UCLouvain

SINF2M1

2026 - 2027

Master [60] in Computer Science

At Louvain-la-Neuve - 60 credits - 1 year - Day schedule - In English
Dissertation/Graduation Project : **YES** - Internship : **NO**
Activities in English: **YES** - Activities in other languages : **NO**
Activities on other sites : **NO**
Main study domain : **Sciences**
Organized by: **Louvain School of Engineering (EPL)**
Programme acronym: **SINF2M1** - Francophone Certification Framework: 7

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SINF2M1 - Introduction

Introduction

Introduction

The objective of this master's degree programme is to train computer science professionals capable of

- understanding and analysing the complex needs of a company
- designing computing systems that meet those needs
- mastering the rapidly evolving technological tools in this area
- implementing solutions
- assuring quality products and procedures in a company.

Your profile

You would like to

- **conceive, design, and implement computer** science systems that will shape the future;
- further your education beyond the bachelor's degree with a major in computer sciences (or the equivalent);
- improve your **theoretical knowledge** and develop your technical expertise in fields like artificial intelligence, computer networks, information security, software engineering and programming systems;
- improve your **interdisciplinary knowledge** in areas such as foreign languages, resource management, teamwork, autonomy and ethics.

Your future job

We train

- **professionals** who will design computer systems that meet users' needs;
- **innovators** who can master a wide range of constantly evolving technologies;
- **specialists** capable of implementing software solutions with particular attention paid to product quality and its development process.

Your programme

This master's programme includes

- a **core curriculum** designed to acquire the skills necessary for modelling and designing complex applications. Topics covered include artificial intelligence, computer networking, software engineering, compilers and data bases;
- **an introductory course (LEPL2211)** that presents the main aspects of a business and its responsible management through the analysis of a business plan and its application to real-life cases.
- a **graduation project** that offers students the opportunity to explore a subject in-depth and, due to its scope, offers a genuine introduction to the professuinal life of a computer scientist. The topic of this project is selected in consultation with the programme supervisors and possibly a company.

SINF2M1 - Teaching profile

Learning outcomes

The computer science developers and designers of tomorrow face two major challenges:

- increasingly complex computer science systems
- increasingly varied areas of application.

To meet these challenges, future master's graduate should:

- be proficient in real computer science technologies but also keep up with their constant progress
- work as part of multidisciplinary teams that take into account non-technical issues.

This master 60 aims at the in-depth understanding of concepts and the acquisition of thinking and abstraction skills. This theoretical approach is supplemented by the application of concepts which takes an important place in the training. The program therefore includes many projects and works.

Except for exceptions specified in the detailed program, all the courses of the program are taught in English, the command of this language being essential in the field of data processing. This offers French-speaking students the opportunity to practise English intensively during their training.

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

1. Demonstrate mastery of a solid body of knowledge in computer science allowing them to solve problems raised in their field of study

This master's degree programme aims to provide students with advanced knowledge and is based on the fundamentals of computer science acquired in the Bachelor's degree programme. A diversity of subjects are offered in the common curriculum:

M.1. Networking;

M.2. Programming languages;

M.3. Software engineering;

M.4. Artificial intelligence.

2. Organise and carry out the development of a computer system that meets the complex demands of a client

2.1. Analyse a problem to solve or functional needs to be met and formulate a corresponding specifications note.

2.2. Model a problem and design one or more technical solutions in line with the specifications note.

2.3. Evaluate and classify solutions in light of all the criteria included in the specifications note: efficiency, feasibility, quality, ergonomics, environmental security and sustainability.
2.4. Implement and test the chosen solution.

2.5. Come up with recommendations to improve the solution.

2.6. Think disruptively and creatively, open to plurality.

3. Contribute as part of a team to the planning and completion of a project while taking into account its objectives, allocated resources, and constraints

3.1. Frame and explain the project's objectives (in terms of performance indicators) while taking into account its issues and constraints.

3.2. Collaborate on a work schedule, deadlines and roles.

3.3. Work in a multi/inter/transdisciplinary environment with peers holding different points of view; manage any resulting disagreement or conflicts, identify the contributions and limits of each discipline, dialogue on the same project.

3.4. Make team decisions when choices need to be made (whether they are about technical solutions or the division of labour to complete a project).

4. Communicate effectively (orally or in writing) with the goal of carrying out assigned projects in the workplace (in English in particular)

4.1. Identify the needs of all parties: question, listen and understand all aspects of their request and not just the technical aspects.

4.2. Present your arguments, advise and adapt to the language of your interlocutors: technicians, colleagues, clients, superiors, specialists from other disciplines or general public.

4.3. Communicate through graphics and diagrams: interpret a diagram, present project results, structure information.

4.4. Read and analyse different technical documents (rules, plans, specification notes).

4.5. Draft documents that take into account contextual requirements and social conventions.

4.6. Make a convincing oral presentation using modern communication techniques.

5. Rigorously mobilise their scientific and technical skills and their critical sense to analyse complex situations by adopting a systemic and transdisciplinary approach, and to adapt their technical responses to the current and future challenges of the socio-economic-ecological transition, thus actively contributing to the transformation of society

5.1. Acquire a knowledge base on the socio-ecological issues and use multi-criteria tools to evaluate the sustainability of a technology, in quantitative and/or qualitative terms.

5.2. Define, specify and analyse a problem in all its complexity, taking into account its various dimensions (social, ethical, environmental, etc.), scales (time, place) and uncertainty.

5.3. Identify, propose and activate engineering levers that can contribute to sustainable development and transition (eco-design, robustness, circularity, energy efficiency, etc.).

5.4. Demonstrate critical awareness of a technical solution in order to verify its robustness and minimise the risks that may occur during implementation, be aware of its limitations, and take a personal stand on ethical, environmental and societal issues.

5.5. Evaluate oneself and independently develop necessary skills to remain knowledgeable in the field.

Programme structure

The student's master's program 60 in computer science will total a minimum of 60 credits distributed over an annual block including core courses (21 credits), a final thesis (15 credits) and units of elective course (24 credits).

This programme may vary depending on students' prior course of study. If during their previous studies, students have already taken a required class or completed an equivalent activity, they may substitute this course with an activity of their choice from the master's degree programme (120) in computer science (provided they follow the programme guidelines). They will also verify that the minimum number of required credits for their diploma has been obtained.

Such programmes will be submitted to the appropriate programme commission for approval.

Most courses in this programme are offered in English. For non-Francophone students, alternative courses will be suggested by the programme commission as substitutes for required courses taught in French. This will be done on a case-by-case basis depending on the student's curriculum.

It is always possible for students to speak in French in class or during evaluations. Specifically, the graduation thesis/project may be written and defended in either English or French.

For students coming from bachelor's degrees in management information technology or computer science and systems from the Hautes Ecoles in FWB, the program also includes an additional module comprising 45 credits which must be taken as a priority during the first registration in the master's degree. Including this complementary module, the student's complete program should reach 105 credits spread over 2 annual blocks.

SINF2M1 Programme

Detailed programme by subject

CORE COURSES

- Mandatory
- Optional
- Not offered in 2026-2027
- Not offered in 2026-2027 but offered the following year
- Offered in 2026-2027 but not the following year
- Not offered in 2026-2027 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...)

Specialised courses in computer science

Students choose 3 courses among:
Minimum 18 credit(s)

LINFO2132	Languages and translators	Ramin Sadre	EN [q2] [30h+30h] [6 Credits] *> French-friendly*
LINFO2241	Architecture and performance of computer systems	Tom Barbette	EN [q1] [30h+30h] [6 Credits] *> French-friendly*

LINFO2255	Software engineering project	Benoît Duhoux	EN [q1] [30h+30h] [6 Credits] > French-friendly
LINFO2262	Machine Learning :classification and evaluation	Pierre Dupont	EN [q2] [30h+30h] [6 Credits] > French-friendly
LINFO2172	Databases	Samuel Hiard	EN [q2] [30h+30h] [6 Credits] > French-friendly

Elective courses (24 credits)

The student completes his program with optional disciplinary courses in the master's 120 program in computer science with the agreement of the program committee. Students' attention is drawn to the following two courses:

LINFO2401	Open Source strategy for software development	Lionel Dricot	EN [q1] [30h+15h] [5 Credits] > French-friendly
LINFO2402	Open Source Project	Cristel Pelsser (coord.)	EN [q1+q2] [0h] [5 Credits] > French-friendly

Interdisciplinary courses in the humanities and social sciences

LEPL2211	Introduction to new venture management	Benoît Gailly	EN [q2] [30h] [3 Credits] > French-friendly

Master Thesis (15 credits)

LINFO2991	Graduation project/End of studies project *The graduation project can be written and presented in French or English, in consultation with the supervisor. It may be accessible to exchange students by prior agreement between the supervisors and/or the two universities.*		EN [q1+q2] [] [15 Credits]

Supplementary classes

To access this Master, students must have a good command of certain subjects. If this is not the case, in the first annual block of their Masters programme, students must take supplementary classes chosen by the faculty to satisfy course prerequisites.

- Mandatory
- Optional
- Not offered in 2026-2027
- Not offered in 2026-2027 but offered the following year
- Offered in 2026-2027 but not the following year
- Not offered in 2026-2027 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...)

Course for applicants with a short bachelor's degree. Students will need to take a minimum of 105 credits to obtain the master's degree in computer science.

LINFO1114	Discrete structures	Gaëtan Cassiers	FR [q1] [30h+15h] [5 Credits]

Cours alternatifs Probabilités et statistiques

The student chooses a course from:

LBIR1212	Probabilities and statistics (I)	Patrick Bogaert	FR [q1] [30h+15h] [5 Credits]
LSINC1211	Probability and Statistics	Marie-Ange Remiche	FR [q2] [30h+30h] [5 Credits]

Cours alternatifs Intelligence artificielle

The student chooses a course from:

LINFO1361	Artificial intelligence	Quentin Cappart Eric Piette	FR [q2] [30h+30h] [5 Credits]
LSINC1361	Artificial intelligence	Quentin Cappart Eric Piette	FR [q2] [30h+30h] [5 Credits]

Cours alternatifs Systèmes informatiques

The student chooses a course from:

LINFO1252	Operating Systems	Etienne Riviere	FR [q1] [30h+30h] [5 Credits]
LSINC1252	Operating Systems	Etienne Riviere	FR [q1] [30h+30h] [5 Credits]

Cours alternatifs Réseaux informatiques

The student chooses a course from:

LINFO1341	Computer networks	Olivier Bonaventure (coord.) Cristel Pelsser	FR [q2] [30h+30h] [5 Credits]
LSINC1341	Computer networks	Olivier Bonaventure (coord.) Cristel Pelsser	FR [q2] [30h+30h] [5 Credits]

Cours alternatifs Algorithmique et structures de données

The student chooses a course from:

LINFO1121	Algorithms and data structures	Pierre Schaus	FR [q1] [30h+30h] [5 Credits]
LSINC1121	Algorithms and data structure	Pierre Schaus	FR [q1] [30h+30h] [5 Credits]

Cours alternatifs Concepts des langages de programmation

The student chooses a course from:

LINFO1104	Programming language concepts	Quentin Stiévenart	FR [q2] [30h+30h] [5 Credits]

⊠ LSINC1104	Programming Paradigms and Concurrency	Quentin Stiévenart	FR [q1] [30h+30h] [5 Credits]
○ LEPL1509	Project 4 (in informatics)	Hélène Verhaeghe	FR [q2] [30h+22.5h] [5 Credits]

○ Cours alternatifs Calculabilité, logique et complexité

The student chooses a course from:

⊠ LINFO1123	Calculability and Complexity	Yves Deville Charles Pecheur	FR [q2] [30h+30h] [5 Credits]
⊠ LSINC1123	Calculability, Logic and Complexity		FR [q2] [30h+30h] [5 Credits] △

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.

SINF2M1 - Information

Access Requirements

Master course admission requirements are defined by the French Community of Belgium Decree of 7 November 2013 defining the higher education landscape and the academic organisation of courses.

General and specific admission requirements for this programme must be satisfied at the time of enrolling at the university.

Unless explicitly mentioned, the bachelor's, master's and licentiate degrees listed in this table or on this page are to be understood as those issued by an institution of the French, Flemish or German-speaking Community, or by the Royal Military Academy.

In the event of the divergence between the different linguistic versions of the present conditions, the French version shall prevail.

SUMMARY

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- > Specific access requirements
- > University Bachelors
- > Non university Bachelors
- > Holders of a 2nd cycle University degree
- > Holders of a non-University 2nd cycle degree
- > Access based on validation of professional experience
- > Access based on application
- > Admission and Enrolment Procedures for general registration

Specific access requirements

This programme is taught in English with no prerequisite in French. See selection criteria of the personalized access.

University Bachelors

Diploma	Special Requirements	Access	Remarks
UCLouvain Bachelors			
Bachelor in Computer Science (Louvain-la-Neuve)		Direct access	
Bachelor in Computer Science (Charleroi)		Direct access	
Bachelor in Economics and Management Bachelor in Mathematics Bachelor in Engineering : Architecture	Minor in Computer Sciences	Access with additional training	maximum 60 additional credits integrated into their master's degree programme. If the UCLouvain Admissions Office considers the enrolment application sufficiently complete, it will submit the application to the faculty for a decision.
Others Bachelors of the French speaking Community of Belgium			
Bachelier en sciences informatiques		Direct access	
Bachelors of the Dutch speaking Community of Belgium			
Bachelor in de informatica		Direct access	
Foreign Bachelors			
Bachelor in Computer Sciences		Access based on application	See "Personalized Access"

Non university Bachelors

> Find out more about links to the university

Diploma	Access	Remarks
BA en informatique de gestion - crédits supplémentaires entre 30 et 60	Les enseignements supplémentaires éventuels	Type court

BA en informatique et systèmes, orientation informatique industrielle - crédits supplémentaires entre 30 et 60
BA en informatique et systèmes, orientation réseaux et télécommunications - crédits supplémentaires entre 30 et 60
BA en informatique et systèmes, orientation sécurité des systèmes - crédits supplémentaires entre 30 et 60
BA en informatique et systèmes, orientation technologie de l'informatique - crédits supplémentaires entre 30 et 60
BA en informatique, orientation développement d'applications - crédits supplémentaires entre 30 et 60
BA en informatique, orientation informatique industrielle - crédits supplémentaires entre 30 et 60
BA en informatique, orientation intelligence artificielle - crédits supplémentaires entre 30 et 60
BA en informatique, orientation réseaux et télécommunications - crédits supplémentaires entre 30 et 60
BA en informatique, orientation sécurité des systèmes - crédits supplémentaires entre 30 et 60
BA en informatique, orientation technologies de l'informatique - crédits supplémentaires entre 30 et 60

peuvent être consultés dans le module complémentaire .

Holders of a 2nd cycle University degree

Diploma	Special Requirements	Access	Remarks
"Licenciés"			
Masters			

Holders of a non-University 2nd cycle degree

Access based on validation of professional experience

It is possible, under certain conditions, to use one's personal and professional experience to enter a university course without having the required qualifications. However, validation of prior experience does not automatically apply to all courses. Find out more about Validation of priori experience .

Access based on application

Access based on application : access may be granted either directly or on the condition of completing additional courses of a maximum of 60 ECTS credits, or refused.

The first step of the admission procedure requires to submit an application online : https://uclouvain.be/en/study/inscriptions/futurs-etudiants.html .

Selection criteria are summarized here (contact : epl-admission@uclouvain.be).

In cases where direct access to the master program is not available or not as described above, an application for admission based on application file may still be submitted to the Enrolment Office.

For any question, please contact epl-admission@uclouvain.be

04/08/2026 : Pending the publication of the 2027-2028 study programme (expected in early March), the selection criteria for 2027-2028 are now available

Admission and Enrolment Procedures for general registration

Teaching method

Active learning and non-technical skills

You will play an active role in your education. The pedagogical approach is a balanced mix of lectures, exercises, and projects to be completed individually or in groups. The teaching methods are varied. At times, you will be required to explore concepts and techniques independently, with the teaching team acting as a resource to support your learning. At other times, the pedagogy is more directive, providing you with the necessary tools to complete future tasks.

A significant emphasis is placed on non-technical skills (autonomy, organisation, time management, different modes of communication, etc.). In particular, by emphasising project-based activities (including a large-scale project that puts students in a semi-professional situation), this programme develops students' critical thinking skills, which allows them to design, model, implement, and validate complex IT systems.

Languages

The lingua franca of computer science is English. The use of English in the programme will help students to enhance their mastery of this language, which will facilitate their professional integration. Course materials and guidance are in English. However, students may always ask or respond to exam questions in French if desired.

Additionally, the programme allows students to take language courses at the university's Language Institute (ILV).

Evaluation

The evaluation methods comply with the Academic regulations and procedures . More detailed explanation of the modalities specific to each learning unit are available on their description sheets under the heading "Learning outcomes evaluation method".

The learning activities are assessed according to the rules of the university (see exam regulations), namely written and oral exams, personal or group assignments, public presentation of projects and defence of the graduation thesis. For the courses taught in English, questions will be formulated in English by the teacher, but the student may choose to answer in French. For the courses taught in French, the questions will be formulated in French by the teacher, but the student may request help with translation into English and answer in English.

Some activities such as projects during the semester under the supervision of the teaching staff and in collaboration with other students are not reorganised outside the period prescribed for the course. They cannot be reassessed in a subsequent session.

The detailed assessment procedures for each teaching unit are communicated to students by the teaching staff at the beginning of each semester.

To find out more about the assessment procedures, students are invited to consult the activity description sheet.

To obtain the average, the marks obtained for the teaching units are weighted by their respective credits.

Mobility and/or Internationalisation outlook

International Opportunities (for UCLouvain students)

This master's programme (60) does not allow for Erasmus/Socrates/Mercator exchange programmes. Students interested in international exchanges are urged to enrol in the 120 credit master's programme in computer science.

International Appeal (for foreign students)

The entire master's programme is taught in English, and no knowledge of French is required. Except for rare exceptions, courses are dispensed in English. For non-Francophone students, alternative courses will be suggested by the programme commission as substitutes for required courses taught in French. This will be done on a case-by-case basis depending on the student's curriculum.

Possible trainings at the end of the programme

Master - 120 credits available:
The 60-credit Master's degree in Computer Science can be followed by a 120-credit Master's degree in Computer Science.

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 1348 Louvain-la-Neuve Tel: +32 (0) 10 47 31 50 - Fax: +32 (0) 10 45 03 45

Academic supervisor: ramin.sadre@uclouvain.be

Jury

- Président du Jury: claude.oestges@uclouvain.be
- Secrétaire du Jury: ramin.sadre@uclouvain.be

Useful Contact(s)

- Secrétariat: vanessa.maons@uclouvain.be
- Secrétariat facultaire: master-epl-sinf@uclouvain.be
- Study advisor: cecile.lombart@uclouvain.be