Bachelor in Computer science

Programme mnemonic
BA-INFO

Studies level
Bachelor

Learning language
french

Schedule
office hours

Studies category / subcategory
Sciences and technics / Sciences

Campus
Plaine and Solbosch

Programme objectives

At the end of the study cycle, the student will so have acquired:

- The capacity to **develop an IT project**, thanks to the various lectures in **programming**, **algorithmics** and **software engineering**
- The mastery of **major computing topics**, in particular operating systems and computers architecture, algorithmics, databases, software engineering, networking, programming languages and the bio-informatics
- The capacity **to search information** and to inquire and **to express himself/herself** both in French and in English, thanks to the language courses and to the various essays, homeworks and projects
- The capacity to develop **auto-learning** strategies and **adapt** in order to **maintain a high level** of knowledge and the ability to **use computing tools**
- Open-mindedness to other disciplines, according to personal tastes or the desire to begin **further studies** (biology and biochemistry related to bioinformatics, electronics, economics and management, systems administration...)

Programme's added value

Learning activities are illustrated by lots of examples and case studies **directly related to the research areas of the teaching staff**, effectively preparing the student for the 2nd cycle of study.

Every block includes **individual and group projects** and a **transversal project** developing the student's the capacity to **exploit the skills and knowledge** and to **present his/her results with appropriate arguments**.

Each academic year, the student has to follow elective courses in **other scientific disciplines**.

Teaching methods

The Bachelor programme alternates between **lectures**, **practicals**, and **projects** (individual or group).

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/studies-info-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

If you so wish, you may spend one or more terms at universities abroad.

Job opportunities

The main objective of the programme is to provide general and specific skills in the field of computer science, as described in the learning outcomes, with the aim of allowing **direct continuation to graduated studies**, mainly **the Master's degree in computing sciences**, even if the Bachelor's degree can also lead to other paths of study or be valued in a professional career.

In particular, depending on their choice of elective courses, the graduates have direct access to the **Master's degree in bioinformatics and modelling** or the **Master degree in Cybersecurity**.

For university IT graduates, most career opportunities will open after completing a **Master's degree** in the domain.

Contacts

ba-info@ulb.be

+32 2 650 56 14

https://sciences.ulb.be/departement-d-informatique

Jury President
Thierry MASSART

Jury Secretary
Gwenaël JORET

Bachelor in Computer science

The programme helps students acquire the **technical know-how** and **fundamental scientific knowledge** in computer science, as well as **general skills**, in particular technical English language and an introduction to **other scientific disciplines**.

The studies are organized around two main focuses:

- A basic training in **fundamental and theoretical computer science**, as well as in the **related scientific and mathematical matters**
- A **project-based learning** leading to the acquisition of the practical and technical skills in computing

Bloc 1 | BA-INFO

Cours obligatoires

Méthodes, systèmes et projets 1

INFO-F102 Fonctionnement des ordinateurs | Gilles GEERAERTS (Coordinator)
5 credits [lecture: 36h, practical work: 12h] first term French

INFO-F106 Projets d'informatique 1 | Gwenaël JORET (Coordinator) and Tom LENAERTS
5 credits [practical work: 12h, project: 120h] first and second terms French

Programmation et structure de données 1

INFO-F101 Programmation | Thierry MASSART (Coordinator)
10 credits [lecture: 36h, tutorial classes: 36h, practical work: 24h, project: 60h] first term French

INFO-F103 Algorithmique 1 | Olivier MARKOWITCH (Coordinator), Bernard FORTZ and Dimitrios PAPADIMITRIOU
10 credits [lecture: 36h, tutorial classes: 36h, practical work: 24h, project: 60h] second term French

INFO-F105 Langages de programmation 1 | Christophe PETIT (Coordinator)
5 credits [lecture: 24h, practical work: 24h, project: 30h] second term French

Autres disciplines et compétences générales 1

MATH-F112 Mathématiques 1 | Dimitri LEEMANS (Coordinator), Michele D'ADDERIO and Bruno PREMOSELLI
10 credits [lecture: 60h, tutorial classes: 60h] first and second terms French

MATH-F114 Algèbre linéaire et arithmétique | Julie DE SAEDELEER (Coordinator) and Michele D'ADDERIO
5 credits [lecture: 30h, tutorial classes: 24h] second term French

PHYS-F103 Physique | Alain JORISSEN (Coordinator)
5 credits [lecture: 36h, tutorial classes: 24h] second term French

Cours optionnels

A total of five credits chosen from the following

BIOL-F102 (optional) Biologie générale | Patrick MARDULYN (Coordinator) and Etienne MEYLAN
5 credits [lecture: 48h] second term French

ENVI-F1001 (optional) Sciences de la Terre, Environnement et Société | Pierre REGNIER (Coordinator), Jean-Michel DECROLY and Frank PATTYN
5 credits [lecture: 48h] first and second terms French

PHYS-F105 (optional) La structure de l'univers | Alain JORISSEN (Coordinator) and Rodrigo ALVAREZ
5 credits [lecture: 48h] first term French

Bachelor in Computer science

Bloc 2 | BA-INFO

Cours obligatoires

Méthodes, systèmes et projets 2

INFO-F201 Systèmes d'exploitation | Joël GOOSSENS (Coordinator) and Olivier MARKOWITCH
5 credits [lecture: 24h, tutorial classes: 12h, practical work: 12h, project: 30h] first term French

INFO-F204 Analyse et méthodes | Christian HERNALSTEEN (Coordinator)
5 credits [lecture: 36h, tutorial classes: 12h, practical work: 12h] first term French

INFO-F209 Projets d'informatique 2 | Joël GOOSSENS (Coordinator) and Christian HERNALSTEEN
10 credits [practical work: 12h, project: 270h] first and second terms French

Programmation et structure de données 2

INFO-F202 Langages de programmation 2 | John IACONO (Coordinator)
5 credits [lecture: 24h, practical work: 24h, project: 30h] first term French

INFO-F203 Algorithmique 2 | Jean CARDINAL (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h, project: 30h] second term French

INFO-H303 Bases de données | Esteban ZIMANYI (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h, practical work: 12h] second term French

Outils formels et numériques 2

INFO-F205 Calcul formel et numérique | Maarten JANSEN (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h, project: 30h] second term French

MATH-F307 Mathématiques discrètes | Samuel FIORINI (Coordinator) and Laurent LA FUENTE-GRAVY
5 credits [lecture: 36h, tutorial classes: 24h] first term French

MATH-F315 Probabilités et statistiques | Thomas VERDEBOUT (Coordinator) and Jennifer ALONSO GARCIA
5 credits [lecture: 30h, tutorial classes: 30h] first term French

Autres disciplines et compétences générales 2

ETHI-F201 Sciences, éthique, histoire et société | Grégoire Wallenborn (Coordinator) and Eric MURAILLE
5 credits [lecture: 48h] second term French

LANG-F201 Anglais scientifique I | Alexander CORNFORD (Coordinator), David Albert BEST and Hugh MURPHY
5 credits [tutorial classes: 48h] second term English

Bachelor in Computer science

Bloc 3 | BA-INFO

Cours obligatoires

Systèmes distribués

INFO-F303 — Réseaux, information et communications | Guy LEDUC (Coordinator) and Christophe PETIT
5 credits [lecture: 48h, tutorial classes: 12h] | first term | French

Gestion des données et des projets logiciels

INFO-F307 — Génie logiciel et gestion de projets | Frédéric PLUQUET (Coordinator)
10 credits [lecture: 24h, practical work: 7h, project: 89h] | second term | French

INFO-F311 — Intelligence artificielle | Tom LENAERTS (Coordinator)
5 credits [lecture: 24h, tutorial classes: 12h, project: 60h] | first term | French

Outils formels et numériques 2

INFO-F302 — Informatique fondamentale | Emmanuel FILIOT (Coordinator)
5 credits [lecture: 36h, tutorial classes: 12h, project: 30h] | first term | French

INFO-F305 — Modélisation et simulation | Gianluca BONTEMPI (Coordinator)
5 credits [lecture: 30h, tutorial classes: 24h, project: 6h] | first term | French

INFO-F310 — Algorithmique et recherche opérationnelle | Bernard FORTZ (Coordinator) and Dimitrios PAPADIMITRIOU
5 credits [lecture: 24h, tutorial classes: 24h, project: 30h] | second term | French

Autres disciplines et compétences générales 3

INFO-F308 — Projets d'informatique 3 transdisciplinaire | Matthieu DEFRANCE (Coordinator)
10 credits [practical work: 24h, project: 240h] | first and second terms | French

LANG-F301 — Anglais scientifique II | Hugh MURPHY (Coordinator), David Albert BEST and Alexander CORNFORD
5 credits [tutorial classes: 48h] | first term | English

Cours optionnels

A total of ten credits chosen from the following

CHIM-F208 (optional) — Biochimie 1 | Cyril GUEYDAN (Coordinator) and Véronique KRUYS
5 credits [lecture: 60h] | first term | French

ECON-S1001 (optional) — Introduction à la microéconomie et à la macroéconomie | P.-Guillaume MEON (Coordinator), Renaud FOUCART and Julien RAVET
15 credits [lecture: 72h, tutorial classes: 48h] | academic year | French

ELEC-H201 (optional) — Electricité et électronique | Frédéric ROBERT (Coordinator) and Johan GYSELINCK
5 credits [lecture: 24h, tutorial classes: 12h, practical work: 24h] | second term | French

ELEC-H310 (optional) — Digital electronics | Dragomir MILOJEVIC (Coordinator)
5 credits [lecture: 24h, tutorial classes: 12h, practical work: 24h] | second term | English

ETHI-F301 (optional) — Science et Société : analyse de controverses scientifiques | Patrick MARDULYN (Coordinator) and Grégoire Wallenborn
5 credits [lecture: 24h, project: 70h] first term French

GEST-D447 (optional) — Principes généraux d'organisation et de gestion | Philippe SCIEUR (Coordinator)
5 credits [lecture: 24h] first term French

GEST-S101 (optional) — Comptabilité financière | Gilles GEVERS (Coordinator) and Laurent GHEERAERT
5 credits [lecture: 36h, tutorial classes: 8h] second term French

One course chosen from the following

HULB-0000 (optional) — Cours externe à l'Université
5 credits academic year

HULB-0000 (optional) — Cours externe à l'Université
10 credits academic year

INFO-F309 (optional) — Administration de systèmes | Sébastien COLLETTE (Coordinator)
5 credits [lecture: 24h, practical work: 24h, project: 30h] second term French

PHYS-F517 (optional) — How To Make (almost) Any Experiment Using Digital Fabrication | Denis TERWAGNE (Coordinator)
5 credits [lecture: 24h, practical work: 24h] first term French

One course chosen from the following

TEMP-0000 (optional) — Cours extérieurs au programme
5 credits academic year French

TEMP-0000 (optional) — Cours extérieurs au programme
10 credits academic year French

TRAN-F201 (optional) — Introduction aux enjeux de la durabilité | Wouter ACHTEN (Coordinator) and Chiara ARMENI
5 credits [lecture: 24h] second term French