



#### Programme mnemonic

BA-BIOL > Option *Charleroi* : BA-BIOLC

Exists also in > Option *Bruxelles* : BA-BIOLB

Studies level Bachelor

Learning language french

**Schedule** office hours

#### **Studies category / subcategory** Sciences and technics / Sciences

**Campus** Charleroi Ville Haute

## Programme objectives

- Acquiring the general scientific training (in Mathematics, Chemistry, Physics and Earth science) necessary for the study of Biology and that raise awareness of the students in all aspects of the progress of science.
- > Appropriating all the fundamental concepts of Biology and using them in new situations.
- > Acquiring the principles of scientific approach.
- > Acquiring an experimental training in the key disciplines of Biology.
- > Learning to master the peculiarities of scientific language and writing, and communicating to a target audience appropriately.
- > Awareness of societal issues of Biology and Science (values, moral, ethic, and legal issues).

This bachelor organised in Charleroi is designed for students who want to discover several scientific orientation in order to take a final decision for their study choice. Passing the 60 credits of the first year gives the access, without condition, to ULB and UMONS programs in:

- > Biologicl sciences ;
- > Chimical sciences ;
- > Biomedical sciences ;
- > Pharmaceutical sciences.

The student will then be able to obtain a Master in Biochemistry (Molecular and Cellular Biology), a Master in Biology of Organisms and Ecology, but also (depending on the reinforcement chosen) in Biomedical Sciences, Chemical Sciences, Pharmaceutical Sciences.

BA-BIOL | BA-BIOLC | 2023-2024

#### Programme's added value

The specificities of this POLYVALENT training is that it allows the student, at the end of his first block of bachelor, to choose between several sectors: Biology, Chemistry, Pharmacy, Biomedical Sciences. This training is therefore aimed at students who wish to discover several orientations before making their final choice. This first block will allow them unconditional access to the ULB or UMONS to the Biology, Chemistry, Pharmacy,

Biomedical Sciences courses, provided they pass the 60 credits making up BLOCK 1.

Practical laboratory training modules allow the student to carry out experiments and analyze the results.

Most molecular biology laboratories of the Faculty of Sciences of the ULB are grouped at the Biopark, a major centre of research and economic development located at Gosselies, near Charleroi. Many practical works are organized on this site. Shuttles are provided for student travel from Charleroi to Gosselies.

#### Teaching methods

The education are divided into:

- > Lectures (47%)
- > Exercises (17%)
- > Lab work (34%)
- > Field works (2%).

## Succeed in your studies

Choose

The information and guidance counsellors at the InfOR-études [https://www.ulb.be/en/studies-info-desk-1] service will help you choose your studies throughout the year.

#### Succeed

Take part in preparatory courses [https://www.ulb.be/en/studiesinfo-desk-1] or get help to succeed [https://www.ulb.be/en/ studies-info-desk-1], before or during your studies.

#### Get help

Apply for financial aid, look for accommodation or a student job, get support [https://www.ulb.be/fr/aides-services-et-accompagnement/aid-services-and-support-1] for your specific needs.

#### International/Openness

The training provided by the ULB and UMONS is internationally renowned. Thanks to the many agreements between the ULB and UMONS and institutions worldwide, students may pursue part of their studies abroad.

#### Job opportunities

By prolonging the BA by a MA in Biochemistry and Molecular and Cellular biology, Biology of organisms and Ecology, Biomedical sciences, or Bioinformatics and Modelling, students may pursue careers in the following areas:

- Industrial area (pharmaceutical, biotechnology, food processing, environmental technology): research and development, responsible for management, communication and/or publishing; scientific advisor for the sale of high-tech products;
- > Education: teaching in secondary schools and at higher nonuniversity level
- > Academia: teaching and research in universities and high schools;
- Public area (local, regional, federal, international) and nongovernmental organizations (NGO): business related to conservation, management and valorization of resources of biological diversity; to environment and sustainable development, quality control, biosafety, forensics, continuing education, dissemination of science;

After the Master, the student can continue his education by achieving a PhD, for which fellowships are available.

By prolonging the BA by a MA in Biochemistry and Molecular and Cellular Biology, Biology of organisms and Ecology, or Bioinformatics and Modelling, the student will address to one of the following careers:

- Research (in companies, universities, public research institutions)
- > Teacher (secondary schools, higher non-university level)
- Project manager for the conservation and management of natural resources, in NGOs, administrations and international institutions
- > Responsible for educational projects in the field of natural sciences in museums, ASBL, botanical gardens
- > Scientific advisor for the sale of products derived from biotechnology, pharmaceutical companies
- Responsible for the monitoring of analyses (clinical, quality control, biodiversity, bioremediation, biosecurity, forensic, companies in biotechnology and genomics...)
- > Instructor in in-service training activities
- Responsible for management, communication and/or in scientific publishing in a company (pharmaceutical, biotechnology, environmental technologies...) or a public institution
- > Etc....

# Contacts Info.charleroi@ulb.be Info.charleroi@ulb.be

Jury President Colin Van Dyck

Jury Secretary Sophie BONNOT



During the BA, you will receive a double competence:

- > a general education in Mathematics, Physics, Chemistry and Earth sciences;
- a specific education in Life sciences: Zoology, Botany, Ecology, Physiology, Genetics, Biochemistry, Cell biology, Molecular biology, Microbiology (viruses and bacteria).

Theprogram covers two main topics:

- Biology of organisms. It concerns with the knowledge and understanding of biological diversity, its evolution and its role in ecosystem functioning; therefore it studies the organization, physiology, and ecology of various types of organisms (animals, plants, fungi, micro-organisms);
- > Molecular biology. It deals with the understanding of biological phenomena through the study of molecules and cells constituting organisms. It also contributes to the study of pathologies (molecular causes and development of therapies).

The importance of these two topics is substantially equivalent (50/50%).

#### Bloc 1 BA-BIOLC BA-BIOL

#### **Enseignements obligatoires**

Ce programme est organisé en collaboration avec l'UMons (Université de Mons). Pour avoir accès au programme complet, veuillez consulter le site suivant : https://web.umons.ac.be/fs/fr/formations/sciences-biologiques-3/

BIOL-F1703 Biologie I | Sophie BONNOT (Coordinator) 🕑 6 credits [lecture: 40h, tutorial classes: 12h, practical work: 18h] 🛛 📋 first term 🛛 🔎 French BIOI - Y226 Projet interbloc en Biologie 1 | Sophie BONNOT (Coordinator), Jean-Christophe DE BISEAU D'HAUTEVILLE and Pierrick UZUREAU CHIM-F1704 Chimie organique | Jérémy ODENT 🕑 6 credits [lecture: 32h, tutorial classes: 20h, practical work: 20h] 🛛 📋 second term 🛛 💬 French CHIM-Y1708 Chimie générale I Damien Thiry 🕑 10 credits [lecture: 60h, tutorial classes: 25h, practical work: 35h] 🛛 🛗 first term 🛛 💬 French MATH-Y1706 Bases mathématiques pour disciplines scientifiques (avec remise à niveau) Colin Van Dyck (Coordinator) PHYS-Y1707 Physique I | Colin Van Dyck (Coordinator) 🕑 8 credits [lecture: 60h, tutorial classes: 10h, practical work: 20h] 🛛 📋 first term 🛛 💭 French

#### **Enseignements optionnels**

Les étudiants sont priés de choisir un module de 23 crédits parmi les 4 modules repris ci-dessous

#### Module chimie

- BMOL-Y110
   Biochimie
   Sabrina BOUSBATA (Coordinator)

   ③ 1 credit [lecture: 15h]

   <sup>(1)</sup>

   Second term

   \mathcal{Field}



MATH-Y200	Outils mathématiques des sciences de la vie (Partie A)   Colin Van Dyck (Coordinator) ② 7 credits [lecture: 42h, tutorial classes: 42h] 🛗 second term 🔎 French
PHYS-Y200	Physique II   Colin Van Dyck (Coordinator) ② 5 credits [lecture: 30h, tutorial classes: 10h, practical work: 20h] 📋 second term 🔗 French
	Module Pharma
BIOL-F1709	Biochimie       Sabrina BOUSBATA (Coordinator)         ③ 3 credits [lecture: 29h, practical work: 10h] <sup>(1)</sup> second term <sup>(2)</sup> French
BIOL-F1710	Botanique       Pierre Jacques MEERTS (Coordinator), Sophie BONNOT and Jason VLEMINCKX         ③ 5 credits [lecture: 30h, practical work: 32h]
BIOL-F1712	Anatomie / Embryologie   Eric BELLEFROID (Coordinator), Xavier CATTEAU, Maud MARTIN and Daniel RADBATA ② 4 credits [lecture: 42h, practical work: 14h] 🛗 second term 🜻 French
BIOL-F1717	Biologie II Sophie BONNOT (Coordinator) and Denis LAFONTAINE 3 5 credits [lecture: 30h, tutorial classes: 10h, field trips: 8h, personal assignments: 12h] 🖞 second term 🔎 French
CHIM-Y201	Chimie générale II ⊙ 6 credits [lecture: 35h, tutorial classes: 12h, practical work: 25h] 🛗 second term ᆽ French
	Module Biomed
BIOL-F1709	Biochimie   Sabrina BOUSBATA (Coordinator) ② 3 credits [lecture: 29h, practical work: 10h] 📋 second term 👂 French
BIOL-F1712	Anatomie / Embryologie   Eric BELLEFROID (Coordinator), Xavier CATTEAU, Maud MARTIN and Daniel RADBATA ② 4 credits [lecture: 42h, practical work: 14h] 📋 second term 🔉 French
BIOL-F1718	Biologie II Sophie BONNOT (Coordinator) and Denis LAFONTAINE ③ 5 credits [lecture: 30h, tutorial classes: 10h, field trips: 8h, personal assignments: 12h] 🗂 second term 🔎 French
CHIM-Y201	Chimie générale II ◎ 6 credits [lecture: 35h, tutorial classes: 12h, practical work: 25h]
PHYS-Y200	Physique II Colin Van Dyck (Coordinator) <ul> <li>5 credits [lecture: 30h, tutorial classes: 10h, practical work: 20h]</li> <li>second term</li> <li>French</li> </ul>
	Module Biologie
BIOL-F1710	Botanique   Pierre Jacques MEERTS (Coordinator), Sophie BONNOT and Jason VLEMINCKX ④ 4 credits [lecture: 30h, practical work: 20h] 🛗 second term 👂 French
BIOL-F1717	Biologie II Sophie BONNOT (Coordinator) and Denis LAFONTAINE <ul> <li>5 credits [lecture: 30h, tutorial classes: 10h, field trips: 8h, personal assignments: 12h]</li> <li>5 credits [lecture: 30h, tutorial classes: 10h, field trips: 8h, personal assignments: 12h]</li> </ul>
BMOL-Y110	Biochimie       Sabrina BOUSBATA (Coordinator)         ③ 1 credit [lecture: 15h] <sup>(1)</sup> second term                French
CHIM-Y201	Chimie générale II ◎ 6 credits [lecture: 35h, tutorial classes: 12h, practical work: 25h]  📋 second term 👂 French
MATH-Y200	Outils mathématiques des sciences de la vie (Partie A) Colin Van Dyck (Coordinator) ② 7 credits [lecture: 42h, tutorial classes: 42h] 📋 second term 🔎 French



#### Bloc 2 | BA-BIOLC | BA-BIOL

#### **Enseignements obligatoires**

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BIOL-F2702	Métabolisme du carbone et de l'azote   Baptiste LEROY         ③ 5 credits [lecture: 30h, practical work: 20h]
BIOL-F2703	Physiologie et histologie animale   Jacob SOUOPGUI (Coordinator), Sophie BONNOT and Anna Maria MARINI ② 5 credits [lecture: 48h, practical work: 12h] 🛗 first term 📿 French
BIOL-F2704	Biologie cellulaire et moléculaire David PEREZ-MORGA (Coordinator), Sophie BONNOT, Sophie Bouchat and Dukas Jurénas ② 8 credits [lecture: 40h, tutorial classes: 10h, practical work: 40h] 🛗 first and second terms 🔗 French
BIOL-F2705	Microbiologie       Laurence VAN MELDEREN (Coordinator) and Sophie Bouchat         Image: State of the state
BIOL-Y204	Anglais         ◎ 5 credits [lecture: 24h, tutorial classes: 24h]         □ academic year         ○ French
BIOL-Y205	Bio-informatique et sciences des données I   Raphaël CONOTTE © 5 credits [practical work: 70h] 🛗 academic year 📿 French
BIOL-Y209	Zoologie       Guillaume CAULIER         Image: Guillaume CAULIER       Image: Guillaume C
BIOL-Y210	Compléments de biochimie   Sabrina BOUSBATA (Coordinator) and Abel GARCIA-PINO © 5 credits [lecture: 10h, tutorial classes: 40h] 🛗 first term 💬 French
BIOL-Y230	Projet interbloc en Biologie 2   Sophie BONNOT (Coordinator), Jean-Christophe DE BISEAU D'HAUTEVILLE and Pierrick UZUREAU © 2 credits [project: 24h] — first and second terms — French
GEOL-F2700	Sciences de la Terre et géobiologie   Steeve BONNEVILLE (Coordinator), Sandra ARNDT, Karen FONTIJN, Nadine MATTIELLI and Pierre REGNIER ③ 5 credits [lecture: 15h, field trips: 36h]

#### An alternative chosen from the two following

## Module de rattrapage pour les étudiants ayant suivi l'option BioMED en BAB1

BIOL-F1710 (optional)

Botanique | Pierre Jacques MEERTS (Coordinator), Sophie BONNOT and Jason VLEMINCKX ② 4 credits [lecture: 30h, practical work: 20h] 📋 second term ♀ French

MATH-Y200 Outils mathématiques des sciences de la vie (Partie A) | Colin Van Dyck (Coordinator) 

# Module de rattrapage pour les étudiants ayant suivi l'option Biologie en BAB1

BIOL-F1712

or

Anatomie / Embryologie | Eric BELLEFROID (Coordinator), Xavier CATTEAU, Maud MARTIN and Daniel RADBATA ② 5 credits [lecture: 42h, practical work: 14h] 🛗 second term 👂 French



PHYS-Y200 (optional)

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#### Bloc 3 | BA-BIOLC | BA-BIOL

## Programme

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BIOL-F3701	Génétique I Bruno ANDRE (Coordinator) ③ 5 credits [lecture: 24h, practical work: 24h]       first and second terms
BIOL-F3702	Neurosciences       Maud MARTIN (Coordinator)         ③ 5 credits [lecture: 24h, practical work: 10h] <sup>(1)</sup> second term <sup>(2)</sup> French
BIOL-F3703	Mécanismes et épistémologie de l'évolution   Jean-Christophe DE BISEAU D'HAUTEVILLE (Coordinator) ② 5 credits [lecture: 24h, practical work: 24h]
BIOL-F3704	Immunologie et microbiologie   Fabienne ANDRIS (Coordinator) and Laurence VAN MELDEREN ② 5 credits [lecture: 24h, practical work: 24h]
BIOL-F3705	Biologie du développement   Eric BELLEFROID (Coordinator) ③ 5 credits [lecture: 24h, practical work: 24h]
BIOL-Y206	Bio-informatique et sciences des données II   Raphaël CONOTTE ② 5 credits [practical work: 60h] 📋 academic year 📿 French
BIOL-Y207	Biodiversité, évolution et écologie   Guillaume CAULIER ② 5 credits [lecture: 36h, practical work: 24h] 🛗 second term 🔎 French
BIOL-Y301	Pharmaco-toxicologie       Sébastien BOUTRY (Coordinator)         ③ 5 credits [lecture: 24h, practical work: 24h] <sup>(1)</sup> first term <sup>(2)</sup> French
BIOL-Y302	Physiopathologie       Laurence Ris         ③ 5 credits [lecture: 50h, practical work: 10h] <sup>(1)</sup> second term          ○ French
BIOL-Y330	Projet interbloc en Biologie 3   Jean-Christophe DE BISEAU D'HAUTEVILLE (Coordinator), Sophie BONNOT and Pierrick UZUREAU © 4 credits [lecture: 48h]  first and second terms  French
BIOL-Y331	Interactions hôtes pathogènes Fabienne WILLEMS (Coordinator) and Eric MURAILLE ② 5 credits [lecture: 12h, tutorial classes: 36h, practical work: 24h] 🛗 second term 🔎 French
BMOL-F3700	Méthodologie de biochimie, biologie cellulaire et moléculaire   Guillaume OLDENHOVE (Coordinator) and Ruddy WATTIEZ ③ 6 credits [lecture: 12h, practical work: 48h]