

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

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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.

[> Detailed programme](#) [en-prog-2020-chim2m1-tronc_commun]

Preparatory Module (only for students who qualify for the course via complementary coursework)

[> Master \[60\] in Chemistry](#) [en-prog-2020-chim2m1-module_complementaire]

CHIM2M1 Detailed programme

Programme by subject

CORE COURSES [60.0]

○ Mandatory

△ Courses not taught during 2020-2021

⊕ Periodic courses taught during 2020-2021

⊗ Optional

⊖ Periodic courses not taught during 2020-2021

■ Activity with requisites

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

○ Mémoire et séminaire (19 credits)

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

○ Formation disciplinaire de base (33 credits)

○ Cours de formation disciplinaire générale (24 credits)

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

○ Compléments de cours obligatoires (9 credits)

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

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

⊗ LCHM2151	Advanced mass spectrometry	Charles-André Fustin	22.5h+7.5h	3 Credits	q1
⊗ LCHM2152	NMR Complements	Michael Singleton	22.5h+7.5h	3 Credits	q1
⊗ LCHM2122	Analysis physical methods of solids	Charles-André Fustin Yann Garcia	30h	3 Credits	q1

○ Compléments de cours disciplinaires (6 credits)

⊗ LCHM1353	Quantum Chemistry	Benoît Champagne (compensates Geoffroy Hautier)	22.5h+7.5h	3 Credits	q1
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⊗ LCHM2143	Physical organic chemistry	Raphaël Robiette	22.5h+7.5h	3 Credits	q1
⊗ LCHM2246	Nuclear chemistry	Pascal Froment	22.5h+7.5h	3 Credits	q1
⊗ LBBMC2101	Structural and functional biochemistry	Pierre Morsomme Patrice Soumillion	36h+6h	3 Credits	q1
⊗ LCHM2245	Industrial organic chemistry		22.5h+7.5h	3 Credits	q1 Δ

o Compétences transversales (2 credits)

o un cours de philosophie parmi

⊗ LSC2001	Introduction to contemporary philosophy	Peter Verdée	30h	2 Credits	q2
⊗ LSC2220	Philosophy of science	Peter Verdée (compensates Alexandre Guay)	30h	2 Credits	q2
⊗ LFILO2003E	Ethics in the Sciences and technics (sem)		15h+15h	2 Credits	q2
⊗ LTHEO2840	Science and Christian faith	Benoît Bourgine (coord.) Dominique Lambert	15h	2 Credits	q1

⊗ Optional courses

These credits are not counted within the 60 required credits.

⊗ LSST1001	IngénieuxSud	Jean-Pierre Raskin	15h+45h	5 Credits	q1+q2
⊗ LSST1002M	Information and critical thinking - MOOC	Myriam De Kesel Jim Plumet Jean-François Rees	30h+15h	3 Credits	q2

The programme's courses and learning outcomes

For each UCLouvain training programme, a [reference framework of learning outcomes](#) specifies the competences expected of every graduate on completion of the programme. You can see the contribution of each teaching unit to the programme's reference framework of learning outcomes in the document *"In which teaching units are the competences and learning outcomes in the programme's reference framework developed and mastered by the student?"*

CHIM2M1 - Information

Access Requirements

In the event of the divergence between the different linguistic versions of the present conditions, the French version shall prevail
Decree of 7 November 2013 defining the landscape of higher education and the academic organization of studies.
The admission requirements must be met prior to enrolment in the University.

SUMMARY

- > [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](#)

University Bachelors

Diploma	Special Requirements	Access	Remarks
UCLouvain Bachelors			
Bachelor in Chemistry		Direct access	
Bachelor in Biology	Si l'étudiant a suivi la (unknown URL)	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](https://uclouvain.be/fr/etudier/passerelles) (https://uclouvain.be/fr/etudier/passerelles) to the university

Diploma	Access	Remarks
BA en chimie (biochimie, biotechnologie, chimie appliquée) - EPS - crédits supplémentaires entre 45 et 60 BA en chimie (biochimie, biotechnologie, chimie appliquée, environnement) - HE - crédits supplémentaires entre 45 et 60	Les enseignements supplémentaires éventuels peuvent être consultés dans le module complémentaire .	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

> See the website [Valorisation des acquis de l'expérience](#)

It is possible to gain admission to all masters courses via the validation of professional experience procedure.

Access based on application

Reminder : all Masters (apart from Advanced Masters) are also accessible on file.

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

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

△ Courses not taught during 2020-2021

⊕ Periodic courses taught during 2020-2021

⊗ Optional

⊖ Periodic courses not taught during 2020-2021

■ Activity with requisites

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

⊗ LMAT1101	Mathematics 1	Pedro Dos Santos Santana Forte Vaz	30h+20h	4 Credits	q1
⊗ LMAT1102	Mathematics 2	Augusto Ponce	30h+30h	4 Credits	q2
⊗ LCHM1252	Elements of physical molecular chemistry	Xavier Gonze (compensates Geoffroy Hautier)	45h+22.5h	6 Credits	q2
⊗ LCHM1331	Inorganic chemistry I	Sophie Hermans (compensates Michel Devillers)	37.5h+7.5h	4 Credits	q1
⊗ LCHM1321	Chimie analytique 1	Christine Dupont (coord.) Yann Garcia	40h	4 Credits	q1
⊗ LCHM1351	Physical chemistry	Tom Leyssens	45h+19h	5 Credits	q1
⊗ LCHM1311	Environmental chemistry	Alexandru Vlad	30h	3 Credits	q2
⊗ LCHM1319	Material's chemistry	Charles-André Fustin Alexandru Vlad	45h	5 Credits	q2
⊗ LCHM1391	Project	Benjamin Elias Charles-André Fustin Sophie Hermans Raphaël Robiette Alexandru Vlad	0h+90h	6 Credits	q1
⊗ LCHM1341	Organic chemistry III	Olivier Riant Raphaël Robiette	30h+15h	4 Credits	q2
⊗ LCHM1253	Elements of crystallography	Yaroslav Filinchuk	30h+10h	4 Credits	q1
⊗ LCHM1254	Elements of molecular spectroscopy	Sophie Hermans	30h+20h	4 Credits	q2
⊗ LANG1863	English for Students in Sciences (Upper-Intermediate level)	Ahmed Adriouche (coord.) Catherine Avery (coord.) Amandine Dumont (coord.) Sandrine Jacob (coord.) Sabrina Knorr Nevin Serbest Colleen Starrs Françoise Stas (coord.)	30h	3 Credits	q1 or q2

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 (<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

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

- Jean-François Gohy
- Tom Leyssens

Useful Contact(s)

- Aloysia Stephenne
- Bernadette Gravy

