

At Louvain-la-Neuve - 60 credits - 1 year - Day schedule - In EnglishDissertation/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

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 2021-2022
- ⊖ Not offered in 2021-2022 but offered the following year
- ⊕ Offered in 2021-2022 but not the following year
- △ ⊕ Not offered in 2021-2022 or the following year
- Activity with requisites
- ⊕ Open to international students
- ⊖ Not open to international students
- (FR) Teaching language (FR, EN, ES, NL, DE, ...)

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

o Mémoire et séminaire (19 credits)

○ LCHM2290	Thesis tutorial	Sandrine Meirlaen Olivier Riant	EN [q2] [15h] [3 Credits]
○ LCHM2995	Mémoire		FR [] [] [16 Credits]

o Formation disciplinaire de base (33 credits)

o Cours de formation disciplinaire générale (24 credits)

○ LCHM2120	Analytical Chemistry II and exercises	Yann Garcia	EN [q1] [30h+40h] [6 Credits]
○ LCHM2130	Inorganic chemistry II and Exercises	Sophie Hermans (compensates Michel Devillers)	EN [q1] [30h+45h] [6 Credits]
○ LCHM2140	Organic chemistry IV and exercises	Benjamin Elias Olivier Riant	EN [q1] [30h+40h] [6 Credits]
○ LCHM2150	Physical chemistry and physico-chemical calculations II	Tom Leyssens Tom Leyssens (compensates Geoffroy Hautier)	EN [q1] [45h+10h] [6 Credits]

o Compléments de cours obligatoires (9 credits)

○ LCHM2181	Homogeneous and heterogeneous catalysis	Eric Gaigneaux Olivier Riant	EN [q1] [22.5h+7.5h] [3 Credits]
○ LCHM2170	Introduction to protein biotechnology	Pierre Morsomme Patrice Soumillion	EN [q1] [22.5h+7.5h] [3 Credits]

o un cours parmi les 4 suivants : (3 credits)

⊗ LCHM2151	Advanced mass spectrometry	Charles-André Fustin	EN [q1] [22.5h+7.5h] [3 Credits]
⊗ LCHM2152	NMR Complements	Michael Singleton	EN [q1] [22.5h+7.5h] [3 Credits]
⊗ LCHM2122	Analysis physical methods of solids	Charles-André Fustin Yann Garcia	EN [q1] [30h] [3 Credits]
⊗ LBIR1346	Surface and colloid chemistry	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]
------------	----------------------------	------------------	----------------------------------

⊗ LCHM1353	Quantum Chemistry	Benoît Champagne (compensates Geoffroy Hautier)	FR [q1] [22.5h+7.5h] [3 Credits]
⊗ LCHM2246	Nuclear chemistry	Pascal Froment	FR [q1] [22.5h+7.5h] [3 Credits]
⊗ LBBMC2101	Structural and functional biochemistry	Pierre Morsomme Patrice Soumillion	EN [q1] [36h+6h] [3 Credits]
⊗ LCHM2245	Industrial organic chemistry		FR [q1] [22.5h+7.5h] [3 Credits] Δ

o Compétences transversales (2 credits)

o un cours de philosophie parmi

⊗ LSC2001	Introduction to contemporary philosophy	Peter Verdée	FR [q2] [30h] [2 Credits]
⊗ LSC2220	Philosophy of science	Cristian Lopez (compensates Alexandre Guay)	EN [q2] [30h] [2 Credits]
⊗ LFILO2003E	Ethics in the Sciences and technics (sem)	Hervé Jeanmart Charles Pence René Rezsöházy	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, they must add supplementary classes at the beginning of their Master's programme in order to obtain the prerequisites for these studies.

- Mandatory
- ⊗ Optional
- △ Not offered in 2021-2022
- ⊙ Not offered in 2021-2022 but offered the following year
- ⊕ Offered in 2021-2022 but not the following year
- △ ⊕ Not offered in 2021-2022 or the following year
- Activity with requisites
- 🌐 Open to international students
- 🚫 Not open to international students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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

⊗ LMAT1101	Mathematics 1	Pedro Dos Santos Santana Forte Vaz	FR [q1] [30h+20h] [4 Credits]
⊗ LMAT1102	Mathematics 2	Augusto Ponce	FR [q2] [30h+30h] [4 Credits]
⊗ LCHM1252	Elements of physical molecular chemistry	Xavier Gonze (compensates Geoffroy Hautier)	FR [q2] [45h+22.5h] [6 Credits]
⊗ LCHM1331	Inorganic chemistry I	Sophie Hermans (compensates Michel Devillers)	FR [q1] [37.5h+7.5h] [4 Credits]
⊗ LCHM1321	Chimie analytique 1	Christine Dupont (coord.) Yann Garcia Yann Garcia (compensates Christine Dupont)	FR [q1] [40h] [5 Credits]
⊗ LCHM1351	Physical chemistry	Tom Leyssens	FR [q1] [45h+19h] [5 Credits]
⊗ LCHM1311	Environmental chemistry	Alexandru Vlad	EN [q2] [30h] [4 Credits]
⊗ LCHM1319	Material's chemistry	Charles-André Fustin Alexandru Vlad	FR [q2] [45h] [5 Credits]
⊗ LCHM1391	Project	Benjamin Elias (coord.) Charles-André Fustin Sophie Hermans Raphaël Robiette Alexandru Vlad	FR [q1] [45h+45h] [6 Credits]
⊗ LCHM1341	Organic chemistry III	Olivier Riant Raphaël Robiette	FR [q2] [30h+15h] [4 Credits]
⊗ LCHM1253	Elements of crystallography	Yaroslav Filinchuk	FR [q1] [30h+10h] [4 Credits]
⊗ LCHM1254	Elements of molecular spectroscopy	Sophie Hermans	FR [q2] [30h+20h] [4 Credits]
⊗ LANG1863	English for Students in Sciences (Upper-Intermediate level)	Ahmed Adriouèche (coord.) Catherine Avery (coord.) Amandine Dumont (coord.) Sandrine Jacob (coord.) Sabrina Knorr Nevin Serbest Colleen Stas Françoise Stas (coord.)	EN [q1 or q2] [30h] [3 Credits]

The programme's courses and learning outcomes

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.

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](#).

University Bachelors

Diploma	Special Requirements	Access	Remarks
UCLouvain Bachelors			
Bachelor in Chemistry		Direct access	
Bachelor in Biology	Si l'étudiant a suivi la Titre inconnu:Iminchim	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.
Bachelor in Bioengineering		Access with additional training	
Others Bachelors of the French speaking Community of Belgium			
		Direct access	
Bachelors of the Dutch speaking Community of Belgium			
		Direct access	
Foreign Bachelors			
		Access based on application	

Non university Bachelors

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

Diploma	Access	Remarks
BA en chimie (biochimie, biotechnologie, chimie appliquée) - EPS - crédits supplémentaires entre 45 et 60	Les enseignements supplémentaires éventuels	Type court

BA en chimie (biochimie, biotechnologie, chimie appliquée, environnement) - HE - crédits supplémentaires entre 45 et 60

peuvent être consultés dans le [module complémentaire](#).

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

Admission on the basis of a submitted dossier may be granted either directly or on the condition of completing additional coursework 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

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

The evaluation methods comply with the [regulations concerning studies and exams](#). 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

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

Curriculum Management

Entity

Structure entity

Denomination

Faculty

Sector

Acronym

Postal address

SST/SC/CHIM

(CHIM)

Faculty of Science (SC)

Sciences and Technology (SST)

CHIM

Place Louis Pasteur 1 - bte L4.01.07

1348 Louvain-la-Neuve

Tel: +32 (0) 10 47 40 45 - Fax: +32 (0) 10 47 28 36

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

Website

Academic supervisor: [Tom Leyssens](#)

Jury

- President: [Jean-François Gohy](#)
- Secretary and study advisor: [Tom Leyssens](#)

Useful Contact(s)

- Administrative manager for the student's annual program: [Aloysia Stephenne](#)
- Secretary of the School of chemistry: [Bernadette Gravy](#)

