

At Louvain-la-Neuve - 120 credits - 2 years - Day schedule - In EnglishDissertation/Graduation Project : **YES** - Internship : **YES**Activities in English: **YES** - Activities in other languages : **NO**Activities on other sites : **YES**Main study domain : **Sciences**Organized by: **Faculty of Science (SC)**Programme acronym: **BBMC2M** - Francophone Certification Framework: 7**Table of contents**

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BBMC2M - Introduction

Introduction

Introduction

From the academic year 2020-2021, this master's degree will be taught mainly in English. Nevertheless, access to the teaching focus requires good mastery of French.

The Master's degree develops the knowledge necessary for an experimental approach to any question relating to the structure, functioning and exploitation for biotechnological purposes of living cells and their molecular components.

It forms

- biochemists, capable of understanding the structure, functioning and evolution of macromolecules that form the basis of the structure, functioning and programming of living organisms;
- Molecular and cellular biologists who understand how cells interact with each other, how they grow, adapt, differentiate and die.

Your profile

You

- wish to develop know-how and technical and experimental skills in biochemistry and molecular and cellular biology;
- are interested in living cells, their molecular components and the field of biotechnology;
- wish to contribute to research in biochemistry, molecular and cellular biology;
- wish to join a company active in the field of biotechnology, whether in the agri-food, pharmaceutical or biomedical sector.

Your future job

By touching the very essence of life, biology is the cornerstone of many scientific disciplines: analysis of genetic information, genome sequencing, biotechnology, etc.

Along with chemistry, it contributes to the design of new products. In interaction with physics, it generates new methods for the detection of diseased cells, for example cancer cells.

Our graduates exercise their skills in scientific, fundamental or applied research in research institutes or private laboratories, in expertise and resource management in the private or public sector, in education, training and communication.

Your programme

The master offers you

- original pedagogical tools: workshop, tutorial thesis;
- the possibility of discovering, during three fifteen-day periods, specialized laboratories of Louvain Institute of Biomolecular Science and Technology (LIBST) ;
- advanced training in experimental research, through a one-year thesis in a laboratory of your choice;
- a professional immersion internship in a laboratory or a company, in Belgium or abroad;
- the possibility of carrying out the internship or part of the master's degree abroad.

BBMC2M - Teaching profile

Learning outcomes

Students on the Master in Biochemistry and Molecular and Cell Biology programme must acquire knowledge and technical expertise which enable them to gain advanced understanding of and deal experimentally with issues relating to the structure, working and use for biotechnical purposes of living cells and their molecular components. Not only will they simply learn, but, more importantly, they will be able to learn independently

- as biochemists : how macromolecules work and develop, since they are the molecular foundations of the structure, functioning and programming of living beings;
- as molecular and cellular biologists : how, both as a single cell or as a component of multicellular organisms, cells interact, how they convert the special features and/or changes in their environment into biochemical and/or genetic regulation signals, how they grow, adapt, become differentiated and die.

The **research focus** prepares students to become researchers. Specialized courses deal with issues that are at the edge of human knowledge. There is emphasis on experimentation and academic communication, both written and oral. The programme includes a placement or training in a laboratory outside UCL, preferably abroad.

The **professional focus in biotechnology** enables students who wish to go on to work in industry to have the opportunity of a work placement so that they can play an active part in the work of a company in the biotechnology sector and begin to gain a reputation. The programme comprises courses on biotechnology as well as introductory courses on the creation and management of companies.

The **teaching focus** is a specially adapted programme designed for teachers at higher levels in secondary education.

The Master in Biochemistry and M

with the programme at the Facultés U

Both the overall structure of the prog

basically the same in the two univers

special subjects at each university.

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

1. concevoir les processus fondamentaux régissant la structure, le fonctionnement et l'évolution des cellules vivantes et de leurs composants moléculaires chez les microorganismes, les plantes et les animaux

1.1 témoigner d'une maîtrise des connaissances factuelles sur les thèmes principaux de biochimie et de biologie moléculaire et cellulaire. Ceci inclut notamment:

- l'organisation des génomes et leur évolution
- les voies de signalisation et de communication cellulaire
- les mécanismes moléculaires de régulation des gènes
- les mécanismes moléculaires qui sous-tendent la fonction des protéines
- les mécanismes de prolifération, différenciation et mort cellulaire
- la complexité et la diversité du vivant au niveau cellulaire et moléculaire

1.2 décrire, expliquer, synthétiser et discuter la structure et le fonctionnement des cellules vivantes et de leurs composants moléculaires.

2. résoudre avec créativité les problématiques et les défis posés par la biologie moderne dans une perspective fondamentale et appliquée

2.1 intégrer et articuler les concepts théoriques pour comprendre des problématiques variées allant de la molécule à la cellule,

2.2 utiliser et appliquer ces concepts en vue de l'exploitation à des fins biotechnologiques des cellules vivantes et de leurs composants moléculaires.

3. mettre en œuvre de manière autonome une démarche scientifique pour répondre à une question inédite dans un domaine, et/ou à l'interface de plusieurs domaines, de la biologie

3.1 formuler une question scientifique, émettre des hypothèses, programmer et réaliser les expérimentations appropriées, analyser et interpréter les résultats, afin d'objectiver et de conclure,

3.2 mobiliser un savoir-faire technique afin de réaliser des expérimentations avec toute la rigueur scientifique.

4. communiquer et interagir avec aisance sur des sujets scientifiques d'ordre général ou spécialisés en français et en anglais

4.1 maîtriser et utiliser les techniques de présentation formelle (poster, diaporama...),

4.2 structurer, rédiger et exposer des idées et concepts scientifiques à des spécialistes comme à des non-spécialistes,

4.3 argumenter et justifier des hypothèses et des données afin de les défendre devant un public de professionnels scientifiques,

4.4 lire, comprendre, transmettre et discuter des données scientifiques en anglais.

5. s'instruire et agir de manière autonome dans une perspective collaborative

5.1 acquérir et évaluer de nouvelles compétences scientifiques ou techniques,

5.2 partager ses compétences et son expertise en tant que membre actif au sein d'une équipe scientifique,

- 5.3 acquérir la capacité de s'adapter avec rapidité, autonomie et efficacité à d'autres environnements professionnels.
6. démontrer une conscience critique des savoirs dans un domaine et à l'interface de plusieurs domaines
- 6.1 analyser de manière critique la littérature scientifique,
- 6.2 élaborer une opinion personnelle par une écoute attentive et contribuer activement aux échanges dans le cadre d'un séminaire scientifique,
- 6.3 énoncer une critique constructive et prendre part de façon active à un débat scientifique et sociétal.
7. appréhender les questions d'éthiques dans les sciences du vivant
- 7.1 mettre en perspective de manière critique l'impact des sciences et des techniques sur l'évolution des sociétés,
- 7.2 évaluer les enjeux éthiques et sociétaux des nouvelles biotechnologies et des pratiques expérimentales en biologie, impliquant entre autres l'expérimentation animale,
- 7.3 reconnaître la fraude scientifique et le plagiat comme des comportements inacceptables en sciences.
8. s'il choisit la finalité Approfondie, enrichir ses connaissances, parfaire sa formation à la démarche expérimentale, aux technologies et à la communication scientifique écrite et orale dans l'optique d'une carrière dans la recherche.
- 8.1 témoigner d'une expérience acquise via une formation pratique sur des questions scientifiques ciblées au sein de laboratoires d'accueil dans différentes universités de la fédération Wallonie Bruxelles.
- 8.2 utiliser les compétences acquises au cours du Master dans un environnement nouveau et porteur au sein d'une institution de recherche nationale ou internationale.
9. s'il choisit la finalité Spécialisée, enrichir ses connaissances dans le domaine des biotechnologies et se confronter à la réalité de l'entreprise.
- 9.1 faire preuve de l'acquisition des approches méthodologiques et technologiques de pointe en relation avec les pratiques entrepreneuriales
- 9.2 utiliser les compétences acquises au cours du Master dans un environnement nouveau et porteur au sein d'une entreprise au sens large, qu'il s'agisse d'un laboratoire d'une industrie du secteur pharmaceutique, du secteur biotechnologique, ou d'un organisme de consultance, un bureau de gestion ou de programmation de recherches.
10. s'il choisit la finalité Didactique, mobiliser les compétences nécessaires pour entamer efficacement le métier d'enseignant du secondaire supérieur, en biologie, et pouvoir y évoluer positivement.
- 10.1 intervenir en contexte scolaire, en partenariat avec différents acteurs.
- 10.2 enseigner en situations authentiques et variées.
- 10.3 exercer un regard réflexif et se projeter dans une logique de développement continu.
- > Pour plus de détails, consultez l'Agrégation de l'enseignement secondaire supérieur (sciences biologiques).

Programme structure

The program includes common subjects of at least 54 credits, a finality (30 credits) and elective courses.

The student chooses one of the following focuses : research, professional (biotechnology) or teaching.

Students who enrol in the specialized "biotechnology" program have the opportunity to follow the interdisciplinary training in business creation (CPME) as part of their master's program. However, this training is only accessible following a selection procedure based on an application file and an interview. At the end of this training, the student will have acquired and developed analytical and reflective tools that will help him/her to understand entrepreneurial processes, create or take over a business or develop entrepreneurial projects within existing organizations.

For a programme-type, and regardless of the focus, options/or elective courses selected, this master will carry a minimum of 120 credits divided over two annual units, corresponding to 60 credits each.

> [Tronc commun](#) [en-prog-2020-bbmc2m-tronc_commun]

Liste des finalités

> [Research Focus](#) [en-prog-2020-bbmc2m-lbbmc200a]

> [Teaching Focus](#) [en-prog-2020-bbmc2m-lbbmc200d]

> [Professional Focus : Biotechnology](#) [en-prog-2020-bbmc2m-lbbmc200s]

List of electives

> [Elective courses](#) [en-prog-2020-bbmc2m-lbbmc300o]

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

> [Master \[120\] in Biochemistry and Molecular and Cell Biology](#) [en-prog-2020-bbmc2m-module_complementaire]

BBMC2M Detailed programme

Programme by subject

CORE COURSES [54.0]

The core study is taught in English with the exception of some social studies courses, English-speaking students are invited to take LSC2220.

- Mandatory
 △ Courses not taught during 2020-2021
 ⊕ Periodic courses taught during 2020-2021
- ✘ Optional
 ⊖ Periodic courses not taught during 2020-2021
 ■ Activity with prerequisites

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

							Year	
							1	2
○ LBBMC2101	Structural and functional biochemistry	Pierre Morsomme Patrice Soumillion	36h+6h	4 Credits	q1	✘		
○ LBRMC2201	Bioinformatics : DNA and protein sequences	Michel Ghislain	30h+15h	4 Credits	q1	✘		
○ LBBMC2102	Integrated molecular and cellular biology	Henri Batoko Bernard Hallet Pierre Morsomme Melissa Page (compensates René Rezsöházy)	30h	3 Credits	q1	✘		
○ LBBMC2103	Rotation	Henri Batoko Françoise Gofflot Bernard Hallet Bernard Knoops Pierre Morsomme Patrice Soumillion	12h+36h	8 Credits	q1	✘		
○ LBBMC2997	Master's thesis - Part 1			10 Credits			✘	
○ LBBMC2998	Master's thesis - Part 2			17 Credits			✘	
○ LBBMC2201	Thesis tutorial	Patrick Dumont Anne-Julie Toubeau	15h	3 Credits	q1	✘	✘	

○ Biochemistry and molecular biology techniques

at least one of the following three courses:

Minimum 3 credits

✘ LBIRC2101	Biochemical analysis	Pierre Morsomme (coord.)	22.5h +30h	4 Credits	q1	✘	
✘ LBRMC2101	Genetic engineering	François Chaumont (coord.) Charles Hachez Melissa Page (compensates François Chaumont)	37.5h +15h	5 Credits	q1	✘	
✘ LBRMC2202	Cell culture technology	David Alsteens Charles Hachez (coord.) Pascal Hols	30h	3 Credits	q1	✘	

○ Social Sciences and Humanities (2 credits)

at least one of the following three courses:

✘ 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	✘	✘

							Year	
							1	2
⌘ LTHEO2840	Science and Christian faith	Benoît Bourgine (coord.) Dominique Lambert	15h	2 Credits	q1	x	x	

LIST OF FOCUSES

The research focus is fully taught in English.

The professional focus is accessible to English-speaking students but they will have to choose their courses carefully because some are taught in French.

The teaching focus aims to teach in secondary education in the French Community of Belgium, therefore it is accessible only to students who have a good knowledge of French.

- > [Research Focus](#) [en-prog-2020-bbmc2m-lbbmc200a]
- > [Teaching Focus](#) [en-prog-2020-bbmc2m-lbbmc200d]
- > [Professional Focus : Biotechnology](#) [en-prog-2020-bbmc2m-lbbmc200s]

RESEARCH FOCUS [30.0]

- 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...)

Year

1 2

Content:

○ LBBMC2205	Research internship - Part 1	Bernard Hallet	25h+40h	20 Credits	q2		x
○ LBBMC2203	Research Training Seminar	Henri Batoko Françoise Gofflot Charles Hachez (compensates Bernard Knoops) Bernard Hallet Pierre Morsomme Patrice Soumillion (coord.)	40h+40h	5 Credits	q1+q2		x

Elective activity(ies) (5 credits)

to choose from the list of elective courses.

TEACHING FOCUS [30.0]

IMPORTANT NOTE: In accordance with article 138 para. 4 of the decree of 7 November 2013 concerning higher education and the academic organisation of studies, teaching practice placements will not be assessed in the September session. Students are required to make every effort to successfully complete the teaching practice in the June session, subject to having to retake the year.

- 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...)

Year

1 2

Content:

Module concevoir, planifier et évaluer des pratiques d'enseignement et d'apprentissage

○ LBIO2310	Stages d'enseignement en biologie (en ce compris le séminaire d'intégration des stages)	Myriam De Kesel	15h+40h	7 Credits	q2	x	x
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							Year	
							1	2
○ LSCI2320	Didactique et épistémologie des sciences	Myriam De Kesel (coord.) Jim Plumat Valérie Wathelet	60h	6 Credits	q1	x	x	
○ LBIO2340	Didactique et épistémologie de la biologie	Myriam De Kesel	15h+5h	2 Credits	q2	x	x	
○ LAGRE2220	General didactics and education to interdisciplinarity	Myriam De Kesel Jean-Louis Dufays (coord.) Anne Ghyssele Véronique Lemaire Jim Plumat Marc Romainville Benoît Vercauteren	37.5h	3 Credits	q2	x	x	

○ Une UE parmi les quatre suivantes (2 credits)

⊗ LCHM2340	Didactique et épistémologie de la chimie	Valérie Wathelet	15h+5h	2 Credits	q2	x	x
⊗ LPHYS2471	Didactique et épistémologie de la physique	Jim Plumat	15h+5h	2 Credits	q2	x	x
⊗ LGEO2320B	Didactique et épistémologie de la géographie (en ce compris le stage d'écoute)	Marie-Laurence De Keersmaecker	15h+10h	2 Credits	q1	x	x
⊗ LMAT2320A	Didactique et épistémologie de la mathématique (en ce compris le stage d'écoute)	Thérèse Gilbert Laure Ninove Rosane Tossut	37.5h +10h	4 Credits	q1+q2	x	x

○ Module comprendre et analyser l'institution scolaire et son contexte

○ LAGRE2400	See specifications in french	Hervé Pourtois (coord.) Pierre-Etienne Vandamme	20h	2 Credits	q2	x	x
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○ Séminaire d'observation et d'analyse de l'institution scolaire et de son contexte (en ce compris le stage d'observation) (4 credits)

Choisir 1 des activités suivantes. Le cours et le séminaire doivent être suivis au même quadrimestre.

⊗ LAGRE2120P	Observation et analyse de l'institution scolaire et de son contexte (en ce compris le stage d'observation)	Branka Cattonar Vincent Dupriez	22.5h +25h	4 Credits	q1	x	x
⊗ LAGRE2120Q	Observation et analyse de l'institution scolaire et de son contexte (en ce compris le stage d'observation)	Branka Cattonar Vincent Dupriez	22.5h +25h	4 Credits	q2	x	x

○ Module animer un groupe et travailler en équipe

○ Comprendre l'adolescent en situation scolaire, gérer la relation interpersonnelle et animer le groupe classe (4 credits)

Choisir 1 des activités suivantes. Le cours et le séminaire doivent être suivis au même quadrimestre.

⊗ LAGRE2020P	Comprendre l'adolescent en situation scolaire, Gérer la relation interpersonnelle et animer le groupe classe.	Véronique Leroy Véronique Leroy (compensates) Pascale Steyns Nathalie Roland	22.5h +22.5h	4 Credits	q1	x	x
⊗ LAGRE2020Q	Comprendre l'adolescent en situation scolaire, Gérer la relation interpersonnelle et animer le groupe classe.	Véronique Leroy Véronique Leroy (compensates) Pascale Steyns Nathalie Roland	22.5h +22.5h	4 Credits	q2	x	x

PROFESSIONAL FOCUS : BIOTECHNOLOGY [30.0]

● 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...)

Year

1 2

○ **Content:**

○ LBBMC2215	Internship in a company	René Rezsóhazy	25h+40h	20 Credits				X
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○ **Biotechnology and introduction to the business world (10 credits)**

At least 5 credits to be chosen in the biotechnology elective activities below and the others in the list of elective courses

⊗ LBIRC2108	Biochemical and Microbial Engineering	Iwona Cybulska	30h +22.5h	5 Credits	q2			X
⊗ LBRNA2202	Nano-biotechnologies	Yves Dufrene	30h	3 Credits	q2			X
⊗ LBRAS2304	Qualités organoleptiques et microbiologiques de la bière et du vin	Sonia Collin (coord.) Marc Maudoux	15h+30h	4 Credits	q1			X
⊗ LBRAL2104	Food microbiology	Jacques Mahillon	30h +22.5h	4 Credits	q2			X
⊗ LBRAL2103	Food chemistry	Sonia Collin	30h+30h	5 Credits	q1			X
⊗ LCHM2244	Medicinal chemistry	Raphaël Frédéric (coord.) Didier Lambert	22.5h +7.5h	3 Credits	q2			X
⊗ WSBIM2248	Toxicologie industrielle et environnementale		82.5h	10 Credits	q1+q2			X
⊗ LCHM2280	Industrial chemistry	Marcel Ceresiat Marc Lacroix	30h	3 Credits	q2			X
⊗ WBICL2107	Principe et méthodologie des dosages immunologiques	Diane Maisin	15h	3 Credits	q2			X
⊗ WFARM1303	Clinical Chemistry	Catherine Fillee Damien Gruson Vincent Haufroid (coord.) Marie-Astrid van Dievoet	20h	2 Credits	q2			X
⊗ WESP2123	Principes des essais cliniques	Diego Castanares Zapatero Philippe Lysy Annie Robert (coord.) Françoise Smets	20h+10h	4 Credits	q1			X
⊗ LBRAL2201B	Food Technology (procédés biotechnologies)	Iwona Cybulska Axel Kather		1 Credits	q2	X	X	
⊗ WSBIM2230	Biochimie des erreurs innées du métabolisme	Marie-Cécile Nassogne	30h	3 Credits	q1			X
⊗ LBRAL2201C	Food Technology: transformations des produits végétaux et animaux	Iwona Cybulska Axel Kather		2 Credits	q2	X	X	
⊗ LBRPP2213	Biotechnologies and diagnostics	Claude Bragard (coord.) Anne Legréve	22.5h +7.5h	3 Credits	q1	X	X	

⊗ **Initiation to the business world**

⊗ LBIR1360	Firm management and organisation	Pierre De Muelenaere	30h+7.5h	3 Credits	q1	X	X	
⊗ LFSA2140	Elements of law for industry and research	Vincent Cassiers Werner Derijcke Bénédicte Inghels	30h	3 Credits	q1	X	X	
⊗ LFSA2230	Introduction to management and to business economics	Benoît Gailly	30h+15h	4 Credits	q2	X	X	
⊗ LFSA3010	Principles of Scientific Communication	Yves Deville Xavier Gonze Michel Verleysen	30h+30h	3 Credits	q2	X	X	
⊗ LSC3001	Recherche, innovation et propriété intellectuelle : applications aux secteurs de la chimie et aux sciences de la vie	Thierry Debled Francis Leyder	30h	3 Credits	q1	X	X	
⊗ LDROP2101	Management of Intellectual Property Rights	Dominique Kaesmacher François Wéry	30h	5 Credits	q2	X	X	
⊗ LDROP2102	Droits intellectuels et nouvelles technologies	Alain Strowel	30h	5 Credits	q2	X	X	
⊗ LBBMC2213	Training workshop for research in companies			5 Credits	△	X	X	

						Year	
						1	2
LBRAI2208	Firms and Markets : Strategic Analysis	Frédéric Gaspart	30h	4 Credits	q1	x	x

Elective courses [36.0]

ELECTIVE COURSES [36.0]

○ 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...)

Students will be required to choose a module (10 credits) from the first four modules below.

Year

1 2

o Content:

o At least one of the following modules (10 credits)

⊗ Deepening module in biochemistry

○ LBBMC2104	Animal physiological biochemistry	Pierre Morsomme Melissa Page	36h+18h	5 Credits	q2	x	
○ LBBMC2105	Protein engineering and directed evolution	Pierre Morsomme Patrice Soumillion	36h+18h	5 Credits	q2	x	

⊗ Deepening module in microbiology

○ LBBMC2106	Molecular genetics and microbial genomics	Bernard Hallet Pascal Hols	36h+18h	5 Credits	q2	x	
○ LBBMC2107	Microbial cellular physiology	Stephan Declerck Michel Ghislain Bernard Hallet Pascal Hols Pierre Morsomme	36h+18h	5 Credits	q2	x	

⊗ Deepening module in plant biology

○ LBBMC2108	Molecular genetics and plant genomics	Henri Batoko Xavier Draye Charles Hachez (compensates François Chaumont)	36h+18h	5 Credits	q2	x	
○ LBBMC2109	Plant cell physiology	Henri Batoko Charles Hachez Pierre Morsomme (compensates François Chaumont)	36h+18h	5 Credits	q2	x	

⊗ Deepening module in animal and human biology

○ LBBMC2110	Animal and human molecular genetics and genomics	Françoise Gofflot Nisha Limaye (compensates Bernard Knoops) René Rezsóhazy	36h+18h	5 Credits	q2	x	
○ LBBMC2111	Animal and human cellular physiology	Patrick Dumont Bernard Knoops	36h+18h	5 Credits	q2	x	

o Other elective courses

⊗ Formation interdisciplinaire en création d'entreprise (CPME)

Cette option s'étend sur 2 ans et s'intègre dans plus de 20 Masters de 9 facultés/écoles de l'UCL. Le choix de cette option implique la réalisation d'un mémoire interfacultaire (en équipe) portant sur un projet de création d'entreprise. Accès limité aux étudiants sélectionnés sur dossier. Plus d'info. via www.uclouvain.be/cpme. NB : 1) L'ét. n'ayant pas les prérequis en gestion doit suivre LCPM2000 en bloc 1 2) LCPME2003 est réparti sur 2 blocs annuels (suivi dès bloc 1, au progr. de bloc 2).

From 20 to 25 credits

⊗ LCPME2000	Venture creation financement and management I	Yves De Rongé Olivier Giacomini	30h+15h	5 Credits	q1	x	x
○ LCPME2001	Entrepreneurship Theory (in French)	Frank Janssen	30h+20h	5 Credits	q1	x	x
○ LCPME2002	Managerial, legal and economic aspects of the creation of a company (in French)	Yves De Cordt Marine Falize	30h+15h	5 Credits	q1	x	x

							Year	
							1	2
○ LCPME2003	Business plan of the creation of a company (in French)	Frank Janssen	30h+15h	5 Credits	q2	x	x	
○ LCPME2004	Advanced seminar on Entrepreneurship (in French)	Frank Janssen	30h+15h	5 Credits	q2	x	x	

⊗ Other electives courses

⊗ LBBMC2206	Internship - Part 2	Bernard Hallet René Rezsóhazy	10h+10h	10 Credits	q2	x	x
⊗ LBRTE2201	Human and environmental toxicology	Cathy Debier (coord.) Philippe Hantson	30h+7.5h	4 Credits	q1	x	x
⊗ LBBMC2204	Cellular and molecular pharmacology - basic concepts	Melissa Page	30h	3 Credits	q1	x	x
⊗ LBBMC2214	Molecular and cellular pharmacology seminar	Patrick Dumont Bernard Knoops	24h	2 Credits	q2	x	x
⊗ LDATS2360	Seminar in data management: basic	Céline Bugli	15h+10h	5 Credits	q1	x	x

⊗ One of the other technical courses

⊗ LBIRC2101	Biochemical analysis	Pierre Morsomme (coord.)	22.5h +30h	4 Credits	q1	x	x
⊗ LBRMC2101	Genetic engineering	François Chaumont (coord.) Charles Hachez Melissa Page (compensates François Chaumont)	37.5h +15h	5 Credits	q1	x	x
⊗ LBRMC2202	Cell culture technology	David Alsteens Charles Hachez (coord.) Pascal Hols	30h	3 Credits	q1	x	x

⊗ Other courses of the deepening modules

⊗ Activities of the Master's degree in Biomedical Sciences at UCLouvain

⊗ Activities of the Master's degree in chemistry

⊗ Activities of the BBMC master's degree at UNamur

⊗ Upgrading activities

⊗ LBIO1237	Immunology : basis and applications in biology	Jean-Paul Dehoux	25h+15h	3 Credits	q1	x	x
⊗ LBIO1322	Integrated tutorials in biochemistry and molecular biology	Bernard Hallet Patrice Soumillion	5h+45h	5 Credits	q2	x	x
⊗ LBIO1333	Integrated animal biology: circulation, respiration, digestion and excretion	Patrick Dumont Françoise Gofflot (coord.)	30h+10h	3 Credits	q2	x	x
⊗ LBIO1342	Plant morphogenesis	François Chaumont	20h+15h	3 Credits	q2 Δ	x	x
⊗ LBIO1240	Plant physiology	Xavier Draye Stanley Lutts	40h+15h	4 Credits	q1	x	x
⊗ LBIO1332	Animal embryology and development genetics	Françoise Gofflot René Rezsóhazy	30h+10h	3 Credits	q1	x	x
⊗ LBIO1236	Integrated animal biology : coordination, perception and locomotion	Frédéric Clotman (compensates Bernard Knoops) Patrick Dumont Patrick Dumont (compensates Bernard Knoops) Françoise Gofflot	40h+10h	4 Credits	q2	x	x
⊗ LCHM1111B	General chemistry	Michel Devillers	45h+45h	8 Credits	q1	x	x
⊗ LCHM1331	Inorganic chemistry I	Sophie Hermans (compensates Michel Devillers)	37.5h +7.5h	4 Credits	q1	x	x
⊗ LCHM1321A	Analytical chemistry	Christine Dupont (coord.) Yann Garcia	30h	3 Credits	q1	x	x
⊗ LCHM1361	Introduction to polymer chemistry	Jean-François Gohy	22.5h	2 Credits	q2	x	x
⊗ LCHM1253	Elements of crystallography	Yaroslav Filinchuk	30h+10h	4 Credits	q1	x	x

						Year	
						1	2
⊗ LCHM1254	Elements of molecular spectroscopy	Sophie Hermans	30h+20h	4 Credits	q2	x	x

⊗ **Elective courses complementary to the teaching focus**

⊗ LSCI2330	Séminaire de recherche en didactique des sciences	Myriam De Kesel Jim Plumat (coord.) Valérie Wathelet	15h+30h	5 Credits	q2	x	x
⊗ LAGRE2310	Micro-teaching exercises	Pascalina Papadimitriou Dominique Vandercammen	15h	2 Credits	q1	x	x
⊗ LAGRE2221	Learning and teaching with new technologies	Sandrine Decamps	15h+15h	2 Credits	q1	x	x
⊗ LGEO2330	Séminaire de didactique de la géographie	Marie-Laurence De Keersmaecker	0h+30h	5 Credits	q2	x	x
⊗ LMAT2330	Seminar on the teaching of mathematics	Enrico Vitale	15h+30h	4 Credits	q1+q2	x	x

⊗ **Optional courses :**

These credits are not counted within the 120 required credits.

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

Course prerequisites

There are no prerequisites between course units (CUs) for this programme, i.e. the programme activity (course unit, CU) whose learning outcomes are to be certified and the corresponding credits awarded by the jury before registration in another CU.

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?"*

BBMC2M - 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](#)

Specific access requirements

As this program is taught in English, no prior proof of French language proficiency is required except for the didactic purpose.

The student is assumed to have a minimum level of B2 in English within the Common European Framework of Reference for Languages. Proof of English level is required for non-Belgian diploma holders.

Students wishing to apply for admission are invited to consult the [academic criteria for the evaluation of applications](#).

Students wishing to access the teaching aim must provide proof of a level C1 of the CEFR ([Common European Framework of Reference](#)).

University Bachelors

Diploma	Special Requirements	Access	Remarks
UCLouvain Bachelors			
CHIM1BA - Bachelier en sciences chimiques		Access based on application	
BIOL1BA - Bachelier en sciences biologiques		Direct access	
SBIM1BA		Direct access	
		Direct access	
(unknown URL)		Direct access	Le choix des cours de 1ère année de master pourrait être adapté en fonction de la formation antérieure.
(unknown URL)		Direct access	Le choix des cours de 1ère année de master pourrait être adapté en fonction de la formation antérieure.
Others Bachelors of the French speaking Community of Belgium			
Bachelier en sciences chimiques		Access based on application	
		Direct access	
Bachelier en sciences de l'ingénieur - orientation bioingénieur		Access with additional training	
Bachelier en sciences biomédicales		Direct access	Le choix des cours de 1ère année de master pourrait être adapté en fonction de la formation antérieure.
Bachelors of the Dutch speaking Community of Belgium			
Bachelor in biologie		Access based on application	

Bachelors in de biochemie en de biotechnologie Bachelor in biologie	Access based on application
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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 - technologue de laboratoire médical - HE - crédits supplémentaires entre 45 et 60 BA en agronomie (techniques et gestion agricoles) - EPS - crédits supplémentaires entre 45 et 60 BA en agronomie (toutes orientations) - HE - crédits supplémentaires entre 45 et 60 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"			
		Direct access	
Masters			
		Direct access	

 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.

The first step in the procedure is to submit a file online (see <https://uclouvain.be/en/study/inscriptions/futurs-etudiants.html>).

It is important to be aware of the academic criteria for the evaluation of applications beforehand.

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...)

These additional courses (maximum 60 credits) will be chosen from the Bachelor's degree in Biological Sciences, in agreement with the academic advisor, and based on the student's previous background and training project.

○ Additional courses

Specific professional rules

The success of the Master's degree in didactics leads to the award of the Master's degree in didactics as well as the title of agrégé of upper secondary education.

The Reform of Titles and Functions, effective 1 September 2016, aims to harmonise the titles, functions and scales of elementary and secondary education professionals in all networks in the French Community of Belgium.

It also aims to ensure that priority is given to the required securities over sufficient securities and to establish a system of securities in shortage.

The holder of SSEA will be able to find out which functions he can perform and which scales he can benefit from by clicking here.

The university cannot be held responsible for any problems that the student may subsequently encounter with a view to being appointed to teaching in the French Community of Belgium.

Teaching method

The teaching strategy takes its inspiration from the idea of taking responsibility for one's own learning and offers a wide range of learning situations. Students must take three major decisions: the choice of an option course, a focus and final additional training.

Approximately thirty credits are reserved for activities which can be freely chosen from the overall **Biochemistry and Molecular and Cell Biology** programme or from related Masters.

Teaching is organized in small groups, most frequently in tutorial style and learning is for the most part centred on individual work (e.g. reading, consultation of databases and bibliographic references, presentation of seminars and research work). Before making a final choice for the subject of the dissertation, students do a "rotation" in four laboratories relating to each of the four available option courses. Work on the dissertation usually starts in the second semester of the first year and continues until the first semester of the second year of the Master. The training is completed by an intensive placement in a professional environment lasting several months, preferably abroad.

The five programmes organized in the French Community of Belgium share a portfolio of approximately fifteen inter-university workshops which can be taken from the first semester of the second year. Each workshop consists of a week of immersion in an intellectual issue in an area of advanced research, spent in a host department which specializes in the area. UCL provides three workshops; our students must attend at least two of them.

Students doing the teaching focus may do advanced teaching in mathematics, physical sciences or geography.

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.

Mobility and/or Internationalisation outlook

For the research and professional focuses, students are invited to spend time in a foreign country, preferably during the second semester of the second year cadre to do a work placement and/or (possibly) during the first semester of the second year to do the second part of their dissertation whilst also taking their option course and their focus-related training

Advanced courses are given by many visiting lecturers from different foreign institutions and some Belgian ones. These are mostly in English.

Possible trainings at the end of the programme

Whatever focuses and option courses are chosen, the Master in **Biochemistry and Molecular and Cell Biology** gives direct access to a doctorate in science.

Contacts

Curriculum Management

Entity

Structure entity	SST/SC/BIOL
Denomination	(BIOL)
Faculty	Faculty of Science (SC)
Sector	Sciences and Technology (SST)
Acronym	BIOL
Postal address	Croix du sud 4-5 - bte L7.07.05 1348 Louvain-la-Neuve Tel: +32 (0) 10 47 34 89 - Fax: +32 (0) 10 47 35 15 https://uclouvain.be/fr/facultes/sc/biol
Website	

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Jury

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