

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**

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 systems.

- 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	2
● LBBMC2101	Structural and functional biochemistry	Pierre Morsomme Patrice Soumilion	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 Soumilion	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 Rezsöházy	FR [q2] [15h+15h] [2 Credits] 🌐	X	X
✘ LTHEO2840	Science and Christian faith	Benoît Bourguine Paulo Jorge Dos Santos Rodrigues			

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 \[30.038s\(4 Tf8.899\[\(9 TJTf 1 0 098 145.014008 cm -1 0 0 - Tf8.899\[\(0 0 m Tf8.899\[\(0 | 340.1589](#)

- 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
 - △
-

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 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
------------	---	------------------------------------

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 \(objectives, methods, evaluation...\)](#)

				Year	
				1	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		

OPTIONS

				Year	
				1	2
⌘ LBBMC2206	Internship - Part 2	Bernard Hallet René Rezsöházy	EN [q2] [10h+10h] [10 Credits] 🌐	x	x
⌘ LBRTE2201	Human and environmental toxicology	Cathy Debier	EN [q1] [30h+7.5h] [4 Credits] 🌐 > <i>French-friendly</i>	x	x
⌘ LBBMC2204	Cellular and molecular pharmacology - basic concepts	Melissa Page	EN [q1] [30h] [3 Credits] 🌐	x	x
⌘ LBBMC2214	Molecular and cellular pharmacology seminar				

				Year	
				1	2
⌘ LAGRE2310	Micro-teaching exercises	Marc Blondeau Pascalia Papadimitriou	EB [q1 or q2] [15h] [2 Credits] 🌐	x	x
⌘ LAGRE2221	Learning and teaching with new technologies	Sandrine Decamps	EB [q1] [15h+15h] [2 Credits] 🌐	x	x
⌘ LGEO2330	Séminaire de didactique de la géographie		EB [q2] [0h+30h] [5 Credits] Δ 🌐	x	x
⌘ LMAT2330	Seminar on the teaching of mathematics	Enrico Vitale	EB [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.)	EB [q1+q2] [15h+45h] [5 Credits] 🌐	x	x
⌘ LSST1002M	Information and critical thinking - MOOC	Myriam De Kesel Jean-François Rees	EB [q2] [30h+15h] [3 Credits] 🌐	x	

o 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

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 higher education landscape and the academic organisation of courses.

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

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



Bachelors of the Dutch speaking Community of Belgium	
Bachelor in biologie	Access based on application
Bachelors in de biochemie en de biotechnologie	Access based on application
Bachelor in biologie	
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	Les enseignements supplémentaires éventuels peuvent être consultés dans le module complémentaire .	Type court
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		

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

