UCLouvain

SINC1BA

*2025 - 2026*

# Bachelor in Computer Science

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

**At Charleroi - 180 credits - 3 years - Day schedule - In French**
Dissertation/Graduation Project : **NO** - Internship : **NO**
Activities in English: **NO** - Activities in other languages : **NO**
Activities on other sites : **NO**
Main study domain : **Sciences**
Organized by: **Louvain School of Engineering (EPL)**
Programme acronym: **SINC1BA** - Francophone Certification Framework: 6

## Table of contents

# SINC1BA - Introduction

## Introduction

### Introduction

Computer science, or more generally information and communications technology (ICT), is everywhere; everyone uses computers/ smartphones/… to communicate, work, study, play, travel, and manage. More and more activities are assisted by computers. SMEs, public services, education world, associations, leisure, in two …

### Your profile

You

• have a taste for problem solving;

• are pushed by a great curiosity;

• overflow of creativity and imagination;

• are a head for abstraction, analysis and synthesis;

• have a methodical mind and show rigor in your reasoning;

• are good for human contact, organization of teamwork, leadership, etc.

Following a strong mathematical option during high school and feeling an attraction to science or economics are assets.

### Your future job

During his career, the computer scientist will flourish and evolve in one or more of the following profiles:

• The designer identifies the needs of the future user and determines the technical means useful to fulfil these needs. He is able to speak "the language" of the customer, it has a fairly broad culture to interact successfully with non-computer experts. He masters computer technology to identify the best solution. It builds a quality architecture for this solution.

• The achiever is able to translate the indications and guidelines produced by the designer in computer components. He analyses in detail some components of the architecture, he programs, tests, deploys these components into an integrated solution. His technical expertise is very sharp.

• The IT project manager takes care of the smooth running of the project; he is responsible for the completion of the tasks associated with these systems, their safety, planning their development. As the designer, it has qualities in terms of human contacts, a good general education and strong technical skills.

### Your programme

The bachelor has a compulsory part covering different disciplines

- computer science ;
- mathematics ;
- life sciences;
- human sciences;
- english.

Once bachelor, you will continue your training by the Master in Computer Science.

# SINC1BA - Teaching profile

## Learning outcomes

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

# SINC1BA Programme

## Detailed programme by subject

- Mandatory
- Optional
- Not offered in 2025-2026
- Not offered in 2025-2026 but offered the following year
- Offered in 2025-2026 but not the following year
- Not offered in 2025-2026 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...)

### Content:

| | | | | Year 1 | 2 | 3 |
|---|---|---|---|---|---|---|
| **Formation en informatique** | | | | | | |
| LSINC1101 | Computer Science 1: Introduction to Programming | Kim Mens<br>Siegfried Nijssen | FR [q1] [30h+30h] [5 Credits] | x | | |
| LSINC1102 | Computer Hardware Principles | Olivier Bonaventure | FR [q2] [30h+30h] [5 Credits] | x | | |
| LSINC1103 | Introduction to Algorithmics | | FR [q2] [30h+30h] [5 Credits] | x | | |
| LSINC1001 | Project 1 in Computer Science: Applications and Introduction to IoT [M] | | FR [q1] [30h+30h] [5 Credits] | x | | |
| LSINC1002 | Project 2 in Computer Science: Design of an Interactive Website | Tom Barbette | FR [q2] [30h+30h] [5 Credits] | x | | |
| LSINC1402 | Computer Science 2 | | FR [q1] [30h+30h] [5 Credits] | | x | |
| LSINC1201 | Interaction and Visualization Techniques | | FR [q1] [30h+30h] [5 Credits] | | x | |
| LSINC1123 | Calculability, Logic and Complexity | Yves Deville | FR [q2] [30h+30h] [5 Credits] | | x | |
| LSINC1104 | Programming Paradigms and Concurrency | Peter Van Roy | FR [q2] [30h+30h] [5 Credits] | | x | |
| LSINC1503 | Project 3 in Computer Science: Improvement of Algorithms Efficiency | | FR [q2] [30h+30h] [5 Credits] | | x | |
| LSINC1121 | Algorithms and data structure | | FR [q1] [30h+30h] [5 Credits] | | | x |
| LSINC1252 | Informaticals Systems | Etienne Riviere | FR [q1] [30h+30h] [5 Credits] | | | x |
| LSINC1301 | Databases and modeling | | FR [q1] [30h+30h] [5 Credits] | | | x |
| LSINC1361 | Artificial intelligence | | FR [q2] [30h+30h] [5 Credits] | | | x |
| LSINC1341 | Computer networks | | FR [q2] [30h+30h] [5 Credits] | | | x |

| | | | | Year 1 | 2 | 3 |
|---|---|---|---|---|---|---|
| LSINC1313 | Numerical algorithmic [M] | | FR [q2] [30h+30h] [5 Credits] | | x | |
| LSINC1509 | Project 4: application of databases | | FR [q2] [30h+30h] [5 Credits] | | | x |

## Formation en mathématiques et science des données

| | | | | | | |
|---|---|---|---|---|---|---|
| LSINC1111 | Analysis | | FR [q1] [30h+30h] [5 Credits] | x | | |
| LSINC1112 | Algebra | | FR [q2] [30h+30h] [5 Credits] | x | | |
| LSINC1113 | Additional Mathematics | | FR [q1] [30h+30h] [5 Credits] | | x | |
| LSINC1211 | Probability and Statistics | | FR [q2] [30h+30h] [5 Credits] | | x | |
| LSINC1109 | Statistics and data sciences | | FR [q2] [30h+30h] [5 Credits] | | | x |

## Formation en sciences du vivant

| | | | | | | |
|---|---|---|---|---|---|---|
| LSINC1131 | General and Organic Chemistry | | FR [q1] [30h+30h] [5 Credits] | x | | |
| LSINC1132 | General biology | | FR [q1] [30h+30h] [5 Credits] | x | | |
| LSINC1133 | Introduction to Human Physiology | | FR [q2] [30h+30h] [5 Credits] | x | | |

## Formation en langues et sciences humaines

| | | | | | | |
|---|---|---|---|---|---|---|
| LSST1002 | Information and critical thinking | | FR [q2] [30h+30h] [5 Credits] | x | | |
| LANGL1182 | English for Computer Scientists | | EN [q1] [30h] [5 Credits] | x | | |
| LSINC1241 | Law, Ethics and Technology | | FR [q2] [30h+30h] [5 Credits] | | x | |
| LANGL1183 | English for Computer Scientists II | | EN [q1] [30h] [5 Credits] | | x | |
| LSINC1805 | People management | | FR [q2] [15h+15h] [3 Credits] | | | x |
| LANGL1184 | English for Computer Scientists III | | EN [q2] [20h] [2 Credits] | | | x |

## ⊠ *Minor or additional module (30 credits)*

*The student completes his training with the additional module in computer science or the additionel module in life sciences and health for computer scientists.*
*Maximum 1 element(s)*

## List of available minors

> Additional module in computer science *[ en-prog-2025-appsinf ]*
> Additional module in life sciences and health for computer scientists *[ en-prog-2025-appscvs ]*

## Course prerequisites

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 puposes 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.

**# Prerequisities list**

**LANGL1183** "Anglais pour informaticiens II" has prerequisite(s) LANGL1182
- LANGL1182 - English for Computer Scientists

**LANGL1184** "Anglais pour informaticiens III" has prerequisite(s) LANGL1183
- LANGL1183 - English for Computer Scientists II

**LSINC1104** "Concepts des langages de programmation" has prerequisite(s) LSINC1101
- LSINC1101 - Computer Science 1: Introduction to Programming

**LSINC1113** "Compléments de mathématiques" has prerequisite(s) LSINC1111
- LSINC1111 - Analysis

**LSINC1121** "Algorithmique et structure de données" has prerequisite(s) LSINC1402
- LSINC1402 - Computer Science 2

**LSINC1201** "Techniques d'interaction et de visualisation" has prerequisite(s) LSINC1101
- LSINC1101 - Computer Science 1: Introduction to Programming

**LSINC1211** "Probabilités et statistiques" has prerequisite(s) LSINC1111 ET LSINC1112
- LSINC1111 - Analysis
- LSINC1112 - Algebra

**LSINC1313** "Algorithmique numérique" has prerequisite(s) LSINC1101 ET LSINC1111 ET LSINC1112
- LSINC1101 - Computer Science 1: Introduction to Programming
- LSINC1111 - Analysis
- LSINC1112 - Algebra

**LSINC1361** "Intelligence artificielle" has prerequisite(s) LSINC1103 ET LSINC1402
- LSINC1103 - Introduction to Algorithmics
- LSINC1402 - Computer Science 2

**LSINC1402** "Informatique 2" has prerequisite(s) LSINC1101
- LSINC1101 - Computer Science 1: Introduction to Programming

**LSINC1503** "Projet 3: amélioration de l'efficacité d'algorithmes" has prerequisite(s) LSINC1101
- LSINC1101 - Computer Science 1: Introduction to Programming

**LSINC1509** "Projet 4: application des bases de données" has prerequisite(s) LSINC1402
- LSINC1402 - Computer Science 2

# 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.

# Detailed programme per annual block

## *SINC1BA - 1ST ANNUAL UNIT*

- Mandatory
- Optional
- Not offered in 2025-2026
- Not offered in 2025-2026 but offered the following year
- Offered in 2025-2026 but not the following year
- Not offered in 2025-2026 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...)

### *Content:*

#### Formation en informatique

| | | | |
|---|---|---|---|
| LSINC1101 | Computer Science 1: Introduction to Programming | Kim Mens<br>Siegfried Nijssen | FR [q1] [30h +30h] [5 Credits] |
| LSINC1102 | Computer Hardware Principles | Olivier Bonaventure | FR [q2] [30h +30h] [5 Credits] |
| LSINC1103 | Introduction to Algorithmics | | FR [q2] [30h +30h] [5 Credits] |
| LSINC1001 | Project 1 in Computer Science: Applications and Introduction to IoT [M] | | FR [q1] [30h +30h] [5 Credits] |
| LSINC1002 | Project 2 in Computer Science: Design of an Interactive Website | Tom Barbette | FR [q2] [30h +30h] [5 Credits] |

#### Formation en mathématiques et science des données

| | | | |
|---|---|---|---|
| LSINC1111 | Analysis | | FR [q1] [30h +30h] [5 Credits] |
| LSINC1112 | Algebra | | FR [q2] [30h +30h] [5 Credits] |

#### Formation en sciences du vivant

| | | | |
|---|---|---|---|
| LSINC1131 | General and Organic Chemistry | | FR [q1] [30h +30h] [5 Credits] |

| | | | |
|---|---|---|---|
| LSINC1132 | General biology | | FR [q1] [30h +30h] [5 Credits] |
| LSINC1133 | Introduction to Human Physiology | | FR [q2] [30h +30h] [5 Credits] |

## Formation en langues et sciences humaines

| | | | |
|---|---|---|---|
| LSST1002 | Information and critical thinking | | FR [q2] [30h +30h] [5 Credits] |
| LANGL1182 | English for Computer Scientists | | EN [q1] [30h] [5 Credits] |

## SINC1BA - 2ND ANNUAL UNIT

- Mandatory
- Optional
- Not offered in 2025-2026
- Not offered in 2025-2026 but offered the following year
- Offered in 2025-2026 but not the following year
- Not offered in 2025-2026 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...)

### Content:

#### Formation en informatique

| | | | |
|---|---|---|---|
| LSINC1402 | Computer Science 2 | | FR [q1] [30h +30h] [5 Credits] |
| LSINC1201 | Interaction and Visualization Techniques | | FR [q1] [30h +30h] [5 Credits] |
| LSINC1123 | Calculability, Logic and Complexity | Yves Deville | FR [q2] [30h +30h] [5 Credits] |
| LSINC1104 | Programming Paradigms and Concurrency | Peter Van Roy | FR [q2] [30h +30h] [5 Credits] |
| LSINC1503 | Project 3 in Computer Science: Improvement of Algorithms Efficiency | | FR [q2] [30h +30h] [5 Credits] |
| LSINC1313 | Numerical algorithmic [M] | | FR [q2] [30h +30h] [5 Credits] |

#### Formation en mathématiques et science des données

| | | | |
|---|---|---|---|
| LSINC1113 | Additional Mathematics | | FR [q1] [30h +30h] [5 Credits] |
| LSINC1211 | Probability and Statistics | | FR [q2] [30h +30h] [5 Credits] |

#### Formation en langues et sciences humaines

| | | | |
|---|---|---|---|
| LSINC1241 | Law, Ethics and Technology | | FR [q2] [30h +30h] [5 Credits] |
| LANGL1183 | English for Computer Scientists II | | EN [q1] [30h] [5 Credits] |

### Minor or additional module

*The student completes his training with the additional module in computer science or the additionel module in life sciences and health for computer scientists.*
*Maximum 1 element(s)*

## SINC1BA - 3RD ANNUAL UNIT

- Mandatory
- Optional
- Not offered in 2025-2026
- Not offered in 2025-2026 but offered the following year
- Offered in 2025-2026 but not the following year
- Not offered in 2025-2026 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...)

## Content:

### Formation en informatique

| | | | |
|---|---|---|---|
| LSINC1121 | Algorithms and data structure | | FR [q1] [30h +30h] [5 Credits] |
| LSINC1252 | Informaticals Systems | Etienne Riviere | FR [q1] [30h +30h] [5 Credits] |
| LSINC1301 | Databases and modeling | | FR [q1] [30h +30h] [5 Credits] |
| LSINC1361 | Artificial intelligence | | FR [q2] [30h +30h] [5 Credits] |
| LSINC1341 | Computer networks | | FR [q2] [30h +30h] [5 Credits] |
| LSINC1509 | Project 4: application of databases | | FR [q2] [30h +30h] [5 Credits] |

### Formation en mathématiques et science des données

| | | | |
|---|---|---|---|
| LSINC1109 | Statistics and data sciences | | FR [q2] [30h +30h] [5 Credits] |

### Formation en langues et sciences humaines

| | | | |
|---|---|---|---|
| LSINC1805 | People management | | FR [q2] [15h +15h] [3 Credits] |
| LANGL1184 | English for Computer Scientists III | | EN [q2] [20h] [2 Credits] |

## Minor or additional module

*The student completes his training with the additional module in computer science or the additionel module in life sciences and health for computer scientists.*
*Maximum 1 element(s)*

# SINC1BA - 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

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 à l'enseignement supérieur - DAES), issued by the Examination Board of the French Community.

## Specific access requirements

- Access to bachelor programmes for candidates of nationality outside the European Union who are not assimilated to Belgian nationals is subject to the following criteria:
  - not have obtained a secondary education diploma for more than 3 years maximum. Example: for an admission application for the academic year 2024-2025, you must have obtained your diploma during the academic years 2021-2022, 2022-2023 ou 2023-2024. In the French Community of Belgium, the academic year runs from September 14 to September 13
  - not already hold an undergraduate degree
- Candidates, whatever their nationality, with a secondary school diploma **from a country outside the European Union**, must have obtained an average of 13/20 minimum or, failing that, have obtained this average, have passed one year of study in Belgium (for example special Maths / sciences). A non-successful year will not be taken into consideration.

- 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 1st 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 medecine 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).
- Access to **Bachelor of Science in Business Engineering**

  The Bachelor of Science in Business Engineering is a joint program organised by KU Leuven and UCLouvain Saint-Louis Bruxelles. In order to register, all candidate must first submit an application via the KU Leuven admission platform. The conditions of access to this programme are specific.

## 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".***

## Contacts

### Curriculum Management

Entity

| | |
|---|---|
| Structure entity | SST/EPL/INFO |
| Denomination | (INFO) |
| Faculty | Louvain School of Engineering (EPL) |
| Sector | Sciences and Technology (SST) |
| Acronym | INFO |
| Postal address | Place Sainte Barbe 2 - bte L5.02.01<br>1348 Louvain-la-Neuve<br>Tel: +32 (0) 10 47 31 50 - Fax: +32 (0) 10 45 03 45 |

Academic supervisor: Siegfried Nijssen

Jury

- Président du jury: Claude Oestges
- Secrétaire du jury: Cristel Pelsser

Useful Contact(s)

- Secrétariat: bac-sinc@uclouvain.be
- Conseillère aux études en sciences informatiques: Cécile Lombart