



## BIOL1BA - Introduction

### Introduction

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## BIOL1BA - Teaching profile

### Learning outcomes

The programme aims at the acquisition of :

- General competence and skills in the principal disciplines of the Exact Sciences (Biology, Chemistry, Mathematics and Physics) and a deepening of the basic competence and skills in the different sectors of Biology
- The capacity to gain knowledge, such as through self-study, through rigorous application of the first stages of a general scientific approach (observation, analysis, summaries, criticism)
- Expertise in the written and oral presentation of scientific texts
- Transversal competence and skills ( Human Sciences, Computing, Management, English, Written and Oral Communication ), with a view to increasing both the general nature of the training and the chance of getting a foothold on the job market upon completion of the studies.

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

1. Maitriser et utiliser des savoirs dans les domaines de la biologie et dans d'autres domaines de connaissances

1.1 Démontrer une compréhension des principes généraux de la vie permettant de comprendre des questions et résoudre des situations qui relèvent de la biologie :

- la structure des systèmes biologiques ;
- le fonctionnement des organismes vivants, incluant les mécanismes génétiques ;
- la diversité des organismes vivants et l'origine de cette diversité ;
- les liens existant entre le fonctionnement d'un organisme et son environnement.

1.2 Intégrer de façon critique des savoirs d'autres domaines de connaissances à la biologie (sciences de la terre, physique, chimie, mathématiques, la philosophie) afin de favoriser une approche interdisciplinaire.

1.3 Synthétiser et résumer sous différentes formes (textuelle, numérique, verbale et graphique) de manière critique l'information issue de la littérature scientifique.

1.4 Traiter des questions biologiques impliquant des savoirs d'autres disciplines issues des sciences exactes et humaines de façon à développer une vision large notamment en lien avec des préoccupations sociétales.

2. Résoudre des problèmes à composante biologique

2.1 Rechercher efficacement de l'information scientifique pertinente dans des bases de données bibliographiques en ligne.

2.2 Respecter des consignes et mobiliser un savoir-faire expérimental de base (techniques d'observation et d'analyse) en sciences biologiques

2.3 Réaliser des observations avec précision dans le cadre d'activités sur le terrain et en laboratoire

2.4 Entreprendre des expériences sur le vivant de manière sécurisée en respectant des règles sanitaires et de sécurité.

3. Appliquer une démarche scientifique, découvrir par soi-même des connaissances et exercer un esprit critique

3.1 Concevoir et mettre en œuvre des expériences et observations en lien avec des hypothèses et questions scientifiques au moyen des méthodologies et techniques appropriées, en laboratoire et sur le terrain.

3.2 Rapporter et interpréter des résultats et situations de manière rigoureuse à l'aide d'informations scientifiques déjà disponibles et d'outils quantitatifs et qualitatifs appropriés, en faisant abstraction de ses idées préconçues.

3.3 Formuler des conclusions et définir les perspectives de son travail.

3.4 Exercer un esprit critique quant à la qualité des sources, l'interprétation des faits expérimentaux et la démarche suivie et, le cas échéant, proposer des améliorations.

4. Communiquer efficacement et de manière adaptée au public en français et en anglais

4.1 Comprendre et utiliser des articles, sites de la toile et autres ouvrages scientifiques en français et en anglais (anglais :

- 5.2 Gérer sa formation : développer des objectifs pour sa formation future en master et formuler progressivement un projet professionnel, établir le choix de mineure, de cours, de stages, le cas échéant de séjour en programme d'échange en conformité avec ces objectifs et en fonction de contraintes externes.
- 5.3 Exercer ses compétences et utiliser ses connaissances dans des situations d'apprentissage variées et nouvelles et tirer parti de ces situations nouvelles.
- 5.4 Identifier les applications des savoirs biologiques à travers l'observation et la participation aux activités de professionnels dans le domaine de la biologie par le biais de stages.
6. Travailler en équipe sur des questions multidisciplinaires centrées sur la biologie et ainsi développer des qualités relationnelles
- 6.1 Identifier les objectifs et responsabilités individuels et collectifs en tenant compte des avantages et des contraintes d'une action collective et organiser et réaliser le travail en conformité avec ces rôles, en particulier dans le cadre d'études pratiques, de laboratoire et / ou sur le terrain.
- 6.2 Partager les savoirs et les méthodes, favoriser la collaboration et l'entraide.
- 6.3 Reconnaître et respecter les points de vue et opinions des membres de l'équipe, établir des compromis.
- 6.4 Evaluer ses performances en tant que membre d'une équipe ainsi que les performances des autres membres de l'équipe de la façon la plus objective possible.
- 6.5 Lors de stages, s'intégrer dans une équipe professionnelle et collaborer avec ses membres avec modestie, ouverture d'esprit et curiosité.
7. Agir en scientifique conscient de lui-même et du monde, responsable et respectueux de son environnement
- 7.1 Référencer ses travaux conformément aux standards du monde scientifique et sans plagiat.
- 7.2 Etre conscient de l'impact environnemental de certaines activités d'études du baccalauréat en sciences biologiques et respecter des règles et des lois visant à en minimiser l'importance.
- 7.3 Mener une réflexion personnelle et critique sur sa formation, sa façon de travailler, ses objectifs, sa motivation.
- 7.4 Etre conscient de l'impact sociétal des développements scientifiques, réfléchir et débattre sur les controverses actuelles dans le domaine des sciences biologiques, entre autres celles qui touchent à la qualité de la vie et l'action de l'homme sur son environnement.

## Programme structure

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The programme consists of a major of 150 credits, completed :

- either by blocks of options orientated towards the main domains of Biology (30 credits). These course blocks are taken in the 3rd year of the bachelor's programme
- or by a minor with studies more directed towards Chemistry (30 credits) ; this minor in Chemistry begins in the 2nd year of the bachelor's programme with a prerequisite course for the same minor in the third year of the bachelor's programme
- or by another minor selected from the University programme in concertation with the study advisor. This minor will be taken in its entirety (30 credits) in the 3rd year of the bachelor studies.

The progressive orientation of the programme starts right from the first year of polyvalent studies. The first year programme aims at the acquisition of basic knowledge in Sciences, (Mathematics, Physics, Chemistry, Biology and Earth Sciences).

At the end of the first year, the students may re-orientate their studies, without the need for any complements, to the second year of the bachelor's of Biochemistry and of Bioengineering Science and also to that of Geographical Science, subject to an extra course in Geography (GEO 1111).

The second year is composed of a common pool of subjects totalling 54 credits, to which are added, in accordance with the student's personal choice, a project of 4 credits and a course in Philosophy of 2 credits, or a minor in Chemistry of 6 credits. The third year again takes the form of a common pool of subjects (30 credits) and options in the form of personally selected blocks of courses (30 credits) or a minor. The programme groups different subjects together with the aim of breaking down the boundaries of the different disciplines. This interdisciplinary approach is also fostered in the context of the individual or group projects. Several courses are based on self-study. A part of the evaluation takes the form of ongoing assessment which also includes the wide number of seminars offered.

Language courses accompany the programme and are aimed at mastering scientific English.

Principal Subjects

The major in Biology, totalling 150 credits, contains the following :

Philosophy (30) (2 credits)

Mathematics and Biostatistics (20 credits)

- General Mathematics I (75-60) (11 credits)
- Statistics in Natural Sciences (30-30) (5 credits)
- Biometrics (25-25) (4 credits)

These courses are followed in the order indicated.

Physics and Biophysics (18 credits)

- General Physics I (75-75) (12 credits)
- Biophysics (45-30) (6 credits)

These courses are followed in the order indicated

Earth Sciences (45-30) (6 credits)

Chemistry - Biochemistry (25 credits)

- General Chemistry (60-60) (10 credits)
- Organic Chemistry I (30-30) (5 credits)
- Bio-organic Chemistry (30-10) (3 credits)
- Elements of Biochemistry (30-24) (4 credits)
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## Filtered programme by subject

- 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 3

### o Majeure (150 credits)

#### o Mathématiques et statistiques (19 credits)

○ LMAT1101	Mathematics 1	Pedro Dos Santos Santana Forte Vaz	FR [q1] [30h+20h] [4 Credits] 🌐	X		
○ LMAT1102	Mathematics 2	Augusto Ponce	FR [q2] [30h+30h] [4 Credits] 🌐	X		
○ LBIO1282	Management and exploration of biological data	Renate Wesselingh	FR [q1] [20h+15h] [2 Credits] 🌐		X	
○ LBIO1283	Statistical principles and biological data analysis	Nicolas Schtickzelle	FR [q2] [30h+40h] [4 Credits] 🌐		X	
○ LBIO1383	Statistical methods applied to biology	Anouar El Ghouch	FR [q2] [30h+40h] [5 Credits] 🌐			X

#### o Physique et biophysique (10 credits)

○ LPHY1101	Physics 1	Michel Crucifix Thierry Fichet	FR [q1] [30h+40h] [6 Credits] 🌐	X		
○ LPHY1103	Additional physics	Gabriel Dias de Carvalho Junior Marco Drewes	FR [q2] [40h+10h] [4 Credits] 🌐		X	

#### o Sciences de la terre (5 credits)

○ LBIR1130	Introduction to Earth sciences	Pierre Delmelle (coord.) Sophie Opfergelt	FR [q2] [30h+30h] [5 Credits] 🌐	X		
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#### o Chimie et biochimie (24 credits)

○ LCHM1111B	General chemistry	Benjamin Elias Alexandru Vlad	FR [q1] [45h+45h] [8 Credits] 🌐	X		
○ LCHM1141B	Organic chemistry	Benjamin Elias Charles-André Fustin	FR [q2] [30h+30h] [6 Credits] 🌐	X		
○ LCHM1242	Bio-organic chemistry	Benjamin Elias Patrice Soumillion	FR [q1] [30h+10h] [3 Credits] 🌐		X	
○ LCHM1271A	Elements of biochemistry	Patrice Soumillion	FR [q1] [30h+20h] [3 Credits] 🌐		X	
○ LCHM1371B	Metabolic biochemistry - lectures and lab	Melissa Page				

Year

1 2 3

## o Biologie cellulaire (2 credits)

○ LBIO1235	General cell physiology	Stanley Lutts Valérie Van der Eecken (compensates Jean-François Rees)	PS [q1] [15h+15h] [2 Credits]		x	
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## o Biologie végétale (12 credits)

	Plant physiology	Xavier Draye Stanley Lutts	PS [q1] [40h+15h] [4 Credits]		x	
○ LBIO1242	Angiosperm's development, reproduction and systematic	Stanley Lutts Muriel Quinet	PS [q2] [30h+15h] [3 Credits]		x	







## Course prerequisites

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The **table** below lists the activities (course units, or CUs) for which there are one or more prerequisites within the programme, i.e. the programme CU for which the learning outcomes must be certified and the corresponding credits awarded by the jury before registering for that CU.

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

### Prerequisites and student's annual programme

As the prerequisite is for CU registration purposes only, there are no prerequisites within a programme year. Prerequisites are defined between CUs of different years and therefore influence the order in which the student will be able to register for the programme's CUs.

In addition, when the jury validates a student's individual programme at the beginning of the year, it ensures its coherence, meaning that it may:

- require the student to combine registration in two separate CUs which it considers necessary from a pedagogical point of view.
- transform a prerequisite into a corequisite if the student is in the final year of a degree course.

For more information, please consult the [Academic Regulations and Procedures](#).

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### # Prerequisites list

**LANG1862** "[English: reading and listening comprehension of scientific texts](#)" has prerequisite(s) LANG1861

- LANG1861 - [English: reading and listening comprehension of scientific texts](#)

**LVETE1300** "[Integrated Seminars](#)" has prerequisite(s) LANG1861

- LANG1861 - [English: reading and listening comprehension of scientific texts](#)

## The programme's courses and learning outcomes

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For each UCLouvain training programme, a [reference framework of learning outcomes](#) specifies 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.

## Detailed programme per annual block

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### o Physique et biophysique

○ LPHY1101	Physics 1	Michel Crucifix Thierry Fichet	PS [q1] [30h +40h] [6 Credits]
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### o Sciences de la terre

○ LBIR1130	Introduction to Earth sciences	Pierre Delmelle (coord.) Sophie Opfergelt	PS [q2] [30h +30h] [5 Credits]
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### o Chimie et biochimie

○ LCHM1111B	General chemistry	Benjamin Elias Alexandru Vlad	PS [q1] [45h +45h] [8 Credits]
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○ LCHM1141B	Organic chemistry	Benjamin Elias Charles-André Fustin	PS [q2] [30h +30h] [6 Credits]
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### o Biologie générale

○ LBIO1110	Life : diversity and evolution	Patrick Dumont	PS [q1] [30h +10h] [4 Credits]
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○ LBIO1111	Cell and molecular biology	Patrick Dumont Charles Hachez	PS [q1] [30h +20h] [5 Credits]
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○ LBIO1112	Organism biology : plants and animals	Muriel Quinet	
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**BIOL1BA - 2ND ANNUAL UNIT**

- 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 Majeure****o Mathématiques et statistiques**

○ LBIO1282	Management and exploration of biological data	Renate Wesselingh	FR [q1] [20h +15h] [2 Credits] 🌐
○ LBIO1283	Statistical principles and biological data analysis	Nicolas Schtickzelle	FR [q2] [30h +40h] [4 Credits] 🌐

**o Physique et biophysique**

○ LPHY1103	Additional physics	Gabriel Dias de Carvalho Junior Marco Drewes	FR [q2] [40h +10h] [4 Credits] 🌐
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**o Chimie et biochimie**

○ LCHM1242	Bio-organic chemistry	Benjamin Elias Patrice Soumillion	FR [q1] [30h +10h] [3 Credits] 🌐
○ LCHM1271A	Elements of biochemistry	Patrice Soumillion	FR [q1] [30h +20h] [3 Credits] 🌐

**o Biologie cellulaire**

○ LBIO1235	General cell physiology	Stanley Lutts Valérie Van der Eecken (compensates Jean-François Rees)	FR [q1] [15h +15h] [2 Credits] 🌐
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**o Biologie végétale**

○ LBIO1240	Plant physiology	Xavier Draye Stanley Lutts	
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● LBIO1236	Integrated animal biology : coordination, perception and locomotion	Frédéric Clotman (compensates Bernard Knoops) Patrick Dumont Patrick Dumont (compensates Bernard Knoops) Françoise Gofflot	18
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## BIOL1BA - 3RD ANNUAL UNIT

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- 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, ...)

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

## o Majeure

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## BIOL1BA - Information

### Access Requirements

*Decree of 7 November 2013 defining the landscape of higher education and the academic organization of studies.*

*The admission requirements must be met prior to enrolment in the University.*

***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](#)
- [Access based on validation of professional experience](#)
- [Special requirements to access some programmes](#)

### General access requirements

Except as otherwise provided by other specific legal provisions, admission to undergraduate courses leading to the award of a Bachelor's degree will be granted to students with one of the following qualifications :

1. A Certificate of Upper Secondary Education issued during or after the 1993-1994 academic year by an establishment offering full-time secondary education or an adult education centre in the French Community of Belgium and, as the case may be, approved if it was issued by an educational institution before 1 January 2008 or affixed with the seal of the French Community if it was issued after this date, or an equivalent certificate awarded by the Examination Board of the French Community during or after 1994;
2. A Certificate of Upper Secondary Education issued no later than the end of the 1992-1993 academic year, along with official documentation attesting to the student's ability to pursue higher education for students applying for a full-length undergraduate degree programme;
3. A diploma awarded by a higher education institution within the French Community that confers an academic degree issued under the above-mentioned Decree, or a diploma awarded by a university or institution dispensing full-time higher education in accordance with earlier legislation;
4. A higher education certificate or diploma awarded by an adult education centre;
5. A pass certificate for one of the [entrance examinations](#) organized by higher education institutions or by an examination board of the French Community; this document gives admission to studies in the sectors, fields or programmes indicated therein;
6. A diploma, certificate of studies or other qualification similar to those mentioned above, issued by the Flemish Community of Belgium, the German Community of Belgium or the Royal Military Academy;
7. A diploma, certificate of studies or other qualification obtained abroad and deemed equivalent to the first four mentioned above by virtue of a law, decree, European directive or international convention;

#### Note:

Requests for equivalence must be submitted to the Equivalence department ([Service des équivalences](#)) of the Ministry of Higher Education and Scientific Research of the French Community of Belgium in compliance with the official deadline.

The following two qualifications are automatically deemed equivalent to the Certificate of Upper Secondary Education (Certificat d'enseignement secondaire supérieur – CESS):

- European Baccalaureate issued by the Board of Governors of a European School,
- International Baccalaureate issued by the International Baccalaureate Office in Geneva.

8. Official documentation attesting to a student's ability to pursue higher education (diplôme d'aptitude à accéder i49 GI(d'enseigne...)) TJ 1 0 0 -1 0633



- For any secondary school diploma **from a European Union country**, the admission request must contain the equivalence of your diploma or, at the very least, proof of the filing of the equivalence request with the Wallonia-Brussels Federation (French Community of Belgium). For any information relating to obtaining an equivalence, please refer to [the following site](#).
- For any secondary school diploma **from a country outside the European Union**, the admission application must contain the [equivalence of your diploma](#) issued by the Wallonia-Brussels Federation (French Community of Belgium). If you have a restrictive equivalence for the programme of your choice, in addition of it, you **must** have either the [DAES](#) or a certificate of successful completion of the [examination giving access to 1<sup>st</sup> cycle studies](#) when you submit your application

## Access based on validation of professional experience

Admission to undergraduate studies on the basis of accreditation of knowledge and skills obtained through professional or personal experience (Accreditation of Prior Experience)

Subject to the general requirements laid down by the authorities of the higher education institution, with the aim of admission to the undergraduate programme, the examination boards accredit the knowledge and skills that students have obtained through their professional or personal experience.

This experience must correspond to at least five years of documented activity, with years spent in higher education being partially taken into account: 60 credits are deemed equivalent to one year of experience, with a maximum of two years being counted. At the end of an assessment procedure organized by the authorities of the higher education institution, the Examination Board will decide whether a student has sufficient skills and knowledge to successfully pursue undergraduate studies.

After this assessment, the Examination Board will determine the additional courses and possible exemptions constituting the supplementary requirements for the student's admission.

## Special requirements to access some programmes

- Admission to **undergraduate studies in engineering: civil engineering and architect**

Pass certificate for the [special entrance examination for undergraduate studies in engineering: civil engineering and architect](#).

Admission to these courses is always subject to students passing the special entrance examination. Contact the faculty office for the programme content and the examination arrangements.

- Admission to **undergraduate studies in veterinary medicine**

[Admission to undergraduate studies in veterinary medicine is governed by the Decree of 16 June 2006 regulating the number of students in certain higher education undergraduate courses \(non-residents\)](#).

- Admission to **undergraduate studies in physiotherapy and rehabilitation**

[Admission to undergraduate studies in physiotherapy and rehabilitation is governed by the Decree of 16 June 2006 regulating the number of students in certain higher education undergraduate courses \(non-residents\)](#).

- Admission to **undergraduate studies in psychology and education: speech and language therapy**

[Admission to undergraduate studies in psychology and education: speech and language therapy is governed by the Decree of 16 June 2006 regulating the number of students in certain higher education undergraduate courses \(non-residents\)](#).

- Admission to **undergraduate studies in medicine and dental science**

[Admission to undergraduate studies in medicine and dental science is governed by the Decree of 16 June 2006 regulating the number of students in certain higher education undergraduate courses \(non-residents\)](#).

Note: students wishing to enrol for a **Bachelor's degree in Medicine** or a **Bachelor's degree in dental science** must first sit an [aptitude test \(fr\)](#).



Postal address

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