UCLouvain

BBMC2M

2023 - 2024

Master [120] in Biochemistry and Molecular and Cell Biology

At Louvain-la-Neuve - 120 credits - 2 years - Day schedule - In English
Dissertation/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

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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 Biolog y 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 maitrise 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.

BBMC2M Programme

Detailed programme by subject

CORE COURSES

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

- Mandatory
- Optional
- Not offered in 2023-2024
- Not offered in 2023-2024 but offered the following year
- Offered in 2023-2024 but not the following year
- Not offered in 2023-2024 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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

				Year 1	Year 2
LBBMC2101	Structural and functional biochemistry	Pierre Morsomme Patrice Soumillion	EN [q1] [36h+6h] [4 Credits]	x	
LBRMC2201	Bioinformatics : DNA and protein sequence analysis	Michel Ghislain	EN [q1] [30h+15h] [4 Credits] > *French-friendly*	x	
LBBMC2102	Integrated molecular and cellular biology	Henri Batoko Bernard Hallet Pierre Morsomme Melissa Page	EN [q1] [30h] [3 Credits]	x	
LBBMC2103	Rotation	Françoise Gofflot Bernard Hallet Pierre Morsomme Melissa Page Patrice Soumillion	EN [q1] [12h+36h] [8 Credits]	x	
LBBMC2997	Master's thesis - Part 1		EN [] [] [10 Credits]	x	
LBBMC2998	Master's thesis - Part 2		EN [] [] [17 Credits]		x
LBBMC2201	Thesis tutorial	Patrick Dumont Anne-Julie Toubeau	EN [q1] [15h] [3 Credits]		x

Biochemistry and molecular biology techniques

at least one of the following three courses:
Minimum 3 credit(s)

LBIRC2101	Biochemical analysis	François Chaumont Pierre Morsomme (coord.)	FR [q1] [22.5h+30h] [4 Credits] > *English-friendly*	x	
LBRMC2101	Genetic engineering	François Chaumont (coord.) Charles Hachez	FR [q1] [37.5h+15h] [5 Credits] > *English-friendly*	x	
LBRMC2202	Cell culture technology	David Alsteens Charles Hachez (coord.) Pascal Hols	EN [q1] [30h] [3 Credits] > *French-friendly*	x	

Social Sciences and Humanities (2 credits)

at least one of the following three courses:

LSC2001	Introduction to contemporary philosophy	Peter Verdée Peter Verdée (compensates Charles Pence)	FR [q2] [30h] [2 Credits]	x	
LSC2220	Philosophy of science	Alexandre Guay	EN [q2] [30h] [2 Credits]	x	
LFILO2003E	Ethics in the Sciences and technics (sem)	Alexandre Guay (compensates Charles Pence) Hervé Jeanmart René Rezsohazy	FR [q2] [15h+15h] [2 Credits]	x	x
LTHEO2840	Science and Christian faith	Benoît Bourgine Paulo Jorge Dos Santos Rodrigues	FR [q1] [15h] [2 Credits]	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-2023-bbmc2m-lbbmc200a]
> Teaching Focus [en-prog-2023-bbmc2m-lbbmc200d]
> Professional Focus : Biotechnology [en-prog-2023-bbmc2m-lbbmc200s]

RESEARCH FOCUS [30.0]

- Mandatory
- Optional
- Not offered in 2023-2024
- Not offered in 2023-2024 but offered the following year
- Offered in 2023-2024 but not the following year
- Not offered in 2023-2024 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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

Content:

				Year 1	Year 2
LBBMC2205	Research internship - Part 1	Bernard Hallet	EN [q2] [25h+40h] [20 Credits]		x
LBBMC2203	Research Training Seminar	Henri Batoko Françoise Gofflot Charles Hachez Bernard Hallet Pierre Morsomme Patrice Soumillion	EN [q1+q2] [40h+40h] [5 Credits]		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
- Optional
- Not offered in 2023-2024
- Not offered in 2023-2024 but offered the following year
- Offered in 2023-2024 but not the following year
- Not offered in 2023-2024 or the following year
- Activity with requisites
- Open to incoming exchange students
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- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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Content:

Year 1 2

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	FR [q1+q2] [15h+40h] [7 Credits]	x	x
LSCI2320	Didactics and epistemology of science	Myriam De Kesel (coord.) Gabriel Dias de Carvalho Junior Stéphanie Wilmet	FR [q1] [22.5h] [2 Credits]	x	x
LBIO2340	Didactics and Epistemology of Biology	Myriam De Kesel	FR [q1+q2] [37.5h+0h] [4 Credits]	x	x
LAGRE2220	General didactics and education to interdisciplinarity	Stéphane Colognesi Severine De Croix Myriam De Kesel Jean-Louis Dufays Anne Ghysselinckx Véronique Lemaire Benoît Vercruysse	FR [q1+q2] [37.5h] [3 Credits]	x	x

Une UE parmi les quatre suivantes (4 credits)

LCHM2340	Didactics and epistemology of chemistry	Marc de Wergifosse (coord.) Nathalie Matthys Stéphanie Wilmet	FR [q1+q2] [37.5h] [4 Credits]	x	x
LPHYS2471	Didactics and Epistemology of Physics	Gabriel Dias de Carvalho Junior	FR [q1+q2] [37.5h] [4 Credits]	x	x
LMAT2320A	Didactique et épistémologie de la mathématique (en ce compris le stage d'écoute)	Cécile Coyette Sonia Ghorbal Laure Ninove	FR [q1+q2] [37.5h+10h] [4 Credits]	x	x
LGEO2320A	Didactique et épistémologie de la géographie (en ce compris le stage d'écoute)	Marie-Laurence De Keersmaecker	FR [q1] [37.5h+10h] [4 Credits]	x	x

Module comprendre et analyser l'institution scolaire et son contexte

LAGRE2400	See specifications in french	Mathias El Berhoumi (compensates Xavier Delgrange) Hervé Pourtois (coord.) Pierre-Etienne Vandamme	FR [q2] [20h] [2 Credits]	x	x

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

Year
1 2

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.

LAGRE2020P	Comprendre l'adolescent en situation scolaire, Gérer la relation interpersonnelle et animer le groupe classe.	Baptiste Barbot Véronique Leroy Nathalie Roland	FR [q2] [22.5h+22.5h] [4 Credits]		x
LAGRE2020Q	Comprendre l'adolescent en situation scolaire, Gérer la relation interpersonnelle et animer le groupe classe.	Baptiste Barbot Véronique Leroy Nathalie Roland	FR [q2] [22.5h+22.5h] [4 Credits]		x

PROFESSIONAL FOCUS : BIOTECHNOLOGY [30.0]

- Mandatory
- Optional
- Not offered in 2023-2024
- Not offered in 2023-2024 but offered the following year
- Offered in 2023-2024 but not the following year
- Not offered in 2023-2024 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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

Content:

				Year 1	Year 2
LBBMC2215	Internship in a company	René Rezsohazy	EN [q2] [25h+40h] [20 Credits]		x

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	Benoît Stenuit	EN [q2] [30h+22.5h] [5 Credits] > French-friendly		x
LBRNA2202	Nano-biotechnologies	Yves Dufrêne	FR [q2] [30h] [3 Credits]		x
LBRAS2304	Qualités organoleptiques et microbiologiques de la bière et du vin	Sonia Collin (coord.) Marc Maudoux	FR [q1] [15h+30h] [4 Credits]		x
LBRAL2104	Food microbiology	Annika Gillis	EN [q2] [30h+22.5h] [4 Credits] > French-friendly		x
LBRAL2103	Food chemistry	Sonia Collin	FR [q1] [30h+30h] [5 Credits]		x
LCHM2244	Medicinal chemistry	Raphaël Frédérick Quentin Spillier (compensates Didier Lambert)	EN [q2] [22.5h+7.5h] [3 Credits] > French-friendly		x
LCHM2280	Industrial chemistry	Marc Lacroix Vincent Mutterer	EN [q2] [30h] [3 Credits] > French-friendly		x
WSBIM2248	Toxicologie industrielle et environnementale		FR [q1+q2] [82.5h] [10 Credits]		x
WFARM1303	Clinical Chemistry	Joseph Dewulf Catherine Fillee Damien Gruson Vincent Haufroid (coord.) Madeleine Rousseaux	FR [q2] [20h] [2 Credits]		x
WBICL2107	Principe et méthodologie des dosages immunologiques	Diane Maisin	FR [q2] [15h] [3 Credits]		x
WESP2123	Principles of clinical trials	Diego Castanares Zapatero Philippe Lysy Annie Robert (coord.) Françoise Smets	FR [q1] [20h+10h] [4 Credits]		x
WSBIM2230	Biochemistry of inborn errors of metabolism	Marie-Cécile Nassogne	FR [q1] [30h] [3 Credits]		x
LBRAL2201B	Food Technology (procédés biotechnologies)	Axel Kather Benoît Stenuit	EN [q2] [] [1 Credits] > French-friendly	x	x
LBRAL2201C	Food Technology: transformations des produits végétaux et animaux	Axel Kather Benoît Stenuit	EN [q2] [] [2 Credits] > French-friendly	x	x
LBRPP2213	Biotechnology and diagnosis	Claude Bragard (coord.) Anne Legrève	FR [q1] [22.5h+7.5h] [3 Credits] > English-friendly	x	x

Initiation to the business world

LBIR1360	Firm management and organisation	Pierre De Muelenaere	EN [q1] [30h+7.5h] [3 Credits] > French-friendly	x	x
LEPL2211	Business issues introduction	Benoît Gailly	EN [q2] [30h] [3 Credits] > French-friendly	x	x
LEPL2214	Law, Regulation and Legal Context	Vincent Cassiers Werner Derycke	FR [q1] [30h+5h] [4 Credits]	x	x
LDROP2101	Management of Intellectual Property Rights	François Wéry	EN [q2] [30h] [5 Credits]	x	x
LDROP2102	Droits intellectuels et nouvelles technologies	Alain Strowel	FR [q2] [30h] [5 Credits]	x	x

				Year 1	Year 2
LBBMC2213	Training workshop for research in companies		EN [] [] [5 Credits] Δ	x	x
LBRAI2208	Firms and Markets : Strategic Analysis	Frédéric Gaspart	EN [q1] [30h] [4 Credits] > *French-friendly*	x	x

OPTIONS

> Elective courses [en-prog-2023-bbmc2m-lbbmc300o]
> INEO (ex-CPME), Interdisciplinary training in entrepreneurship [en-prog-2023-bbmc2m-lboe955o]

ELECTIVE COURSES [36.0]

- Mandatory
- Optional
- Not offered in 2023-2024
- Not offered in 2023-2024 but offered the following year
- Offered in 2023-2024 but not the following year
- Not offered in 2023-2024 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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

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

Year
1 2

Content:

At least one of the following modules (10 credits)

Deepening module in biochemistry

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

Deepening module in microbiology

LBBMC2106	Molecular genetics and microbial genomics	Bernard Hallet Pascal Hols	EN [q2] [36h+18h] [5 Credits]	x	
LBBMC2107	Microbial cellular physiology	Corentin Claeys Bouuaert Stephan Declerck Benoît Desguin Pascal Hols Géraldine Laloux Pierre Morsomme (coord.)	EN [q2] [36h+18h] [5 Credits]	x	

Deepening module in plant biology

LBBMC2108	Molecular genetics and plant genomics	Henri Batoko François Chaumont Xavier Draye	EN [q2] [36h+18h] [5 Credits]	x	
LBBMC2109	Plant cell physiology	Henri Batoko François Chaumont Charles Hachez	EN [q2] [36h+18h] [5 Credits]	x	

Deepening module in animal and human biology

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

Other elective courses

Other electives courses

				Year 1	Year 2
LBBMC2206	Internship - Part 2	Bernard Hallet René Rezsohazy	EN [q2] [10h+10h] [10 Credits]	x	x
LBRTE2201	Human and environmental toxicology	Cathy Debier	EN [q1] [30h+7.5h] [4 Credits] > *French-friendly*	x	x
LBBMC2204	Cellular and molecular pharmacology - basic concepts	Melissa Page	EN [q1] [30h] [3 Credits]	x	x
LBBMC2214	Molecular and cellular pharmacology seminar	Patrick Dumont Bernard Knoops	EN [q2] [24h] [2 Credits]	x	x
LDATS2360	Seminar in data management: basic	Céline Bugli	FR [q1] [15h+10h] [5 Credits]	x	x

One of the other technical courses

LBIRC2101	Biochemical analysis	François Chaumont Pierre Morsomme (coord.)	FR [q1] [22.5h+30h] [4 Credits] > *English-friendly*	x	x
LBRMC2101	Genetic engineering	François Chaumont (coord.) Charles Hachez	FR [q1] [37.5h+15h] [5 Credits] > *English-friendly*	x	x
LBRMC2202	Cell culture technology	David Alsteens Charles Hachez (coord.) Pascal Hols	EN [q1] [30h] [3 Credits] > *French-friendly*	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	FR [q1] [25h+15h] [3 Credits]	x	x
LBIO1322	Integrated tutorials in biochemistry and molecular biology	Bernard Hallet Patrice Soumillion	FR [q2] [5h+45h] [5 Credits]	x	x
LBIO1333	Integrated animal biology: circulation, respiration, digestion and excretion	Patrick Dumont Françoise Gofflot Françoise Gofflot (compensates René Rezsohazy)	FR [q2] [30h+10h] [3 Credits]	x	x
LBIO1342	Plant morphogenesis	François Chaumont	FR [q2] [20h+15h] [3 Credits]	x	x
LBIO1240	Plant physiology	Xavier Draye Stanley Lutts	FR [q1] [40h+15h] [4 Credits]	x	x
LBIO1332	Animal embryology and development genetics	Françoise Gofflot René Rezsohazy	FR [q1] [30h+10h] [3 Credits]	x	x
LBIO1236	Integrated animal biology : coordination, perception and locomotion	Frédéric Clotman (compensates Bernard Knoops) Patrick Dumont Patrick Dumont (compensates Bernard Knoops) Françoise Gofflot Bernard Knoops	FR [q2] [40h+10h] [4 Credits]	x	x
LCHM1111B	General chemistry	Benjamin Elias Alexandru Vlad	FR [q1] [45h+45h] [8 Credits]	x	x
LCHM1331	Inorganic chemistry I	Sophie Hermans	FR [q1] [37.5h+7.5h] [4 Credits]	x	x
LCHM1321A	Analytical chimistry	Christine Dupont Yann Garcia	FR [q1] [30h] [3 Credits]	x	x
LCHM1361	Introduction to polymer chemistry	Jean-François Gohy	FR [q2] [22.5h] [2 Credits]	x	x
LCHM1253	Elements of crystallography	Yaroslav Filinchuk	FR [q1] [30h+10h] [4 Credits]	x	x
LCHM1254	Elements of molecular spectroscopy	Sophie Hermans	FR [q2] [30h+20h] [4 Credits]	x	x

Elective courses complementary to the teaching focus

LSCI2330	Séminaire de recherche en didactique des sciences	Myriam De Kesel (coord.) Jim Plumat	FR [q2] [15h+30h] [5 Credits]	x	x

				Year 1	Year 2
LAGRE2310	Micro-teaching exercises	Marc Blondeau Pascalia Papadimitriou	FR [q1 or q2] [15h] [2 Credits]	x	x
LAGRE2221	Learning and teaching with new technologies	Sandrine Decamps	FR [q1] [15h+15h] [2 Credits]	x	x
LGEO2330	Séminaire de didactique de la géographie		FR [q2] [0h+30h] [5 Credits] △	x	x
LMAT2330	Seminar on the teaching of mathematics	Enrico Vitale	FR [q1+q2] [15h+30h] [4 Credits]	x	x

Optional courses :

These credits are not counted within the 120 required credits.

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

INEO (EX-CPME), INTERDISCIPLINARY TRAINING IN ENTREPRENEURSHIP

- Mandatory
- Optional
- Not offered in 2023-2024
- Not offered in 2023-2024 but offered the following year
- Offered in 2023-2024 but not the following year
- Not offered in 2023-2024 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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

This option lasts 2 years and is integrated into more than 30 Masters programs in 9 faculties/schools of the UCLouvain. The choice of this option implies the realization of an interfaculty dissertation (in team) on a business creation project. Access is limited to students selected on the basis of a portfolio. More info. via https://uclouvain.be/en/study/ineo

Admission to this CPME option is subject to selection, please submit your application in due time https://uclouvain.be/fr/etudier/ineo/admission.html

Courses in this option cannot be taken individually outside of the option.

From 20 to 25credit(s)

Content:

				Year 1	Year 2
LINEO2021	Financer son projet *Ce cours est obligatoire pour les étudiants qui n'ont pas de prérequis en gestion (les étudiants qui ont suivi la mineure en gestion, ou la mineure en esprit d'entreprendre sont dispensés de ce cours).*	Yves De Rongé Philippe Grégoire (compensates Yves De Rongé)	[q2] [30h+15h] [5 Credits]	x	
LINEO2001	Théorie de l'entrepreneuriat	Frank Janssen	[q1] [30h+20h] [5 Credits]	x	
LINEO2002	Aspects juridiques, économiques et managériaux de la création d'entreprise	Yves De Cordt Marine Falize	[q1] [30h+15h] [5 Credits]	x	
LINEO2004	Séminaire d'approfondissement en entrepreneuriat	Frank Janssen	[q2] [30h+15h] [5 Credits]	x	
LINEO2003	Plan d'affaires et étapes-clefs de la création d'entreprise	Frank Janssen	[q2] [30h+15h] [5 Credits]		x

Supplementary classes

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

- Mandatory
- Optional
- Not offered in 2023-2024
- Not offered in 2023-2024 but offered the following year
- Offered in 2023-2024 but not the following year
- Not offered in 2023-2024 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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

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

Additional courses

Students coming from a bachelor degree different from the bachelor degree in chemical sciences in FWB and admitted into this cursus (see admission conditions) may be required to follow additional courses to complete their initial training. As an indication, here is a list of courses that could be added.

LBIO1237	Immunology : basis and applications in biology	Jean-Paul Dehoux	FR [q1] [25h+15h] [3 Credits]
LBIO1322	Integrated tutorials in biochemistry and molecular biology	Bernard Hallet Patrice Soumillion	FR [q2] [5h+45h] [4 Credits]
LBIO1333	Integrated animal biology: circulation, respiration, digestion and excretion	Patrick Dumont Françoise Gofflot Françoise Gofflot (compensates René Rezsohazy)	FR [q2] [30h+10h] [3 Credits]
LBIO1342	Plant morphogenesis	François Chaumont	FR [q2] [20h+15h] [3 Credits]
LBIO1240	Plant physiology	Xavier Draye Stanley Lutts	FR [q1] [40h+15h] [4 Credits]
LBIO1332	Animal embryology and development genetics	Françoise Gofflot René Rezsohazy	FR [q1] [30h+10h] [3 Credits]
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LCHM1111B	General chemistry	Benjamin Elias Alexandru Vlad	FR [q1] [45h+45h] [8 Credits]
LCHM1331	Inorganic chemistry I	Sophie Hermans	FR [q1] [37.5h+7.5h] [4 Credits]
LCHM1321A	Analytical chimistry	Christine Dupont Yann Garcia	FR [q1] [30h] [3 Credits]
LCHM1361	Introduction to polymer chemistry	Jean-François Gohy	FR [q2] [22.5h] [3 Credits]
LCHM1253	Elements of crystallography	Yaroslav Filinchuk	FR [q1] [30h+10h] [4 Credits]
LCHM1254	Elements of molecular spectroscopy	Sophie Hermans	FR [q2] [30h+20h] [4 Credits]

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 the skills expected of every graduate on completion of the programme. Course unit descriptions specify targeted learning outcomes, as well as the unit's contribution to reference framework of learning outcomes.

BBMC2M - Information

Access Requirements

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

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

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

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

SUMMARY

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

Specific access requirements

Since this program is taught in English, no prior proof of French language proficiency is required, except for students wishing to access the didactic program who must provide proof of a CEFR level C1 proficiency.

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

University Bachelors

Diploma	Special Requirements	Access	Remarks
UCLouvain Bachelors			
BIOL1BA - Bachelier en sciences biologiques		Direct access	
CHIM1BA - Bachelier en sciences chimiques		Access based on application	
		Direct access	
		Access with additional training	
SBIM1BA		Direct access	
Titre inconnu:lmed1ba		Direct access	Le choix des cours de 1ère année de master pourrait être adapté en fonction de la formation antérieure.
Titre inconnu:lvete1ba		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
Foreign Bachelors	
	Access based on application

Non university Bachelors

> Find out more about links to the university

Diploma	Access	Remarks
BA - technologue de laboratoire médical - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation agro-industries et biotechnologies - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation agronomie des régions chaudes - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation environnement - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation forêt et nature - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation techniques et gestion agricoles - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation techniques et gestion horticoles - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation technologie animalière - crédits supplémentaires entre 45 et 60 BA en chimie, orientation biochimie - crédits supplémentaires entre 45 et 60 BA en chimie, orientation biotechnologie - crédits supplémentaires entre 45 et 60 BA en chimie, orientation chimie appliquée - crédits supplémentaires entre 45 et 60 BA en chimie, orientation environnement - crédits supplémentaires entre 45 et 60	Les enseignements supplémentaires éventuels peuvent être consultés dans 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

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

Access based on application

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

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

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

Specific professional rules

Successful completion of the master's course with **teaching focus** leads to the award of the master's degree with teaching focus and the title of secondary school education specialist.

The Réforme des Titres et Fonctions ("Titles and Functions Reform"), in force since 1 September 2016, is intended to harmonise the titles, functions and pay scales of basic and secondary education professionals in French Community of Belgium networks.

It also aims to guarantee the priority of preferred titles over minimum titles and to establish a regime for titles in short supply.

AESS holders can learn which functions they can carry out and the pay scales from which they can benefit by clicking here.

The university cannot be held responsible for any problems that students may encounter at a later date with a view to a teaching appointment 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 Biolog y** 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 â€˜rotationâ€™ 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
Website	https://uclouvain.be/fr/facultes/sc/biol

Academic supervisor: Pierre Morsomme (https://uclouvain.be/repertoires/pierre.morsomme)

Jury

- President: Henri Batoko (https://uclouvain.be/repertoires/henri.batoko)
- Secretary and Study advisor: Charles Hachez (https://uclouvain.be/repertoires/charles.hachez)

Useful Contact(s)

- Administrative manager for the student's annual program: Catherine De Roy (https://uclouvain.be/repertoires/catherine.deroy)