

Bachelor in Computer Science

he 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

Introduction	
Teaching profile	
Learning outcomes	
Programme	
Detailed programme by subject	
List of available minors	5
Course prerequisites	
The programme's courses and learning outcomes	
Detailed programme per annual block	6
SINC1BA - 1st annual unit	
SINC1BA - 2nd annual unit	8
SINC1BA - 3rd annual unit	
nformation	10
Access Requirements	10
Evaluation	12
Contacts	12

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
- Δ Not offered in 2024-2025
- \oslash Not offered in 2024-2025 but offered the following year
- Offered in 2024-2025 but not the following year
- $\Delta \oplus \mathsf{Not}$ offered in 2024-2025 or the following year
- Activity with requisites
- Open to incoming exchange students

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

Year 1 2 3

o Content:

o Formation en informatique

OLSINC1101	Computer Science 1: Introduction to Programming	Kim Mens Siegfried Nijssen	🛯 [q1] [30h+30h] [5 Credits] 🛞	x		
LSINC1102	Computer Hardware Principles	Olivier Bonaventure	ER [q2] [30h+30h] [5 Credits] 🖲	x		
LSINC1103	Introduction to Algorithmics		ER [q2] [30h+30h] [5 Credits] 🛞	х		
LSINC1001	Project 1 in Computer Science: Applications and Introduction to IoT	Cristel Pelsser	FR [q1] [30h+30h] [5 Credits] 🛞	х		
LSINC1002	Project 2 in Computer Science: Design of an Interactive Website	Tom Barbette	FR [q2] [30h+30h] [5 Credits] 🛞	х		
LSINC1402	Computer Science 2 📕	Sébastien Jodogne Ramin Sadre	1212 [q1] [30h+30h] [5 Credits] 🛞		х	
LSINC1201	Interaction and Visualization Techniques		ER [q1] [30h+30h] [5 Credits] 🛞		х	
LSINC1123	Calculability, Logic and Complexity	Yves Deville	ER [q2] [30h+30h] [5 Credits] 🛞		х	
LSINC1104	Programming Paradigms and Concurrency	Peter Van Roy	ER [q2] [30h+30h] [5 Credits] 🖲		х	
LSINC1503	Project 3 in Computer Science: Improvement of Algorithms Efficiency		ER [q2] [30h+30h] [5 Credits] 🛞		х	
LSINC1121	Algorithms and data structure		ER [q1] [30h+30h] [5 Credits] 🛆 🛞			>
LSINC1252	Informaticals Systems	Etienne Riviere	🗄 [q1] [30h+30h] [5 Credits] 🛆 🛞			>
LSINC1301	Databases and modeling		ER [q1] [30h+30h] [5 Credits] 🛆 🛞)
OLSINC1361	Artificial intelligence		FR [q2] [30h+30h] [5 Credits] 🛆 🏽			>

UCL - Université catholique de Louvain Study Programme 2024-2025 SINC1BA: Bachelor in Computer Science

	Ye	ear	
4	2	2	

			1	2 3	
O LSINC1341	Computer networks	ER [q2]	[30h+30h] [5 Credits] △ ⊕	х	
O LSINC1313	Numerical algorithmic 📕	ER [q]] [30h+30h] [5 Credits] 🛞	х	
O LSINC1509	Project 4: application of databases	FR [q2]	[30h+30h] [5 Credits] △	х	

o Formation en mathématiques et science des données

O LSINC1111	Analysis	Geovani Nunes Grapiglia	188 [q1] [30h+30h] [5 Credits] 🛞	x	
O LSINC1112	Algebra		ER [q2] [30h+30h] [5 Credits] 🛞	х	
O LSINC1113	Additional Mathematics 📕		ER [q1] [30h+30h] [5 Credits] 🛞		x
O LSINC1211	Probability and Statistics 📕		ER [q2] [30h+30h] [5 Credits] 🛞		х
O LSINC1109	Statistics and data sciences		💷 [q2] [30h+30h] [5 Credits] 🛆 🏵		х

• Formation en sciences du vivant

O LSINC1131	General and Organic Chemistry		ER [q1] [30h+30h] [5 Credits] 🛞	х	
O LSINC1132	General biology		ER [q1] [30h+30h] [5 Credits] 🛞	х	
O LSINC1133	Introduction to Human Physiology	Jean-François Rees	FR [q2] [30h+30h] [5 Credits] 🛞	х	

o Formation en langues et sciences humaines

O LSST1002	Information and critical thinking	ER [q2] [30h+30h] [5 Credits] 🛞	х
• LANGL1182	English for Computer Scientists	EN [q1] [30h] [5 Credits] 🕮	х
O LSINC1241	Law, Ethics and Technology	6R [q2] [30h+30h] [5 Credits] 🛞	х
• LANGL1183	English for Computer Scientists II	EN [q1] [30h] [5 Credits] 🕮	х
O LSINC1805	People management	💷 [q2] [15h+15h] [3 Credits] 🛆 🛞	х
O LANGL1184	English for Computer Scientists III	8N [q2] [20h] [2 Credits] 🛞	х

& Minor or additional module (30 credits)

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

https://uclouvain.be/en-prog-2024-sinc1ba

List of available minors

- > Additional module in computer science [en-prog-2024-appsinf]
- > Additional module in life sciences and health for computer scientists [en-prog-2024-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	"English for Computer Scientists II" has prerequisite(s) LANGL1182
LANGL1184	LANGL1182 - English for Computer Scientists "English for Computer Scientists III" has prerequisite(s) LANGL1183
LSINC1104	LANGL1183 - English for Computer Scientists II "Programming Paradigms and Concurrency" has prerequisite(s) LSINC1101
LSINC1113	• LSINC1101 - Computer Science 1: Introduction to Programming "Additional Mathematics" has prerequisite(s) LSINC1111
LSINC1114	• LSINC1111 - Analysis "Analysis of biological data" has prerequisite(s) LSINC1101 AND LSINC1111 AND LSINC1002
LSINC1121	 LSINC1101 - Computer Science 1: Introduction to Programming LSINC1111 - Analysis LSINC1002 - Project 2 in Computer Science: Design of an Interactive Website "Algorithms and data structure" has prerequisite(s) LSINC1402
LSINC1201	• LSINC1402 - Computer Science 2 "Interaction and Visualization Techniques" has prerequisite(s) LSINC1101
LSINC1211	• LSINC1101 - Computer Science 1: Introduction to Programming "Probability and Statistics" has prerequisite(s) LSINC1111 AND LSINC1112
LSINC1231	• LSINC1111 - Analysis • LSINC1112 - Algebra "Biochemistry" has prerequisite(s) LSINC1131 AND LSINC1132
LSINC1232	• LSINC1131 - General and Organic Chemistry • LSINC1132 - General biology "Elements of Human Pathology" has prerequisite(s) LSINC1131 AND LSINC1133
LSINC1233	• LSINC1131 - General and Organic Chemistry • LSINC1133 - Introduction to Human Physiology "Biodiversity, Biological and Ecological Evolution" has prerequisite(s) LSINC1132
LSINC1313	• LSINC1132 - General biology "Numerical algorithmic" has prerequisite(s) LSINC1101 AND LSINC1111 AND LSINC1112
LSINC1331	• LSINC1101 - Computer Science 1: Introduction to Programming • LSINC1111 - Analysis • LSINC1112 - Algebra "Molecular biology" has prerequisite(s) LSINC1231 AND LSINC1211
	• LSINC1231 - Biochemistry • LSINC1211 - Probability and Statistics
LSINC1332	"Biotechnology: omics" has prerequisite(s) LSINC1231 AND LSINC1211

LSINC1361	• LSINC1231 - Biochemistry • LSINC1211 - Probability and Statistics "Artificial intelligence" has prerequisite(s) LSINC1103 AND LSINC1402
LSINC1402	• LSINC1103 - Introduction to Algorithmics • LSINC1402 - Computer Science 2 "Computer Science 2" has prerequisite(s) LSINC1101
LSINC1503	• LSINC1101 - Computer Science 1: Introduction to Programming "Project 3 in Computer Science: Improvement of Algorithms Efficiency" has prerequisite(s) LSINC1101
LSINC1509	• LSINC1101 - Computer Science 1: Introduction to Programming "Project 4: application of databases" 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

- O Mandatory
- 8 Optional
- △ Not offered in 2024-2025
- Ø Not offered in 2024-2025 but offered the following year
- Offered in 2024-2025 but not the following year
- $\Delta \oplus$ 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 Formation en informatique

O LSINC1101	Computer Science 1: Introduction to Programming	Kim Mens Siegfried Nijssen	IR [q1] [30h +30h] [5 Credits] ∰
OLSINC1102	Computer Hardware Principles	Olivier Bonaventure	[q2] [30h +30h] [5 Credits] (6)
O LSINC1103	Introduction to Algorithmics		[q2] [30h +30h] [5 Credits] (5)
OLSINC1001	Project 1 in Computer Science: Applications and Introduction to IoT	Cristel Pelsser	[30h +30h] [5 Credits] (5)
OLSINC1002	Project 2 in Computer Science: Design of an Interactive Website	Tom Barbette	[q2] [30h +30h] [5 Credits] 🛞

o Formation en mathématiques et science des données

O LSINC1111	Analysis	Geovani Nunes Grapiglia	[q1] [30h +30h] [5 Credits] 🛞
O LSINC1112	Algebra		[q2] [30h +30h] [5 Credits] (************************************

o Formation en sciences du vivant

O LSINC1131	General and Organic Chemistry		[30h +30h] [5 Credits] 🛞
O LSINC1132	General biology		[30h (30h +30h] [5 Credits] 🛞
O LSINC1133	Introduction to Human Physiology	Jean-François Rees	[q2] [30h +30h] [5 Credits] 🛞

o Formation en langues et sciences humaines

O LSST1002	Information and critical thinking	+30	[q2] 30h 0h] [5 dits] @
O LANGL1182	English for Computer Scientists		[q1] Dh] [5 dits]

SINC1BA - 2ND ANNUAL UNIT

O Mandatory
🗱 Optional
Δ Not offered in 2024-2025
Not offered in 2024-2025 but offered the following year
Offered in 2024-2025 but not the following year
$\Delta \oplus$ Not offered in 2024-2025 or the following year
Activity with requisites
Open to incoming exchange students
Mot 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 Formation en informatique

O LSINC1402	Computer Science 2 📕	Sébastien Jodogne Ramin Sadre	[30h +30h] [5 Credits] 🕮
O LSINC1201	Interaction and Visualization Techniques 📃		[30h +30h] [5 Credits] (5)
O LSINC1123	Calculability, Logic and Complexity	Yves Deville	[30h +30h] [5 Credits] (5)
O LSINC1104	Programming Paradigms and Concurrency 📕	Peter Van Roy	[q2] [30h +30h] [5 Credits] (5)
O LSINC1503	Project 3 in Computer Science: Improvement of Algorithms Efficiency		[q2] [30h +30h] [5 Credits] (3)
O LSINC1313	Numerical algorithmic 📕		[q1] [30h +30h] [5 Credits] ∰

o Formation en mathématiques et science des données

O LSINC1113	Additional Mathematics 📕	+3	[q1] 30h 30h] [5 dits] 🛞
O LSINC1211	Probability and Statistics 📕	+3	[q2] 30h 60h] [5 6dits] 🛞

o Formation en langues et sciences humaines

O LSINC1241	Law, Ethics and Technology	[92] [30h +30h] [5 Credits] (1)
O LANGL1183	English for Computer Scientists II 📕	[91] [30h] [5 Credits] @

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

SINC1BA - 3RD ANNUAL UNIT

O 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
$\Delta \oplus$ Not offered in 2024-2025 or the following year
Activity with requisites
Open to incoming exchange students
Mot 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 Formation en informatique

O LSINC1121	Algorithms and data structure		FR [q1]
C LSINCTIZT	Algorithms and data structure		[41] [30h+30h] [5 Credits] ▲ ∰
O LSINC1252	Informaticals Systems	Etienne Riviere	[q1] [30h+30h] [5 Credits] [5 @
OLSINC1301	Databases and modeling		[q1] [30h+30h] [5 Credits] (\$\Delta\)
O LSINC1361	Artificial intelligence 📕		[q2] [30h+30h] [5 Credits] [5 @
O LSINC1341	Computer networks		[q2] [30h+30h] [5 Credits] ▲ ∰
O LSINC1509	Project 4: application of databases 📕		[q2] [30h+30h] [5 Credits] ▲ ∰

o Formation en mathématiques et science des données

O LSINC1109	Statistics and data sciences	ER [q2] [30h+30h]
		[5 Credits]
		$\Delta \oplus$

o Formation en langues et sciences humaines

O LSINC1805	People management	[q2] [15h+15h] [3 Credits] (15h+15h]
O LANGL1184	English for Computer Scientists III 📕	[q2] [20h] [2 Credits] ()

& Minor or additional module

The student completes his training with the additional module in computer science or the additional 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
- 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 fulltime 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 2023-2024, you must have obtained your diploma during the academic years 2020-2021, 2021-2022 ou 2022-2023. 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 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).

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 Denomination Faculty Sector Acronym Postal address SST/EPL/INFO (INFO) Louvain School of Engineering (EPL) Sciences and Technology (SST) INFO Place Sainte Barbe 2 - bte L5.02.01 1348 Louvain-la-Neuve 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

UCL - Université catholique de Louvain Study Programme 2024-2025 SINC1BA: Bachelor in Computer Science