes pour résoudre des problèmes de chimie
  - 5.3 Critiquer une démarche expérimentale et proposer des améliorations
  - 5.4 Collecter efficacement des données scientifiques pertinentes (en français et anglais) et en faire l'analyse critique
  - 5.5 Citer et référencer son travail conformément aux standards du monde scientifique, sans plagiat

### Programme structure

The Master in Chemistry (60 credits) is clearly different from the 120 credit Master in Chemistry ; although it only takes a year of study, it is inspired by the same objectives, but aims in a more modest way to build on and refine the training in the bachelor's degree.

## CHIM2M1 Programme

### Detailed programme by subject

#### CORE COURSES [60.0]

- Mandatory
- ⊗ Optional
- △ Not offered in 2022-2023
- ⊖ Not offered in 2022-2023 but offered the following year
- ⊕ Offered in 2022-2023 but not the following year
- △ ⊕ Not offered in 2022-2023 or the following year
- Activity with requisites
- 🌐 Open to incoming exchange students
- 🚫 Not open to incoming exchange students
- (FR) Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

#### ○ Mémoire et séminaire (19 credits)

○ LCHM2290	<a href="#">Thesis tutorial</a>	Ariane Halleux Olivier Riant	EN [q2] [15h] [3 Credits] 🌐 > French-friendly
○ LCHM2995	<a href="#">Mémoire</a>		FR [] [] [16 Credits] 🌐 > English-friendly

#### ○ Formation disciplinaire de base (33 credits)

##### ○ Cours de formation disciplinaire générale (24 credits)

○ LCHM2120	<a href="#">Analytical Chemistry II and exercises</a>	Yann Garcia	EN [q1] [30h+40h] [6 Credits] 🌐 > French-friendly
○ LCHM2130	<a href="#">Inorganic chemistry II and Exercises</a>	Sophie Hermans (compensates Michel Devillers)	EN [q1] [30h+45h] [6 Credits] 🌐 > French-friendly
○ LCHM2140	<a href="#">Organic chemistry IV and exercises</a>	Benjamin Elias Olivier Riant	EN [q1] [30h+40h] [6 Credits] 🌐 > French-friendly
○ LCHM2150	<a href="#">Physical chemistry and physico-chemical calculations II</a>	Tom Leysens	EN [q1] [45h+10h] [6 Credits] 🌐 > French-friendly




##### ○ Compléments de cours obligatoires (9 credits)

○ LCHM2181	<a href="#">Homogeneous and heterogeneous catalysis</a>	Eric Gaigneaux Olivier Riant	EN [q1] [22.5h+7.5h] [3 Credits] 🌐 > French-friendly
○ LCHM2170	<a href="#">Introduction to protein biotechnology</a>	Pierre Morsomme Pierre Morsomme (compensates Patrice Soumillion)	EN [q1] [22.5h+7.5h] [3 Credits] 🌐 > French-friendly

##### ○ un cours parmi les 4 suivants : (3 credits)





⊗ LCHM2151	<a href="#">Advanced mass spectrometry</a>	Charles-André Fustin	EN [q1] [22.5h+7.5h] [3 Credits] 🌐 > French-friendly
⊗ LCHM2152	<a href="#">NMR Complements</a>	Michael Singleton	EN [q1] [22.5h+7.5h] [3 Credits] 🌐 > French-friendly
⊗ LCHM2122	<a href="#">Analysis physical methods of solids</a>	Charles-André Fustin Yann Garcia	EN [q1] [30h] [3 Credits] 🌐 > French-friendly
⊗ LBIR1346	<a href="#">Surface and colloid chemistry</a>	Christine Dupont (coord.) Aurélien vander Straeten (compensates Christine Dupont)	FR [q2] [30h] [3 Credits] 🌐

### o Compléments de cours disciplinaires (6 credits)

⌘ LCHM2143	Physical organic chemistry	Raphaël Robiette	EN [q1] [22.5h+7.5h] [3 Credits]  > French-friendly
⌘ LCHM1353	Quantum Chemistry	Benoît Champagne (compensates Jean-François Gohy)	FR [q1] [22.5h+7.5h] [3 Credits] 
⌘ LCHM2246	Nuclear chemistry	Pascal Froment	FR [q1] [22.5h+7.5h] [3 Credits]  > English-friendly
⌘ LBBMC2101	Structural and functional biochemistry	Benoît Desguin (compensates Patrice Soumillion) Pierre Morsomme	EN [q1] [36h+6h] [3 Credits] 
⌘ LCHM2245	Industrial organic chemistry		FR [q1] [22.5h+7.5h] [3 Credits]  > English-friendly



### o Compétences transversales (2 credits)

#### o un cours de philosophie parmi

⌘ LSC2001	Introduction to contemporary philosophy	Charles Pence Peter Verdée	FR [q2] [30h] [2 Credits] 
⌘ LSC2220	Philosophy of science	Alexandre Guay	EN [q2] [30h] [2 Credits] 
⌘ LFILO2003E	Ethics in the Sciences and technics (sem)	Hervé Jeanmart Charles Pence	FR [q2] [15h+15h] [2 Credits] 
⌘ LTHEO2840	Science and Christian faith	Benoît Bourguin Dominique Lambert	FR [q1] [15h] [2 Credits] 

#### ⌘ Optional courses

These credits are not counted within the 60 required credits.

⌘ LSST1001	IngénieursSud	Stéphanie Merle Jean-Pierre Raskin (coord.)	FR [q1+q2] [15h+45h] [5 Credits] 
⌘ LSST1002M	Information and critical thinking - MOOC	Myriam De Kesel Jean-François Rees	FR [q2] [30h+15h] [3 Credits] 

## Supplementary classes

**To access this Master, students must have a good command of certain subjects. If this is not the case, students must take supplementary classes chosen by the faculty to satisfy course prerequisites.**

- Mandatory
- ⊗ Optional
- △ Not offered in 2022-2023
- ⊙ Not offered in 2022-2023 but offered the following year
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- △ ⊕ Not offered in 2022-2023 or the following year
- Activity with requisites
- 🌐 Open to incoming exchange students
- 🚫🌐 Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

⊗ LMAT1101	<a href="#">Mathematics 1</a>	Cécile Coyette (compensates) Pedro Dos Santos Santana Forte Vaz	FR [q1] [30h+20h] [4 Credits] 🌐
⊗ LMAT1102	<a href="#">Mathematics 2</a>	Augusto Ponce	FR [q2] [30h+30h] [4 Credits] 🌐
⊗ LCHM1252	<a href="#">Elements of physical molecular chemistry</a>	Marc de Wergifosse	FR [q2] [45h+22.5h] [6 Credits] 🌐
⊗ LCHM1331	<a href="#">Inorganic chemistry I</a>	Michel Devillers Sophie Hermans (compensates) Michel Devillers	FR [q1] [37.5h+7.5h] [4 Credits] 🌐
⊗ LCHM1321	<a href="#">Analytical chemistry 1</a>	Christine Dupont (coord.) Yann Garcia	FR [q1] [40h] [5 Credits] 🌐
⊗ LCHM1351	<a href="#">Physical chemistry</a>	Tom Leyskens	FR [q1] [45h+19h] [5 Credits] 🌐
⊗ LCHM1311	<a href="#">Environmental chemistry</a>	Alexandru Vlad	EN [q2] [30h] [4 Credits] 🌐
⊗ LCHM1319	<a href="#">Material's chemistry</a>	Charles-André Fustin Alexandru Vlad	FR [q2] [45h] [5 Credits] 🌐
⊗ LCHM1391	<a href="#">Project</a>	Benjamin Elias (coord.) Charles-André Fustin Sophie Hermans Raphaël Robiette Alexandru Vlad	FR [q1] [45h+45h] [6 Credits] 🌐
⊗ LCHM1341	<a href="#">Organic chemistry III</a>	Olivier Riant Raphaël Robiette	FR [q2] [30h+15h] [4 Credits] 🌐
⊗ LCHM1253	<a href="#">Elements of crystallography</a>	Yaroslav Filinchuk	FR [q1] [30h+10h] [4 Credits] 🌐
⊗ LCHM1254	<a href="#">Elements of molecular spectroscopy</a>	Sophie Hermans	FR [q2] [30h+20h] [4 Credits] 🌐
⊗ LANG1863	<a href="#">English for Students in Sciences (Upper-Intermediate level)</a>	Ahmed Adriouèche (coord.) Catherine Avery (coord.) Julie Crombois Amandine Dumont (coord.) Sandrine Jacob (coord.) Nevin Serbest Florence Simon Françoise Stas (coord.)	EN [q1 or q2] [30h] [3 Credits] 🌐

## The programme's courses and learning outcomes

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For each UCLouvain training programme, a [reference framework of learning outcomes](#) specifies the the skills expected of every graduate on completion of the programme. Course unit descriptions specify targeted learning outcomes, as well as the unit's contribution to reference framework of learning outcomes.

## CHIM2M1 - Information

### Access Requirements

Master course admission requirements are defined by the French Community of Belgium Decree of 7 November 2013 defining the higher education landscape and the academic organisation of courses.

General and specific admission requirements for this programme must be satisfied at the time of enrolling at the university.

Unless explicitly mentioned, the bachelor's, master's and licentiate degrees listed in this table or on this page are to be understood as those issued by an institution of the French, Flemish or German-speaking Community, or by the Royal Military Academy.

**In the event of the divergence between the different linguistic versions of the present conditions, the French version shall prevail.**

#### SUMMARY

- > [General access requirements](#)
- > [Specific access requirements](#)
- > [University Bachelors](#)
- > [Non university Bachelors](#)
- > [Holders of a 2nd cycle University degree](#)
- > [Holders of a non-University 2nd cycle degree](#)
- > [Access based on validation of professional experience](#)
- > [Access based on application](#)
- > [Admission and Enrolment Procedures for general registration](#)

### Specific access requirements

Since this program is taught in English, no prior proof of French language proficiency is required.

Students who wish to be admitted on the basis of a dossier (see tables below) are invited to consult the [criteria for the evaluation of application](#).

Des précisions ont été apportées à ces critères en 2023-2024, vous pouvez y accéder [ici](#).

### University Bachelors

Diploma	Special Requirements	Access	Remarks
<b>UCLouvain Bachelors</b>			
<a href="#">Bachelor in Chemistry</a>		Direct access	
<a href="#">Bachelor in Biology</a>	Si l'étudiant a suivi la Titre inconnu: lminchim	Access with additional training	In some cases, the UCLouvain Enrolment Office, after reviewing their online enrolment or re-enrolment application, will ask the students concerned to provide an enrolment authorisation from the faculty/ school.
<a href="#">Bachelor in Bioengineering</a>		Access with additional training	
<b>Others Bachelors of the French speaking Community of Belgium</b>			
		Direct access	
<b>Bachelors of the Dutch speaking Community of Belgium</b>			
		Direct access	
<b>Foreign Bachelors</b>			
		Access based on application	

### Non university Bachelors

> Find out more about [links](#) to the university



Diploma	Access	Remarks
BA en chimie, orientation biochimie - crédits supplémentaires entre 45 et 60 BA en chimie, orientation biotechnologie - crédits supplémentaires entre 45 et 60 BA en chimie, orientation chimie appliquée - crédits supplémentaires entre 45 et 60 BA en chimie, orientation environnement - crédits supplémentaires entre 45 et 60	Les enseignements supplémentaires éventuels peuvent être consultés dans <a href="#">le module complémentaire</a> .	Type court

### Holders of a 2nd cycle University degree

Diploma	Special Requirements	Access	Remarks
"Licenciés"		-	
Masters		-	

### Holders of a non-University 2nd cycle degree

#### Access based on validation of professional experience

> It is possible, under certain conditions, to use one's personal and professional experience to enter a university course without having the required qualifications. However, validation of prior experience does not automatically apply to all courses. Find out more about [Validation of priori experience](#).

#### Access based on application

Access based on application : access may be granted either directly or on the condition of completing additional courses of a maximum of 60 ECTS credits, or refused.

Students who wish to be admitted on the basis of a dossier are invited to consult the [criteria for the evaluation of application](#).

#### Admission and Enrolment Procedures for general registration

## Teaching method

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The programme has been designed to

- maintain a reasonable amount of student activities, compatible with producing a dissertation and training for research which gives adequate preparation for a doctorate
- promote interdisciplinarity (integrated practical work) and develop scientific communication skills (bibliographic research, presentation of seminars in French and English).

## Evaluation

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***The evaluation methods comply with the regulations concerning studies and exams (<https://uclouvain.be/fr/decouvrir/rgee.html>). More detailed explanation of the modalities specific to each learning unit are available on their description sheets under the heading "Learning outcomes evaluation method".***

Students will mainly be assessed on the basis of individual work (e.g. reading, consultation of databases and bibliographic references, writing monographs and reports, presentation of seminars, dissertation and work placement). Where necessary, students will also be assessed on how much they have learned from lectures. As far as possible, there will be continuous assessment, including regular 'open book examinations'. Certain activities will not be given a precise mark but will be officially certified. Assessment of the dissertation is in two stages : a 'progress report' at the end of the first year of the Master and the final presentation.

## Possible trainings at the end of the programme

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The only university training directly accessible from the 60 credit Master is teacher training. (30 credits).

It is also possible, in one year, to gain the 120 credit Master in Chemistry. This gives access to doctorates and Advanced Masters. In this case, 42 credits may be valid, as well as a part of the work for the dissertation.

## Contacts

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### Curriculum Management

Entity

Structure entity

Denomination

Faculty

Sector

Acronym

Postal address

SST/SC/CHIM

(CHIM)

Faculty of Science (SC)

Sciences and Technology (SST)

CHIM

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<https://uclouvain.be/fr/facultes/sc/chim>

Website

Academic supervisor: Tom Leyssens

Jury

- Jean-François Gohy
- Tom Leyssens

Useful Contact(s)

- Aloysia Stephenne
- Bernadette Gravy

