

At Louvain-la-Neuve - 120 credits - 2 years - Day schedule - In frenchDissertation/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: **Faculté des sciences (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 profil

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 futur 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-2019-bbmc2m-lbbmc200t.html]

Focuses

[> Research Focus](#) [en-prog-2019-bbmc2m-lbbmc200a]

[> Teaching Focus](#) [en-prog-2019-bbmc2m-lbbmc200d]

[> Professional Focus : Biotechnology](#) [en-prog-2019-bbmc2m-lbbmc200s]

[> Cours au choix](#) [en-prog-2019-bbmc2m-lbbmc300o.html]

BBMC2M Detailed programme

Programme by subject

CORE COURSES [54.0]

○ Mandatory

△ Courses not taught during 2019-2020

⊕ Periodic courses taught during 2019-2020

⊗ Optional

⊖ Periodic courses not taught during 2019-2020

■ Activity with requisites

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

						Year	
						1	2
○ LBBMC2101	Biochimie structurale et fonctionnelle	Pierre Morsomme Patrice Soumillon	36h+6h	4 Credits	1q	x	
○ LBRMC2201	Bioinformatics : DNA and protein sequences	Michel Ghislain (coord.) Jacques Mahillon	30h+15h	4 Credits	1q	x	
○ LBBMC2102	Biologie moléculaire et cellulaire intégrée	Henri Batoko Bernard Hallet Pierre Morsomme René Rezsöházy	30h	3 Credits	1q	x	
○ LBBMC2103	Rotation	Henri Batoko François Chaumont Françoise Gofflot Bernard Hallet Bernard Knoops Patrice Soumillon	12h+36h	8 Credits	1q	x	
○ LBBMC2997	Mémoire - 1ère partie			10 Credits			x
○ LBBMC2998	Mémoire - 2ème partie			17 Credits			x
○ LBBMC2201	Thesis tutorial	Patrick Dumont Anne-Julie Toubreau	15h	3 Credits	1q	x	

○ Techniques de biochimie et de biologie moléculaire (3 credits)

un cours parmi les trois suivants :

⊗ LBIRC2101A	Analyse biochimique et notions de génie génétique: analyse biochimique	François Chaumont Charles Hachez Pierre Morsomme	18.5h +22.5h	3 Credits	1q	x	
⊗ LBRMC2101	Genetic engineering	François Chaumont (coord.) Charles Hachez	30h+7.5h	3 Credits	1q	x	
⊗ LBRMC2202	Cell culture technology	David Alsteens Charles Hachez (coord.) Pascal Hols	30h	3 Credits	1q	x	

○ Sciences humaines (2 credits)

un cours parmi les trois suivants :

⊗ LSC2001	Introduction to contemporary philosophy	François Kammerer (compensates Peter Verdée)	30h	2 Credits	2q	x	
⊗ LSC2220	Philosophy of science	Alexandre Guay	30h	2 Credits	2q	x	
⊗ LFILO2003E	Ethics in the Sciences and technics (sem)	Charles Pence	15h+15h	2 Credits	2q	x	x

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

Une finalité à choisir parmi les trois suivantes :

- > Research Focus [en-prog-2019-bbmc2m-lbbmc200a]
- > Teaching Focus [en-prog-2019-bbmc2m-lbbmc200d]
- > Professional Focus : Biotechnology [en-prog-2019-bbmc2m-lbbmc200s]

RESEARCH FOCUS [30.0]

- Mandatory
- △ Courses not taught during 2019-2020
- ⊕ Periodic courses taught during 2019-2020
- ⊗ Optional
- ⊖ Periodic courses not taught during 2019-2020
- Activity with requisites

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

Year

1 2

o Contenu:

○ LBBMC2205	Stage de recherche - 1ère partie	Bernard Hallet	25h+40h	20 Credits	2q	x
○ LBBMC2203	Séminaire de formation à la recherche	David Alsteens Henri Batoko François Chaumont Cathy Debier Isabelle Donnay Yves Dufrêne Patrick Dumont Michel Ghislain Françoise Gofflot Charles Hachez Bernard Hallet Pascal Hols Bernard Knoops Yvan Larondelle Jacques Mahillon Pierre Morsomme Jean-François Rees René Rezsöhazi Patrice Soumillion (coord.)	40h+40h	5 Credits		x

o Activité(s) au choix (5 credits)

à choisir dans la liste des activités au choix.

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 2019-2020

⊕ Periodic courses taught during 2019-2020

⊗ Optional

⊖ Periodic courses not taught during 2019-2020

■ Activity with requisites

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

Year

1 2

o Contenu:

o 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	2q	x	x
○ LSCI2320	Didactique et épistémologie des sciences	Myriam De Kesel (coord.) Jim Plumet Valérie Wathelet	60h	6 Credits	1q	x	x
○ LBIO2340	Didactique et épistémologie de la biologie	Myriam De Kesel	15h+5h	2 Credits	2q	x	x
○ LAGRE2220	General didactics and education to interdisciplinarity	Myriam De Kesel Jean-Louis Dufays (coord.) Anne Ghysseleux Véronique Lemaire Jim Plumet Marc Romainville Benoit Vercauteren	37.5h	3 Credits	2q	x	x

o Une UE parmi les quatre suivantes (2 crédits)

⊗ LCHM2340	Didactique et épistémologie de la chimie	Valérie Wathelet	15h+5h	2 Credits	2q	x	x
⊗ LPHYS2471	Didactique et épistémologie de la physique	Jim Plumet	15h+5h	2 Credits	2q	x	x
⊗ LGEO2320B	Didactique et épistémologie de la géographie (en ce compris le stage d'écoute)	Marie-Laurence De Keersmaecker	15h+10h	2 Credits	1q	x	x
⊗ LMAT2320A	Didactique et épistémologie de la mathématique (en ce compris le stage d'écoute)	Laure Ninove Rosane Tossut	37.5h +10h	4 Credits	1 + 2q	x	x

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

○ LAGRE2400	See specifications in french	Michel Dupuis Anne Ghysseleux	20h	2 Credits	2q	x	x
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o Séminaire d'observation et d'analyse de l'institution scolaire et de son contexte (en ce compris le stage d'observation) (4 crédits)

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	22.5h +25h	4 Credits	1q	x	
⊗ LAGRE2120Q	Observation et analyse de l'institution scolaire et de son contexte (en ce compris le stage d'observation)	Branka Cattonar	22.5h +25h	4 Credits	2q	x	

o Module animer un groupe et travailler en équipe

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

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.	Pascale Steyns	22.5h +22.5h	4 Credits	1q	x	
⊗ LAGRE2020Q	Comprendre l'adolescent en situation scolaire, Gérer la relation interpersonnelle et animer le groupe classe.	Pascale Steyns	22.5h +22.5h	4 Credits	2q	x	

PROFESSIONAL FOCUS : BIOTECHNOLOGY [30.0]

● Mandatory

△ Courses not taught during 2019-2020

⊕ Periodic courses taught during 2019-2020

⊗ Optional

⊖ Periodic courses not taught during 2019-2020

■ Activity with requisites

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

Year

1 2

o **Contenu:**

● LBBMC2215	Stage en entreprise	René Rezsóhazy	25h+40h	20 Credits			X
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o **Biotechnologie et initiation au monde de l'entreprise (10 credits)**

Au moins 5 crédits à choisir dans les activités au choix de biotechnologie ci-dessous et les autres dans la liste des cours au choix

⊗ LBIRC2108	Biochemical and Microbial Engineering	Iwona Cybulska	30h +22.5h	5 Credits	2q		X
⊗ LBRNA2202	Nano-biotechnologies	Yves Dufrene	30h	3 Credits	2q		X
⊗ LBIRA2102	Applied biotechnology	Isabelle Donnay Jacques Mahillon (coord.) Hervé Vanderschuren (compensates) Xavier Draye	30h+7.5h	4 Credits	1q		X
⊗ LBRAS2304	Qualités organoleptiques et microbiologiques de la bière et du vin	Sonia Collin (coord.) Marc Maudoux	15h+30h	4 Credits	1q		X
⊗ LBRAL2104	Food microbiology	Jacques Mahillon	30h +22.5h	5 Credits	2q		X
⊗ LBRAL2103	Food chemistry	Sonia Collin	30h +22.5h	5 Credits	1q		X
⊗ LBBMC2213	Atelier de formation à la recherche en entreprise			5 Credits	△		X
⊗ LCHM2244	Medicinal chemistry	Raphaël Frédéric (coord.) Didier Lambert	22.5h +7.5h	3 Credits	2q		X
⊗ LCHM2280	Industrial chemistry	Marcel Ceresiat Marc Lacroix	30h	3 Credits	2q		X
⊗ WFARM2241	Pharmacokinetics and clinical biology	Laure Elens (coord.) Pierre Wallemacq	30h+15h	4 Credits	1q		X
⊗ WSBIM2248	Toxicologie industrielle et environnementale		82.5h	10 Credits	1 + 2q		X
⊗ WFARM1303	Clinical Chemistry	Jean-Philippe Defour Catherine Fillee Damien Gruson Vincent Haufroid (coord.) Teresinha Leal	20h	2 Credits	1q		X
⊗ WBICL2107	Principe et méthodologie des dosages immunologiques	Diane Maisin	15h+40h	3 Credits	2q		X
⊗ WESP2123	Principes des essais cliniques	Laurence Habimana Annie Robert (coord.) Françoise Smets	20h+10h	4 Credits	1q		X
⊗ WSBIM2230	Biochimie des erreurs innées du métabolisme	Marie-Cécile Nassogne	30h	3 Credits	1q		X
⊗ LBRAL2201C	Food Technology (procédés biotechnologies)	Iwona Cybulska Axel Kather		1 Credits	2q	X	X
⊗ LBRAL2201D	Food Technology: transformations des produits végétaux et animaux	Iwona Cybulska Axel Kather		2 Credits	2q	X	X

⊗ **Initiation au monde de l'entreprise**

⊗ LBIR1360	Firm management and organisation	Pierre De Muelenaere	30h+7.5h	3 Credits	1q	X	X
⊗ LFSA2140	Elements of law for industry and research	Vincent Cassiers Werner Derijcke Bénédicte Inghels	30h	3 Credits	1q	X	X
⊗ LFSA2230	Introduction to management and to business economics	Benoît Gailly	30h+15h	4 Credits	2q	X	X
⊗ LFSA3010	Principles of Scientific Communication	Yves Deville Xavier Gonze Michel Verleysen	30h+30h	3 Credits	2q	X	X

						Year	
						1	2
⊗ 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	1q	x	x
⊗ LDROP2101	Management of Intellectual Property Rights	Dominique Kaesmacher François Wéry	30h	5 Credits	2q	x	x
⊗ LDROP2102	Droits intellectuels et nouvelles technologies	Alain Strowel	30h	5 Credits	2q	x	x
⊗ LDROP2103	Law on intellectual property contr	Vincent Cassiers	30h	5 Credits	2q	x	x
⊗ LBBMC2213	Atelier de formation à la recherche en entreprise			5 Credits	Δ	x	x
⊗ LBRAI2208	Firms and Markets : Strategic Analysis	Frédéric Gaspart	30h	3 Credits	1q	x	x

Cours au choix [36.0]

○ Mandatory

△ Courses not taught during 2019-2020

⊕ Periodic courses taught during 2019-2020

⊗ Optional

⊖ Periodic courses not taught during 2019-2020

■ Activity with requisites

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

Year

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o Contenu:

o Cours au choix - un module obligatoire parmi les suivants (10 credits)

⊗ Module d'approfondissement en biochimie

○ LBBMC2104	Biochimie physiologique animale	Pierre Morsomme Melissa Page	36h+18h	5 Credits	2q	x	
○ LBBMC2105	Ingénierie des protéines et enzymologie	Pierre Morsomme Patrice Soumillion	36h+18h	5 Credits	2q	x	

⊗ Module d'approfondissement en microbiologie

○ LBBMC2106	Génétique moléculaire et génomique microbiennes	Bernard Hallet Pascal Hols	36h+18h	5 Credits	2q	x	
○ LBBMC2107	Physiologie cellulaire microbienne	Stephan Declerck Michel Ghislain Bernard Hallet Pascal Hols Pierre Morsomme	36h+18h	5 Credits	2q	x	

⊗ Module d'approfondissement en biologie végétale

○ LBBMC2108	Génétique moléculaire et génomique végétale	Henri Batoko François Chaumont Xavier Draye Charles Hachez (compensates François Chaumont)	36h+18h	5 Credits	2q	x	
○ LBBMC2109	Physiologie cellulaire végétale	Henri Batoko François Chaumont Charles Hachez Pierre Morsomme	36h+18h	5 Credits	2q	x	

⊗ Module d'approfondissement en biologie animale et humaine

○ LBBMC2110	Génétique moléculaire et génomique animales et humaines	Françoise Gofflot Bernard Knoops René Rezsóhazy	36h+18h	5 Credits	2q	x	
○ LBBMC2111	Physiologie cellulaire animale et humaine	Patrick Dumont Bernard Knoops	36h+18h	5 Credits	2q	x	

o Autres cours au choix

⊗ 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).

De 20 à 25 CREDITS parmi

⊗ LCPME2000	Venture creation financement and management I	Yves De Rongé Olivier Giacomini	30h+15h	5 Credits	1q	x	x
○ LCPME2001	Entrepreneurship Theory (in French)	Blanche Havenne (compensates Frank Janssen) Frank Janssen	30h+20h	5 Credits	1q	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	1q	x	x
○ LCPME2003	Business plan of the creation of a company (in French)	Frank Janssen	30h+15h	5 Credits	2q	x	x
○ LCPME2004	Advanced seminar on Entrepreneurship (in French)	Frank Janssen	30h+15h	5 Credits	2q	x	x

Year

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⊗ Autres cours au choix

⊗ LBBMC2206	Stage - 2ème partie	Bernard Hallet René Rezsóhazy	10h+10h	10 Credits	2q	x	x
⊗ LBRTE2201	Human and environmental toxicology	Cathy Debier (coord.) Philippe Hantson	37.5h +7.5h	5 Credits	1q	x	x
⊗ LBBMC2204	Pharmacologie cellulaire et moléculaire - concepts de base	Melissa Page	30h	3 Credits	1q	x	x
⊗ LBBMC2214	Séminaire de pharmacologie moléculaire et cellulaire	Patrick Dumont Bernard Knoops	24h	2 Credits	2q	x	x
⊗ LSTAT2360	Seminar in data management: basic	Céline Bugli	15h+10h	5 Credits	1q	x	x

⊗ Un des autre cours de techniques

⊗ LBIRC2101A	Analyse biochimique et notions de génie génétique: analyse biochimique	François Chaumont Charles Hachez Pierre Morsomme	18.5h +22.5h	3 Credits	1q	x	x
⊗ LBRMC2101	Genetic engineering	François Chaumont (coord.) Charles Hachez	30h+7.5h	3 Credits	1q	x	x
⊗ LBRMC2202	Cell culture technology	David Alsteens Charles Hachez (coord.) Pascal Hols	30h	3 Credits	1q	x	x

⊗ Autres cours des modules d'approfondissement

⊗ Activités du master en sciences biomédicales de l'UCL

⊗ Activités du master BBMC des FUNDP

⊗ Activités de mise à niveau

⊗ LBIO1335	Immunology : basis and applications in biology	Jean-Paul Dehoux	25h+15h	3 Credits	1q	x	x
⊗ LBIO1322	Integrated tutorials in biochemistry and molecular genetics	Bernard Hallet Patrice Soumillion	0h+60h	5 Credits	2q	x	x
⊗ LBIO1233	Animal physiology and morphology	Patrick Dumont Françoise Gofflot (coord.) René Rezsóhazy	30h+30h	5 Credits	2q	x	x
⊗ LBIO1342	Plant morphogenesis	François Chaumont	20h+15h	3 Credits	2q	x	x
⊗ LBIO1240	Plant physiology	Xavier Draye Stanley Lutts	40h+15h	4 Credits	1q	x	x
⊗ LBIO1332	Animal embryology	René Rezsóhazy	25h+15h	3 Credits	1q	x	x
⊗ LBIO1236	Integrated animal biology : coordination, perception and locomotion	Patrick Dumont Françoise Gofflot Bernard Knoops	40h+10h	4 Credits	2q	x	x
⊗ LCHM1211	General Chemistry 2	Michel Devillers Geoffroy Hautier	45h+60h	8 Credits	2q	x	x
⊗ LCHM1331	Inorganic chemistry I	Michel Devillers Sophie Hermans (compensates Michel Devillers)	37.5h +7.5h	4 Credits	1q	x	x
⊗ LCHM1321A	Analytical chemistry	Christine Dupont (coord.) Yann Garcia	30h	3 Credits	1q	x	x
⊗ LCHM1361	Introduction to polymer chemistry	Jean-François Gohy	22.5h	2 Credits	2q	x	x
⊗ LCHM1251B	Éléments de cristallographie et de spectroscopie moléculaire (partie Éléments de cristallographie)	Yaroslav Filinchuk	30h+10h	4 Credits	1q	x	x
⊗ LCHM1251C	Éléments de cristallographie et spectroscopie moléculaire (partie Éléments de spectroscopie moléculaire)	Sophie Hermans	30h+20h	4 Credits	2q	x	x

⊗ Cours au choix complémentaires à la finalité didactique

⊗ LSCI2330	Séminaire de recherche en didactique des sciences	Myriam De Kesel Jim Plumet (coord.) Valérie Wathélet	15h+30h	5 Credits	2q	x	x
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						Year	
						1	2
⊗ LAGRE2310	Micro-teaching exercises	Pascalia Papadimitriou Dominique Vandercammen	15h	2 Credits	1q	x	x
⊗ LAGRE2221	Learning and teaching with new technologies	Sandrine Decamps	15h+15h	2 Credits	1q	x	x
⊗ LGEO2330	Séminaire de didactique de la géographie	Marie-Laurence De Keersmaecker	0h+30h	5 Credits	2q	x	x
⊗ LMAT2330	Seminar on the teaching of mathematics	Enrico Vitale	15h+30h	4 Credits		x	x

⊗ **Activités du master en chimie**

⊗ **Cours facultatif : Ingénieurs Sud**

Les 5 crédits de cours ne sont pas comptabilisés dans les 120 crédits requis.

⊗ LSST1001	IngénieursSud	Jean-Pierre Raskin	15h+45h	5 Credits	1 + 2q	x	x
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Course prerequisites

A document entitled [en-prerequis-2019-bbmc2m.pdf](#) specifies the activities (course units - CU) with one or more pre-requisite(s) within the study programme, that is the CU whose learning outcomes must have been certified and for which the credits must have been granted by the jury before the student is authorised to sign up for that activity.

These activities are identified in the study programme: their title is followed by a yellow square.

As the prerequisites are a requirement of enrolment, there are none within a year of a course.

The prerequisites are defined for the CUs for different years and therefore influence the order in which the student can enrol in the programme's CUs.

In addition, when the panel validates a student's individual programme at the beginning of the year, it ensures the consistency of the individual programme:

- It can change a prerequisite into a corequisite within a single year (to allow studies to be continued with an adequate annual load);
- It can require the student to combine enrolment in two separate CUs it considers necessary for educational purposes.

For more information, please consult [regulation of studies and exams](#).

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?*"

The document is available by clicking [this link](#) after being authenticated with your UCLouvain account.

BBMC2M - Information

Admission

General and specific admission requirements for this program 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

- > [Specific Admission Requirements](#)
- > [University Bachelors](#)
- > [Non university Bachelors](#)
- > [Holders of a 2nd cycle University degree](#)
- > [Holders of a non-University 2nd cycle degree](#)
- > [Adults taking up their university training](#)
- > [Access on the file](#)
- > [Admission and Enrolment Procedures for general registration](#)

Specific Admission Requirements

Le dossier de demande d'admission est à adresser au Secrétariat du Département de biologie - Carnoy - Place Croix du Sud 4 à 1348 Louvain-la-Neuve

University Bachelors

Diploma	Special Requirements	Access	Remarks
UCLouvain Bachelors			
CHIM1BA - Bachelier en sciences chimiques		Based on application: accepted, conditional on further training, or refusal	
BIOL1BA - Bachelier en sciences biologiques		Direct Access	
SBIM1BA		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		Based on application: accepted, conditional on further training, or refusal	
		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		Based on application: accepted, conditional on further training, or refusal	

Bachelors in de biochemie en de biotechnologie
Bachelor in biologie

Based on application: accepted,
conditional on further training,
or refusal

Foreign Bachelors

Based on application: accepted,
conditional on further training,
or refusal

Non university Bachelors

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

Diploma	Access	Remarks
BA - technologie 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

Adults taking up their university training

> 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 on the file

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

Admission and Enrolment Procedures for general registration

Supplementary classes

To enrol for this Masters, the student must have a good command of certain subjects. If this is not the case, they must add preparatory modules to their Master's programme.

● Mandatory

△ Courses not taught during 2019-2020

⊕ Periodic courses taught during 2019-2020

⊗ Optional

⊖ Periodic courses not taught during 2019-2020

■ Activity with requisites

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

●	Enseignements supplémentaires			Credits	
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Règles professionnelles particulières

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. 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 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
Web site	

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Jury

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