



The version you're consulting is not definitive. This programme still may change. The final version will be published on 1th June.

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 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.

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

1. conceive the fundamental processes governing the structure, functioning and evolution of living cells and their molecular components in microorganisms, plants and animals

1.1 demonstrate mastery of factual knowledge on the main themes of biochemistry and molecular and cellular biology. This includes in particular:

- the organization of genomes and their evolution
- signaling and cellular communication pathways
- molecular mechanisms of gene regulation
- the molecular mechanisms underlying protein function
- the mechanisms of proliferation, differentiation and cell death
- the complexity and diversity of life at the cellular and molecular level

1.2 describe, explain, synthesize and discuss the structure and function of living cells and their molecular components.

2. creatively resolve the issues and challenges posed by modern biology from a fundamental and applied perspective

2.1 integrate and articulate theoretical concepts to understand various issues ranging from the molecule to the cell

2.2 use and apply these concepts with a view to the exploitation of living cells and their molecular components for biotechnological purposes.

3. autonomously implement a scientific approach to answer a new question in a field, and/or at the interface of several fields, of biology

3.1 formulate a scientific question, formulate hypotheses, program and carry out appropriate experiments, analyze and interpret the results, in order to objectify and conclude

3.2 mobilize technical know-how in order to carry out experiments with scientific rigor.

4. communicate and interact with ease on general or specialized scientific topics in French and English

4.1 master and use formal presentation techniques (poster, slideshow, etc.)

4.2 structure, write and present scientific ideas and concepts to specialists and non-specialists alike

4.3 argue and justify hypotheses and data in order to defend them before an audience of scientific professionals

4.4 read, understand, transmit and discuss scientific data in English

5. learn and act autonomously from a collaborative perspective

5.1 acquire and evaluate new scientific or technical skills

5.2 share their skills and expertise as an active member within a scientific team

5.3 acquire the ability to adapt quickly, independently and effectively to other professional environments

6. demonstrate critical awareness of knowledge in a field and at the interface of several fields

6.1 critically analyze the scientific literature

6.2 develop a personal opinion through attentive listening and actively contribute to discussions within the framework of a scientific seminar

6.3 express constructive criticism and take an active part in a scientific and societal debate

7. understand ethical questions in life sciences

7.1 critically put into perspective the impact of science and technology on the evolution of societies

7.2 evaluate the ethical and societal issues of new biotechnologies and experimental practices in biology, involving, among other things, animal experimentation

7.3 recognize scientific fraud and plagiarism as unacceptable behavior in science

8. if he chooses the In-depth goal, enrich his knowledge, perfect his training in the experimental approach, technologies and written and oral scientific communication with a view to a career in research

8.1 demonstrate experience acquired through practical training on targeted scientific questions within host laboratories in different universities in the Wallonia-Brussels federation

8.2 use the skills acquired during the Master's degree in a new and supportive environment within a national or international research institution

9. if he chooses the Specialized purpose, enrich his knowledge in the field of biotechnologies and confront the reality of the company

9.1 demonstrate the acquisition of cutting-edge methodological and technological approaches in relation to entrepreneurial practices

9.2 use the skills acquired during the Master's degree in a new and promising environment within a company in the broad sense, whether it is a laboratory in an industry in the pharmaceutical sector, the biotechnology sector, or a consultancy organization, a management or research programming office

10. if he chooses the Didactic aim, mobilize the necessary skills to effectively begin the profession of upper secondary teaching, in biology, and be able to progress positively there.

10.1 intervene in a school context, in partnership with different stakeholders.

10.2 teach in authentic and varied situations.

10.3 exercise a reflective outlook and project oneself into a logic of continuous development.

--> For more details, consult the Aggregation of upper secondary education (biological sciences).

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 \(INEO\)](#) 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 2024-2025
- Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 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		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	Charles Pence Peter Verdée	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)		FR [q2] [15h+15h] [2 Credits] 🌐	X	X
✘ LTHEO2840	Science and Christian faith	Benoît Bourguine 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-2024-bbmc2m-lbbmc200a]
- > [Teaching Focus](#) [en-prog-2024-bbmc2m-lbbmc200d]
- > [Professional Focus : Biotechnology](#) [en-prog-2024-bbmc2m-lbbmc200s]

RESEARCH FOCUS [30.0]

- Mandatory
- ✘ Optional
- △ Not offered in 2024-2025
- ⊙ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 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

o Content:

○ LBBMC2205	Research internship - Part 1	Bernard Hallet	EN [q2] [25h+40h] [20 Credits] 🌐		x
○ LBBMC2203	Research Training Seminar		EN [q1+q2] [40h+40h] [5 Credits] 🌐		x

o 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 2024-2025
- ⊙ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 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...)

o Content:

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)		FR [q1+q2] [15h+40h] [7 Credits] 🌐	X	X
○ LSCI2320	Didactics and epistemology of science		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 Véronique Lemaire	FR [q1+q2] [37.5h] [3 Credits] 🌐	X	X

o Une UE parmi les quatre suivantes (4 credits)

⌘ LCHM2340	Didactics and epistemology of chemistry		FR [q1+q2] [37.5h] [4 Credits] 🌐	X	X
⌘ LPHYS2471	Didactics and Epistemology of Physics		FR [q1+q2] [37.5h] [4 Credits] 🌐	X	X
⌘ LMAT2320A	Didactique et épistémologie de la mathématique (en ce compris le stage d'écoute)		FR [q1+q2] [37.5h+10h] [4 Credits] 🌐	X	X
⌘ LGEO2320A	Didactique et épistémologie de la géographie (en ce compris le stage d'écoute)		FR [q1] [37.5h+10h] [4 Credits] 🌐	X	X

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

○ LAGRE2400	See specifications in french	Xavier Delgrange Hervé Pourtois (coord.)	FR [q2] [20h] [2 Credits] 🌐	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 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)		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)		FR [q2] [22.5h+25h] [4 Credits] 🌐		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 credits)

Choisir 1 des activités suivantes.

⌘ LAGRE2020P	Comprendre l'adolescent en situation scolaire, Gérer la relation interpersonnelle et animer le groupe classe.		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.		FR [q2] [22.5h+22.5h] [4 Credits] 🌐		X

PROFESSIONAL FOCUS : BIOTECHNOLOGY [30.0]

- Mandatory
- ⊗ Optional
- △ Not offered in 2024-2025
- ⊖ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 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

o Content:

○ LBBMC2215	Internship in a company	René Rezsóhazy	EN [q2] [25h+40h] [20 Credits] 🌐		X
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o 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 Dufréne	FR [q2] [30h] [3 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		EN [q2] [22.5h+7.5h] [3 Credits] 🌐 > French-friendly		X
⊗ LCHM2280	Industrial chemistry		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		FR [q1] [30h] [3 Credits] 🌐		X
⊗ LBRAL2201B	Food Technology (procédés biotechnologies)		EN [q2] [] [1 Credits] 🌐 > French-friendly	X	X
⊗ LBRAL2201C	Food Technology: transformations des produits végétaux et animaux		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		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		EN [q2] [30h] [5 Credits] 🌐	X	X
⊗ LBBMC2213	Training workshop for research in companies		EN [] [] [5 Credits] △ 🌐	X	X
⊗ LBRAI2208	Firms and Markets : Strategic Analysis	Frédéric Gaspart	EN [q1] [30h] [4 Credits] 🌐 > French-friendly	X	X

OPTIONS

- > [Elective courses](#) [en-prog-2024-bbmc2m-lbbmc300o]
 > [INEO, Interdisciplinary training in entrepreneurship](#) [en-prog-2024-bbmc2m-lboe955o]

ELECTIVE COURSES [36.0]

- Mandatory
- ⊗ Optional
- △ Not offered in 2024-2025
- ⊖ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 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

o Content:

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

⊗ Deepening module in biochemistry

○ LBBMC2104	Animal physiological biochemistry		EN [q2] [36h+18h] [5 Credits] 🌐	X	
○ LBBMC2105	Protein engineering and directed evolution		EN [q2] [36h+18h] [5 Credits] 🌐	X	

⊗ Deepening module in microbiology

○ LBBMC2106	Molecular genetics and microbial genomics		EN [q2] [36h+18h] [5 Credits] 🌐	X	
○ LBBMC2107	Microbial cellular physiology		EN [q2] [36h+18h] [5 Credits] 🌐	X	

⊗ Deepening module in plant biology

○ LBBMC2108	Molecular genetics and plant genomics		EN [q2] [36h+18h] [5 Credits] 🌐	X	
○ LBBMC2109	Plant cell physiology		EN [q2] [36h+18h] [5 Credits] 🌐	X	

⊗ Deepening module in animal and human biology

○ LBBMC2110	Animal and human molecular genetics and genomics		EN [q2] [36h+18h] [5 Credits] 🌐	X	
○ LBBMC2111	Animal and human cellular physiology		EN [q2] [36h+18h] [5 Credits] 🌐	X	

o Other elective courses

⊗ Other electives courses

⊗ 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] 🌐 > French-friendly	X	X
⊗ LBBMC2204	Cellular and molecular pharmacology - basic concepts		EN [q1] [30h] [3 Credits] 🌐	X	X
⊗ LBBMC2214	Molecular and cellular pharmacology seminar		EN [q2] [24h] [2 Credits] 🌐	X	X
⊗ LDATS2360	Seminar in data management: basic		FR [q1] [15h+10h] [5 Credits] 🌐	X	X

⊗ One of the other technical courses

⊗ LBIRC2101	Biochemical analysis	François Chaumont Pierre Morsomme (coord.)	EN [q1] [22.5h+30h] [4 Credits] 🌐 > English-friendly	X	X
⊗ LBRMC2101	Genetic engineering	François Chaumont (coord.) Charles Hachez	EN [q1] [37.5h+15h] [5 Credits] 🌐 > English-friendly	X	X

				Year	
				1	2
⌘ 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 René Rezsöházy	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	Molecular Biology of Development	Françoise Gofflot René Rezsöházy	FR [q1] [30h+10h] [3 Credits] 	x	x
⌘ LBIO1236	Integrated animal biology : coordination, perception and locomotion	Patrick Dumont Françoise Gofflot Bernard Knoops	FR [q2] [40h+10h] [4 Credits] 	x	x
⌘ LCHM1111B	General chemistry		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 chemistry		FR [q1] [30h] [3 Credits] 	x	x
⌘ LCHM1361	Introduction to polymer chemistry		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		FR [q2] [15h+30h] [5 Credits] 	x	x
⌘ LAGRE2310	Micro-teaching exercises	Marc Blondeau Pascalia Papadimitriou	FR [q1 or q2] [15h] [2 Credits] 	x	x
⌘ LAGRE2221	Learning and teaching with new technologies		FR [q1] [15h+15h] [2 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	IngénieursSud		FR [q1+q2] [15h+45h] [5 Credits] 	x	x
⌘ LSST1002M	Information and critical thinking - MOOC		FR [q2] [30h+15h] [3 Credits] 	x	x

INEO, INTERDISCIPLINARY TRAINING IN ENTREPRENEURSHIP

- Mandatory
- ⊗ Optional
- △ Not offered in 2024-2025
- ⊙ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 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)

Year

1 2

Content:

⊗ 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).		(FR) [q2] [30h+15h] [5 Credits] ⊗	X	
○ LINEO2001	Théorie de l'entrepreneuriat	Frank Janssen	(FR) [q1] [30h+20h] [5 Credits] ⊗	X	
○ LINEO2002	Aspects juridiques, économiques et managériaux de la création d'entreprise	Yves De Cordt	(FR) [q1] [30h+15h] [5 Credits] ⊗	X	
○ LINEO2004	Séminaire d'approfondissement en entrepreneuriat	Frank Janssen	(FR) [q2] [30h+15h] [5 Credits] ⊗	X	
○ LINEO2003	Plan d'affaires et étapes-clefs de la création d'entreprise	Frank Janssen	(FR) [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 2024-2025
- ⊙ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 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's degree in Biological Sciences, in agreement with the academic advisor, and based on the student's previous background and training project.

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	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 René Rezsóhazy	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	Molecular Biology of Development	Françoise Gofflot René Rezsóhazy	FR [q1] [30h+10h] [3 Credits] 🌐
⌘ LBIO1236	Integrated animal biology : coordination, perception and locomotion	Patrick Dumont Françoise Gofflot Bernard Knoops	FR [q2] [40h+10h] [4 Credits] 🌐
⌘ LCHM1111B	General chemistry		FR [q1] [45h+45h] [8 Credits] 🌐
⌘ LCHM1331	Inorganic chemistry I	Sophie Hermans	FR [q1] [37.5h+7.5h] [4 Credits] 🌐
⌘ LCHM1321A	Analytical chemistry		FR [q1] [30h] [3 Credits] 🌐
⌘ LCHM1361	Introduction to polymer chemistry		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 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.

If the candidate lacks any prerequisites, additional refresher courses may be required. These will be taught in French. If there is no proof of sufficient knowledge of French, the application will not be considered.

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.

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	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

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 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
Website	

Academic supervisor: [Pierre Morsomme](#)

Jury

- President: [Henri Batoko](#)
- Secretary and Study advisor: [Charles Hachez](#)

Useful Contact(s)

- Administrative manager for the student's annual program: [Catherine De Roy](#)

