UCLouvain

SINF2M

*2026 - 2027*

# Master [120] in Computer Science

**At Louvain-la-Neuve - 120 credits - 2 years - Day schedule - In English**
Dissertation/Graduation Project : **YES** - Internship : **optional**
Activities in English: **YES** - Activities in other languages : **optional**
Activities on other sites : **NO**
Main study domain : **Sciences**
Organized by: **Louvain School of Engineering (EPL)**
Programme acronym: **SINF2M** - Francophone Certification Framework: 7

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# SINF2M - Introduction

## Introduction

### Introduction

This master's degree programme tries to strike **a balance between "soft skills" and scientific and technical knowledge, between excellence in research and the pragmatism of field work.** It offers:

- an approach to computer science based on fundamental **concepts** that keep up with the rapid pace of technological progress;
- a programme taught **entirely in English** to improve students' language skills, especially in technical English (both written and spoken);
- **exchange programmes** and dual degrees in Belgium, Europe and across the world.

### Your profile

You would like to

- **imagine, design, and implement** computer science systems that will shape the future;
- continue your education beyond your undergraduate 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

- **scientists** who know how to investigate a sharp problematic using scientific literature in the field;
- **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 degree programme consists of

- **required coursework** that seeks to give students the necessary skills to model and design complex applications (which is an indispensable part of the education of all university-trained computer scientists);
- **a major** selected by students that allows them to gain cutting-edge knowledge in a field of their interest: software engineering and programming systems, artificial intelligence and big data, networks and security;
- **elective courses** that allow students to explore their interests whether it be computer science or another discipline (management, business creation, languages). As a comprehensive university, UCLouvain has numerous courses of study;
- a **graduation project** that makes up half of the programme during the last year. It offers students the possibility to study a subject in-depth and thanks to its size, introduces students to the professional life of a computer scientist or researcher; the topic of this project is selected in consultation with the programme supervisors and possibly a company.

# SINF2M - 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

**In order to meet these challenges, future diploma holders should:**

- master real computer science technologies but also keep up with their constant progress
- innovate by integrating in computer systems elements linked to artificial intelligence, software engineering, and security networks
- work in multi-disciplinary teams that incorporate non-technical issues, and be open to the social sciences and humanities to help them in this task.

**This programme is based on research:**

UCLouvain is a research university. The computer science research conducted at the institute ICTEAM is internationally recognised. Through the major courses offered in this master's degree programme, students will be able to take advantage of cutting-edge knowledge. In addition to providing fundamental knowledge, this programme is based on the in-depth understanding of concepts and the ability to think abstractly. These tools allow students to quickly adapt to the needs of companies. Moreover, this research may be continued through projects carried out at the doctoral level.

**Applying concepts:**

The application of concepts is a key part of this master's degree programme. It is inconceivable that students can master theoretical concepts but not know how to apply them to a concrete problem. The programme includes a number of projects and studies, a large-scale graduation project and the possibility of completing an internship in a company.

**International openness:**

English is de facto the most used language in companies and those in the technical field. This master's degree programme is thus taught in English, which gives our students good speaking and writing skills. By offering a master's degree in English, this programme demonstrates its international openness. The use of English allows the programme to welcome international students while at the same time immersing them in a French-speaking environment. It also increases the possibility of exchanges and dual diplomas with other (non-Belgian) universities.

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**. A diversity of subjects are offered in the common curriculum and students **specialise via a major**:

M.1. Security networks;

M.2. Programming systems;

M.3. Software engineering;

M.4. Artificial intelligence;

M.5. Data Science and Applied Mathematics;

M.6. Business issues.

**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 the 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** the 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.

**3.organise and carry out a study to understand a new problem in the field**

3.1. **Document** and summarise the existing **body of knowledge** in the area under consideration.
3.2. Propose a **model** and/or an **experimental device** in order to simulate or test a **hypotheses** relating to the phenomenon being studied.
3.3. Write a cumulative **report** that explains the potential of the theoretical or technical **innovations** resulting from the research project.
3.4. Think disruptively and creatively, open to plurality.

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

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

4.2. **Collaborate** on a work schedule, deadlines and roles.
4.3. 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.
4.4. **Make team decisions** when choices need to be made (whether they are about technical solutions or the division of labour to complete a project).

**5. communicate effectively (orally or in writing) with the goal of carrying out assigned projects in the workplace (in English in particular)**

5.1. Identify the needs of all parties: **question, listen and understand** all aspects of their request and **not just the technical aspects**.
5.2. **Present your arguments**, advise and adapt to the **language of your interlocutors**: technicians, colleagues, clients, superiors, specialists from other disciplines or general public.
5.3. Communicate **through graphics and diagrams**: interpret a diagram, present project results, structure information.
5.4. Read and **analyse different technical documents** (rules, plans, specification notes).
5.5. **Draft documents** that take into account **contextual requirements** and social conventions.
5.6. Make a **convincing oral presentation** using modern communication techniques.

**6. 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**

6.1. 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.
6.2. 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.

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

6.4 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.

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

## Programme structure

The program includes four parts:

- a core curriculum (28 credits), including a final thesis (25 credits).
- a specialisation track, compulsory training (30 credits).
- one or more options allowing students to specialise in a field of IT (20-40 credits).
- elective courses (20-40 credits).

The graduation project is typically carried out in the last year. However, students may, depending on their training, conduct other courses in either the first or second year so long as they have completed the prerequisite courses. This is especially the case for students who have completed a portion of their studies abroad. The annual timetable of courses given in the detailed programme description is for guidance only.

Additionally, students wishing and presenting a coherent project have the opportunity to broaden their training to non-technical skills through elective courses.

## SINF2M Programme

## Detailed programme by subject

## CORE COURSES [28.0]

- 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...)

| | | | | Year 1 | 2 |
|---|---|---|---|---|---|
| Mandatory LINFO2992 | Graduation project/End of studies project<br>*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] [] [25 Credits] | x | x |

### Computer science seminars

*Students must select 3 credits among*

| | | | | | |
|---|---|---|---|---|---|
| Optional LINFO2349 | Networking and security seminar | Cristel Pelsser<br>Etienne Riviere<br>Ramin Sadre (coord.) | EN [q1] [30h] [3 Credits]<br>*> French-friendly* | | x |
| Optional LINFO2359 | Software engineering and programming systems seminar | Kim Mens (coord.)<br>Charles Pecheur | EN [q1] [30h] [3 Credits]<br>*> French-friendly* | | x |
| Optional LINFO2369 | Artificial intelligence and machine learning seminar | Quentin Cappart<br>Eric Piette<br>Hélène Verhaeghe (coord.) | EN [q1] [30h] [3 Credits]<br>*> French-friendly* | | x |

## PROFESSIONAL FOCUS [30.0]

- 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...)

### Content:

#### Computer science courses

| | | | | Year 1 | Year 2 |
|---|---|---|---|---|---|
| LINFO2132 | Languages and translators | Ramin Sadre | EN [q2] [30h+30h] [6 Credits] > *French-friendly* | x | x |
| LINFO2172 | Databases | | EN [q2] [30h+30h] [6 Credits] > *French-friendly* | x | x |
| LINFO2241 | Architecture and performance of computer systems | | EN [q1] [30h+30h] [6 Credits] > *French-friendly* | x | x |
| LINFO2262 | Machine Learning :classification and evaluation | Pierre Dupont | EN [q2] [30h+30h] [6 Credits] > *French-friendly* | x | x |
| LINFO2255 | Software engineering project | | EN [q1] [30h+30h] [6 Credits] > *French-friendly* | x | x |

## OPTIONS

*Student complete their program by selecting 62 credits from the following sections.*

*- In the "Computer Science Options" section, students must validate at least one of the 6 options. They can also validate several.*

*- In the "Options and elective courses in socio-economic knowledge" section, students validate one of the two options or must choose a minimum of 6 credits from the courses in the option in business issues (maximum one class of innovation may be chosen, maximum one course among those offered by the CPs may be taken into account in these 6 credits).*

*- Students complete their programme by choosing from the computer science option courses and the list of elective courses.*

Options en sciences informatiques

> Major in Artificial Intelligence: big data, optimization and algorithms *[ en-prog-2026-sinf2m-lsinf223o ]*
> Major in Software Engineering and Programming Systems *[ en-prog-2026-sinf2m-lsinf224o ]*
> Option in Data science and Applied Mathematics *[ en-prog-2026-sinf2m-lsinf226o ]*
> Option in Cybersecurity *[ en-prog-2026-sinf2m-linfo309o ]*
> Option Networks and systems *[ en-prog-2026-sinf2m-linfo319o ]*
> Option in Medical Computing *[ en-prog-2026-sinf2m-linfo329o ]*
> Cours au choix disciplinaires *[ en-prog-2026-sinf2m-linfo237o ]*

Options and elective courses in socio-economic knowledge

> Major in Business risks and opportunities *[ en-prog-2026-sinf2m-linfo233o ]*
> Major in Interdisciplinary Program in Entrepreneurship - INEO *[ en-prog-2026-sinf2m-linfo232o ]*
> Elective course in socio-economic knowledge *[ en-prog-2026-sinf2m-lepl200o ]*

Others Elective courses

> Others elective courses *[ en-prog-2026-sinf2m-lsinf923o ]*

*OPTIONS EN SCIENCES INFORMATIQUES*

## *MAJOR IN ARTIFICIAL INTELLIGENCE: BIG DATA, OPTIMIZATION AND ALGORITHMS*

**Students completing the major in Artificial Intelligence: big data, optimization and algorithms will be able to:**

- Identify and implement methods and techniques that allow software to solve complex problems that when solved by humans require “intelligence”,
- Understand and put to good use methods and techniques relating to artificial intelligence such as automatic reasoning, research and heuristics, acquisition and representation of knowledge, automatic learning, problems associated with overcoming constraints,
- Identify applications and its methods and tools; understand a particular category of applications and its related techniques, for example robotics, computer vision, planning, data mining, computational linguistics and bioinformatics, big data processing,
- Formalise and structure a body of complex knowledge and use a systematic and rigorous approach to develop quality “intelligence” systems.

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...)

*From 20 to 30credit(s)*

Year 1 2

### *Content:*

#### Required courses in Artificial Intelligence: big data, optimization and algortihms

| | | | | | |
|---|---|---|---|---|---|
| LINFO2263 | Computational Linguistics and Generative AI | Pierre Dupont | EN [q1] [30h+15h] [5 Credits] *> French-friendly* | x | x |
| LINFO2266 | Advanced Algorithms for Optimization | Pierre Schaus | EN [q1] [30h+15h] [5 Credits] *> French-friendly* | x | x |
| LINFO2364 | Mining Patterns in Data | Hélène Verhaeghe | EN [q2] [30h+15h] [5 Credits] *> French-friendly* | x | x |
| LINFO2275 | Reinforcement Learning: Algorithms and Applications | Quentin Cappart<br>Eric Piette | EN [q2] [30h+15h] [5 Credits] *> French-friendly* | x | x |

#### Elective courses in Artificial Itelligence

*Student shall select 10 credits among*

| | | | | | |
|---|---|---|---|---|---|
| LELEC2870 | Machine learning : regression, deep networks and dimensionality reduction | John Lee<br>Michel Verleysen | EN [q1] [30h+30h] [5 Credits] *> French-friendly* | x | x |
| LELEC2885 | Image processing and computer vision | Christophe De Vleeschouwer<br>Laurent Jacques | EN [q1] [30h+30h] [5 Credits] *> French-friendly* | x | x |
| LGBIO2010 | Bioinformatics | Pierre Dupont | EN [q1] [30h+30h] [5 Credits] *> French-friendly* | x | x |
| LINFO2145 | Cloud Computing | Etienne Riviere | EN [q1] [30h+15h] [5 Credits] *> French-friendly* | x | x |
| LINMA1691 | Discrete mathematics - Graph theory and algorithms | Vincent Blondel<br>Jean-Charles Delvenne | FR [q1] [30h+22.5h] [5 Credits] | x | x |
| LINMA1702 | Optimization models and methods I<br>*LINMA1702 may be selected as an elective unless this course has already been completed as part of a previous programme.* | François Glineur | FR [q2] [30h+22.5h] [5 Credits] | x | x |
| LINMA2450 | Combinatorial optimization | Julien Hendrickx<br>Geovani Nunes Grapiglia | EN [q1] [30h+22.5h] [5 Credits] *> French-friendly* | x | x |
| LINMA2472 | Algorithms in data science | Vincent Blondel<br>Jean-Charles Delvenne | EN [q1] [30h+22.5h] [5 Credits] *> French-friendly* | x | x |

| | | | | Year 1 | 2 |
|---|---|---|---|---|---|
| ⊠ LINFO2365 | Constraint programming | Pierre Schaus | EN [q2] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| ⊠ LINFO2381 | Health Informatics | Sébastien Jodogne | EN [q2] [30h+30h] [5 Credits] > *French-friendly* | x | x |

## *MAJOR IN SOFTWARE ENGINEERING AND PROGRAMMING SYSTEMS*

**Students completing the major “Software engineering and programming systems” will be able to:**

- Understand and explain problems that come up during large scale software projects as well as the long-term critical impact that their choice of solutions may have (construction dimensions as well as validation, documentation, communication and management of a project involving large teams as well as costs and deadlines),
- Select and apply methods and tools of software engineering to develop complex software systems and meet strict quality standards: reliability, adaptability, scalability, performance, security, usefulness,
- Model the products and processes necessary to obtain such systems and analyse these models,
- Develop and implement analytical programmes focused on conversion and optimisation as well as computer representations,
- Put to good use different programming paradigms and languages, in particular those that deal with functional, object-oriented and competing programmes,
- Understand the issues associated with different and competing programming models and use the appropriate model,
- Define a new language (syntax and semantics) suitable to a specific context.

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...)

*From 20 to 30credit(s)*

### *Content:*

#### Required courses in software engineering and programming systems

| | | | | Year 1 | Year 2 |
|---|---|---|---|---|---|
| LINFO2143 | Concurrent systems : models and analysis | Charles Pecheur | EN [q1] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| LINFO2251 | Software Quality Assurance | Charles Pecheur | EN [q2] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| LINFO2252 | Software Maintenance and Evolution | Kim Mens | EN [q1] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| LINFO2345 | Languages and algorithms for distributed Applications | Etienne Riviere | EN [q1] [30h+15h] [5 Credits] > *French-friendly* | x | x |

#### Elective courses in Software Engineering and Programming Systems

*Students can select 10 credits among*

| | | | | | |
|---|---|---|---|---|---|
| LINFO2145 | Cloud Computing | Etienne Riviere | EN [q1] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| LINFO2347 | Computer system security | Ramin Sadre | EN [q2] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| LINFO2355 | Multicore programming | Etienne Riviere | EN [q2] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| LINFO2364 | Mining Patterns in Data | Hélène Verhaeghe | EN [q2] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| LINFO2365 | Constraint programming | Pierre Schaus | EN [q2] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| LINFO2335 | Programming paradigms | Kim Mens | EN [q2] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| LINFO2381 | Health Informatics | Sébastien Jodogne | EN [q2] [30h+30h] [5 Credits] > *French-friendly* | x | x |
| LINFO2382 | Computer supported collaborative work | Jean Vanderdonckt | EN [q1] [30h+15h] [5 Credits] > *French-friendly* | x | x |

## OPTION IN DATA SCIENCE AND APPLIED MATHEMATICS

**Students completing the major "Data science and Applied Mathematics" must be able to:**

- Understand engineering fields requiring synergy between applied mathematics and computer science such as algorithms, scientific calculations, modelling computer systems, optimisation, machine learning or data mining;
- Understand and put to good use algorithms and techniques used in data science;
- Identify and implement models and techniques relating to statistics, machine learning and data mining;
- Learn classes of applications such as the treatment of noisy data, pattern recognition or automatic extraction in large data collections.

O 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...)

*This option is limited to students who have taken the INFO/MAP pairing or the SINF Bachelor's degree program with the equivalent of a minor in mathematics.*

*From 20 to 30credit(s)*

### O Content:

#### O Required courses in Data Science and Applied Mathematics (20 credits)

| | | | | Year 1 | Year 2 |
|---|---|---|---|---|---|
| O LINMA2472 | Algorithms in data science | Vincent Blondel<br>Jean-Charles Delvenne | EN [q1] [30h+22.5h] [5 Credits]<br>> French-friendly | x | x |
| O LINMA2710 | Scientific computing | Pierre-Antoine Absil<br>Benoît Legat | EN [q2] [30h+22.5h] [5 Credits]<br>> French-friendly | x | x |
| O LINFO2275 | Reinforcement Learning: Algorithms and Applications | Quentin Cappart<br>Eric Piette | EN [q2] [30h+15h] [5 Credits]<br>> French-friendly | x | x |
| O LINFO2364 | Mining Patterns in Data | Hélène Verhaeghe | EN [q2] [30h+15h] [5 Credits]<br>> French-friendly | x | x |

#### ⊠ Elective courses in Data Science and applied mathematics

*Student shall select max. 10 credits among*

| | | | | | |
|---|---|---|---|---|---|
| ⊠ LELEC2870 | Machine learning : regression, deep networks and dimensionality reduction | John Lee<br>Michel Verleysen | EN [q1] [30h+30h] [5 Credits]<br>> French-friendly | x | x |
| ⊠ LINFO2266 | Advanced Algorithms for Optimization | Pierre Schaus | EN [q1] [30h+15h] [5 Credits]<br>> French-friendly | x | x |
| ⊠ LELEC2348 | Information theory and coding | Jérôme Louveaux<br>Benoît Macq<br>Olivier Pereira | EN [q2] [30h+15h] [5 Credits]<br>> French-friendly | x | x |
| ⊠ LINFO2365 | Constraint programming | Pierre Schaus | EN [q2] [30h+15h] [5 Credits]<br>> French-friendly | x | x |
| ⊠ LINFO2381 | Health Informatics | Sébastien Jodogne | EN [q2] [30h+30h] [5 Credits]<br>> French-friendly | x | x |
| ⊠ LINMA2450 | Combinatorial optimization | Julien Hendrickx<br>Geovani Nunes Grapiglia | EN [q1] [30h+22.5h] [5 Credits]<br>> French-friendly | x | x |
| ⊠ LINMA2470 | Stochastic modelling | Philippe Chevalier<br>Quentin Lété | EN [q2] [30h+22.5h] [5 Credits]<br>> French-friendly | x | x |
| ⊠ LINMA2471 | Optimization models and methods II | François Glineur<br>Geovani Nunes Grapiglia | EN [q1] [30h+22.5h] [5 Credits]<br>> French-friendly | x | x |
| ⊠ LMAT2450 | Cryptography | Olivier Pereira | EN [q1] [30h+15h] [5 Credits]<br>> French-friendly | x | x |
| ⊠ LMECA2170 | Computational Geometry | Vincent Legat<br>Jean-François Remacle | EN [q1] [30h+30h] [5 Credits]<br>> French-friendly | x | x |

## OPTION IN CYBERSECURITY

Students who have completed the "Cybersecurity and Information Technology" track should be able to:

• Understand areas of engineering that require synergy between computer security, networks, and systems, such as cryptography, data protection, application security, security architecture, or programming,

• Comprehend and appropriately apply methods and techniques related to cybersecurity, including prevention, detection, and response to cyber threats,

• Identify and implement security practices and standards to protect the infrastructure, systems, and data of organizations,

• Apply their knowledge to real-life scenarios through projects.

- 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...)

*Students shall select 20 to 30 credits among:*

### Content:

*Students shall select 20 to 30 credits among:*

| | | | | Year 1 | Year 2 |
|---|---|---|---|---|---|
| **Required courses in Cybersecurity** | | | | | |
| LINFO2145 | Cloud Computing | Etienne Riviere | EN [q1] [30h+15h] [5 Credits] > French-friendly | x | x |
| LINFO2144 | Secured systems engineering | | EN [q2] [30h+15h] [5 Credits] > French-friendly | x | x |
| LELEC2770 | Privacy Enhancing technology | Olivier Pereira<br>François-Xavier Standaert | EN [q1] [30h+30h] [5 Credits] > French-friendly | x | x |
| LINFO2347 | Computer system security | Ramin Sadre | EN [q2] [30h+15h] [5 Credits] > French-friendly | x | x |
| **Elective courses in Cybersecurity** | | | | | |
| LINFO2143 | Concurrent systems : models and analysis | Charles Pecheur | EN [q1] [30h+15h] [5 Credits] > French-friendly | x | x |
| LMAT2450 | Cryptography | Olivier Pereira | EN [q1] [30h+15h] [5 Credits] > French-friendly | x | x |
| LINFO2142 | Computer networks: configuration and management | Olivier Bonaventure | EN [q1] [30h+15h] [5 Credits] > French-friendly | x | x |
| LINFO2146 | Mobile and Embedded Computing | Ramin Sadre | EN [q2] [30h+15h] [5 Credits] > French-friendly | x | x |
| LINFO2345 | Languages and algorithms for distributed Applications | Etienne Riviere | EN [q1] [30h+15h] [5 Credits] > French-friendly | x | x |
| LELEC2348 | Information theory and coding | Jérôme Louveaux<br>Benoît Macq<br>Olivier Pereira | EN [q2] [30h+15h] [5 Credits] > French-friendly | x | x |
| LINFO2315 | Design of Embedded and real-time systems | Cristel Pelsser | EN [q2] [30h+30h] [5 Credits] > French-friendly | x | x |
| LINFO2381 | Health Informatics | Sébastien Jodogne | EN [q2] [30h+30h] [5 Credits] > French-friendly | x | x |

## OPTION NETWORKS AND SYSTEMS

Students who have completed the “Networks and Systems" track should be able to:

- Understand and explain different devices and protocols used in computer and cellular networks;
- Design, configure and manage computer networks while taking into account application needs;
- Understand the operation of IoT and cellular networks;
- Explain the problems that affect cellular and IoT networks and develop solutions to cope with them;
- Understand how to optimise applications to efficiently use parallel cores;
- Understand, implement and use lock-free data structures;
- Understand the interactions between real-time operating systems and hardware;
- Design and implement applications running on embedded systems

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...)

*Students shall select 20 to 30 credits among:*

### Content:

| | | | | Year 1 | Year 2 |
|---|---|---|---|---|---|
| **Required courses in Networks and systems** | | | | | |
| LINFO2142 | Computer networks: configuration and management | Olivier Bonaventure | EN [q1] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| LINFO2146 | Mobile and Embedded Computing | Ramin Sadre | EN [q2] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| LINFO2315 | Design of Embedded and real-time systems | Cristel Pelsser | EN [q2] [30h+30h] [5 Credits] > *French-friendly* | x | x |
| LINFO2355 | Multicore programming | Etienne Riviere | EN [q2] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| **Elective courses in Networks and Systems** | | | | | |
| LINFO2347 | Computer system security | Ramin Sadre | EN [q2] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| LINFO2145 | Cloud Computing | Etienne Riviere | EN [q1] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| LINFO2144 | Secured systems engineering | | EN [q2] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| LINFO2143 | Concurrent systems : models and analysis | Charles Pecheur | EN [q1] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| LINFO2345 | Languages and algorithms for distributed Applications | Etienne Riviere | EN [q1] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| LINFO2381 | Health Informatics | Sébastien Jodogne | EN [q2] [30h+30h] [5 Credits] > *French-friendly* | x | x |
| LELEC2760 | Secure electronic circuits and systems | François-Xavier Standaert | EN [q2] [30h+30h] [5 Credits] > *French-friendly* | x | x |

## OPTION IN MEDICAL COMPUTING

Students completing the major in "Health informatics" will be able to:

- Identify and use methods and techniques that provide software-based solutions to complex problems encountered in hospitals, in bio-pharmaceutical environments, in life sciences, or in digital health.
- Take part in multidisciplinary projects bringing together medical, biological and engineering expertise to the benefit of patient health.
- Understand and put to good use the methods and techniques pertaining to medical informatics and bioinformatics, such as artificial intelligence, health interoperability, clinical knowledge structuring, applied statistics, information security, software quality, as well as the effective management and processing of large volumes of data.
- Understand specific categories of applications where these methods and techniques can be applied, such as diagnostic support, therapeutic assistance, hospital information systems, medical and biomedical imaging, smart devices, clinical trials, health data mining, as well as automated processing of the medical language.
- Formalise and structure a body of complex knowledge by using a systematic and rigorous approach to the development of high-quality medical and biomedical information systems.

O 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...)

*Students shall select 20 to 30 credits among:*

### Content:

#### Cours obligatoires en Informatique médicale

| | | | | Year 1 | Year 2 |
|---|---|---|---|---|---|
| O LGBIO2050 | Medical Imaging | Greet Kerckhofs<br>John Lee<br>Benoît Macq | EN [q1] [30h+30h] [5 Credits]<br>> *French-friendly* | x | x |
| O LGBIO2010 | Bioinformatics | Pierre Dupont | EN [q1] [30h+30h] [5 Credits]<br>> *French-friendly* | x | x |
| O LINFO2381 | Health Informatics | Sébastien Jodogne | EN [q2] [30h+30h] [5 Credits]<br>> *French-friendly* | x | x |
| O LSTAT2330 | Statistics in clinical trials. | Catherine Legrand | FR [q2] [30h+7.5h] [5 Credits] | x | x |

#### Cours aux choix en Informatique médicale

| | | | | | |
|---|---|---|---|---|---|
| ⊠ LDACS2210 | Information visualisation | John Lee | EN [q1] [30h+30h] [5 Credits]<br>> *French-friendly* | x | x |
| ⊠ LELEC2770 | Privacy Enhancing technology | Olivier Pereira<br>François-Xavier Standaert | EN [q1] [30h+30h] [5 Credits]<br>> *French-friendly* | x | x |
| ⊠ LEPL2210 | Ethics and ICT | Axel Gosseries<br>Olivier Pereira | EN [q2] [30h] [3 Credits]<br>> *French-friendly* | x | x |
| ⊠ LGBIO2020 | Bioinstrumentation | André Mouraux<br>Michel Verleysen | EN [q2] [30h+30h] [5 Credits]<br>> *French-friendly* | x | x |
| ⊠ LGBIO2060 | Modelling of biological systems | Philippe Lefèvre | EN [q1] [30h+30h] [5 Credits]<br>> *French-friendly* | x | x |
| ⊠ LGBIO2072 | Mathematical models in neuroscience | Frédéric Crevecoeur | EN [q1] [30h+30h] [5 Credits]<br>> *French-friendly* | x | x |
| ⊠ LGBIO2110 | Introduction to Clinical Engineering | Benoit Delhaye<br>Philippe Lefèvre | EN [q2] [30h] [3 Credits]<br>> *French-friendly* | x | x |
| ⊠ LINFO2251 | Software Quality Assurance | Charles Pecheur | EN [q2] [30h+15h] [5 Credits]<br>> *French-friendly* | x | x |
| ⊠ LINFO2263 | Computational Linguistics and Generative AI | Pierre Dupont | EN [q1] [30h+15h] [5 Credits]<br>> *French-friendly* | x | x |
| ⊠ LINFO2347 | Computer system security | Ramin Sadre | EN [q2] [30h+15h] [5 Credits]<br>> *French-friendly* | x | x |
| ⊠ LINFO2364 | Mining Patterns in Data | Hélène Verhaeghe | EN [q2] [30h+15h] [5 Credits]<br>> *French-friendly* | x | x |

| | | | | Year 1 | 2 |
|---|---|---|---|---|---|
| ⊠ LINFO2401 | Open Source strategy for software development | Lionel Dricot | EN [q1] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| ⊠ LINMA2472 | Algorithms in data science | Vincent Blondel<br>Jean-Charles Delvenne | EN [q1] [30h+22.5h] [5 Credits] > *French-friendly* | x | x |
| ⊠ LMAT2450 | Cryptography | Olivier Pereira | EN [q1] [30h+15h] [5 Credits] > *French-friendly* | x | x |
| ⊠ WESP2123 | Principles of clinical trials | Diego Castanares Zapatero (coord.)<br>Xavier Stephenne | FR [q1] [20h+10h] [4 Credits] | x | x |
| ⊠ WFARM2177 | Biostatistics | Laure Elens | EN [q2] [20h+10h] [3 Credits] | x | x |
| ⊠ WSBIM2122 | Omics data analysis | | EN [q1] [30h+10h] [3 Credits] | x | x |

- 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...)

### Content:

| | | | | Year 1 | Year 2 |
|---|---|---|---|---|---|
| LINFO2401 | Open Source strategy for software development | Lionel Dricot | EN [q1] [30h+15h] [5 Credits] > French-friendly | x | x |
| LINFO2402 | Open Source Project | | EN [q1+q2] [0h] [5 Credits] > French-friendly | x | x |

## *OPTIONS AND ELECTIVE COURSES IN SOCIO-ECONOMIC KNOWLEDGE*

*Validate one of the two options or select a minimum of 6 credits from the elective courses within the "Business Risks & Opportunities" option (maximum one innovation class may be chosen, maximum one course among those offered by the CPs may be taken into account in these 6 credits).*

## *MAJOR IN BUSINESS RISKS AND OPPORTUNITIES*

- 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...)

*Students wishing to validate this option must select a minimum of 15 credits among the courses offered (maximum one course among those offered by the CPs can be taken into account in these 15 credits).*

*This option cannot be taken simultaneously with the "Interdisciplinary training in entrepreneurship - INEO" option*

### Content:

*Courses offered by the Program Commission.*

### Cours spécifiques aux enjeux de l'entreprise

| | | | | Year 1 | Year 2 |
|---|---|---|---|---|---|
| LFSA2995 | Company Internship<br>*This course cannot be chosen by GCE Masters students as part of the business issues option, as part of their compulsory courses.* | Dimitri Lederer<br>Jean-Pierre Raskin | FR [q1+q2] [30h] [10 Credits] | x | x |
| LEPL1805 | People management<br>*This course cannot be chosen if it has already been validated in the bachelor's degree.* | Bauduin Auquier<br>Philippe Henrotaux<br>Renaud Ronsse | FR [q1] [30h+0h] [3 Credits] | x | x |
| LEPL2020 | Professional integration work | Jean-Pierre Raskin | EN [q1+q2] [30h+0h] [3 Credits] > French-friendly | | x |
| LEPL2210 | Ethics and ICT<br>*This course cannot be chosen if the LLSMS2280 course has already been validated.* | Axel Gosseries<br>Olivier Pereira | EN [q2] [30h] [3 Credits] > French-friendly | x | x |

| | | | | Year 1 | 2 |
|---|---|---|---|---|---|
| ⊠ LEPL2211 | Introduction to new venture management | Benoît Gailly | EN [q2] [30h] [3 Credits] > *French-friendly* | x | x |
| ⊠ LEPL2214A | Law, Regulation and Legal Context - (partim A) | | FR [q1] [30h+0h] [3 Credits] | x | x |
| ⊠ LMECA2645 | Major technological hazards in industrial activity. | Aude Simar | FR [q2] [30h] [3 Credits] | x | x |
| ⊠ LMECA2711 | Quality management and control. | Alexandre Debatty<br>Laurence Guiot (coord.) | EN [q2] [30h+30h] [5 Credits] > *French-friendly* | x | x |
| ⊠ LLSMS2036 | Supply Chain Procurement | Per Joakim Agrell | EN [q1] [30h] [5 Credits] | x | x |
| ⊠ LLSMS2280 | Sustainability Transition and social change<br>*Ce cours ne peut être choisi si le cours LEPL2210 a déjà été validé.* | | EN [q1] [30h] [5 Credits] | x | x |

**⊠ Innovation classe**

*Maximum one innovation class can be chosen.*

| | | | | | |
|---|---|---|---|---|---|
| ⊠ LEPL2021 | Innovation classes for transition and sustainable development | Benoît Macq<br>Xavier Marichal | EN [q1] [30h+15h] [5 Credits] | x | x |
| ⊠ LEPL2022 | Health Innovation Classes | | EN [q2] [30h+30h] [5 Credits] > *French-friendly* | x | x |

## ⊠ Courses offered by the Program Commission

| | | | | | |
|---|---|---|---|---|---|
| ⊠ LINFO2399 | Industrial seminar in computer science | | EN [q2] [30h] [3 Credits] > *French-friendly* | x | x |
| ⊠ LINFO2402 | Open Source Project | | EN [q1+q2] [0h] [5 Credits] > *French-friendly* | x | x |

## *MAJOR IN INTERDISCIPLINARY PROGRAM IN ENTREPRENEURSHIP - INEO*

The aim of this option, which is common to most EPL masters' programmes, is to familiarise students with the specifics of entrepreneurship and business creation, equipping them with the skills, knowledge, and tools necessary for starting a business.

The interdisciplinary entrepreneurship training (INEO) is an option that spans two years and is integrated into over 30 Master's programmes across 9 faculties/schools at UCLouvain.

Choosing the INEO option requires completing an interfaculty dissertation (in teams) focused on a business creation project. Access to this option, as well as to each of its courses, is limited to students selected based on their application.

Full details are available at https://uclouvain.be/fr/etudier/ineo.

Students who choose this option must select a minimum of 20 credits and a maximum of 25 credits. This option is not available in English and cannot be taken simultaneously with the "Business Risks and Opportunity" option.

- 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...)

Year 1 2

### *Content:*

#### Cours obligatoires:

| | | | | 1 | 2 |
|---|---|---|---|---|---|
| LINEO2001 | Théorie de l'entrepreneuriat | Frank Janssen | [FR] [q1] [30h+20h] [5 Credits] | x | |
| LINEO2002 | Aspects juridiques, économiques et managériaux de la création d'entreprise | Yves De Cordt | [FR] [q1] [30h+15h] [5 Credits] | x | |
| LINEO2003 | Plan d'affaires et étapes-clefs de la création d'entreprise<br>*Les séances du cours LINEO2003 sont réparties sur les deux blocs annuels du master. L'étudiant doit les suivre dès le bloc annuel 1, mais ne pourra inscrire le cours que dans son programme de bloc annuel 2.* | Frank Janssen | [FR] [q2] [30h+15h] [5 Credits] | | x |
| LINEO2004 | Séminaire d'approfondissement en entrepreneuriat | Frank Janssen | [FR] [q2] [30h+15h] [5 Credits] | x | |

#### Cours préalable:

*Student who have not taken management courses during their previous studies must enroll in LINEO2021.*

| | | | | 1 | 2 |
|---|---|---|---|---|---|
| LINEO2021 | Financer son projet | Olivier Vercruysse | [FR] [q2] [30h+15h] [5 Credits] | x | |

## ELECTIVE COURSE IN SOCIO-ECONOMIC KNOWLEDGE

*Within the section “Options and elective courses in socio-economic knowledge”, students must either validate one of the two options or are required to select at least 6 ECTS credits from the courses offered within the “Major in Business risks and opportunities” (a maximum of one Innovation Class may be selected, and a maximum of one course offered by the CPs may be counted towards these 6 credits).*

## OTHERS ELECTIVE COURSES

*Students may also enrol in any course that is part of other EPL master's programmes, subject to the approval of the selection panel.*

## OTHERS ELECTIVE 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...)

### Content:

*Les étudiant·e·s peuvent également inscrire à leur programme tout cours faisant partie des programmes d'autres masters de l'EPL moyennant l'approbation du jury restreint.*

| | | | | Year 1 | Year 2 |
|---|---|---|---|---|---|
| **Languages** | | | | | |
| *Students may select from any language course offered at the ILV. Special attention is placed on the following seminars in professional development:* | | | | | |
| LALLE2500 | Professional development seminar German | Caroline Klein | DE [q1+q2] [30h] [3 Credits] | x | x |
| LALLE2501 | Professional development seminar-German | Caroline Klein | DE [q1+q2] [30h] [5 Credits] | x | x |
| LESPA2600 | Vocational Induction Seminar - Spanish (B2.2/C1) | Paula Lorente Fernandez (coord.) | ES [q1] [45h] [3 Credits] | x | x |
| LESPA2601 | Vocational Induction Seminar - Spanish (B2.2/C1) | Paula Lorente Fernandez (coord.) | ES [q1] [45h] [5 Credits] | x | x |
| LNEER2500 | Seminar of Entry to professional life in Dutch - Intermediate level | Isabelle Demeulenaere (coord.) | NL [q1 or q2] [30h] [3 Credits] | x | x |
| LNEER2600 | Seminar of entry to professional life in Dutch - Upper-Intermediate level | Isabelle Demeulenaere (coord.) Dag Houdmont | NL [q1 or q2] [30h] [3 Credits] | x | x |
| **Group dynamics** | | | | | |
| LEPL2351 | Become a tutor | Jean-Charles Delvenne (coord.) Delphine Ducarme Thomas Pardoen | FR [q1] [15h+30h] [3 Credits] | x | x |
| LEPL2352 | Become a tutor | Jean-Charles Delvenne (coord.) Delphine Ducarme Thomas Pardoen | FR [q2] [15h+30h] [3 Credits] | x | x |
| **Autres UEs hors-EPL** | | | | | |
| *Students may choose a maximum of 8 credits from courses outside the EPL, which are considered non-disciplinary by the programme committee.* | | | | | |

# 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 | | FR [q1] [30h+15h] [5 Credits] |

## Cours alternatifs Probabilités et statistiques

*L'étudiant·e choisit un cours parmi:*

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

## Cours alternatifs Intelligence artificielle

*L'étudiant·e choisit un cours parmi:*

| | | | |
|---|---|---|---|
| LINFO1361 | Artificial intelligence | Quentin Cappart<br>Eric Piette | FR [q2] [30h+30h] [5 Credits] |
| LSINC1361 | Artificial intelligence | Eric Piette | FR [q2] [30h+30h] [5 Credits] |

## Cours alternatifs Systèmes informatiques

*L'étudiant·e choisit un cours parmi:*

| | | | |
|---|---|---|---|
| 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

*L'étudiant·e choisit un cours parmi:*

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

## Cours alternatifs Algorithmique et structures de données

*L'étudiant·e choisit un cours parmi:*

| | | | |
|---|---|---|---|
| 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

*L'étudiant·e choisit un cours parmi:*

| | | | |
|---|---|---|---|
| LINFO1104 | Programming language concepts | | FR [q2] [30h+30h] [5 Credits] |
| LSINC1104 | Programming Paradigms and Concurrency | | 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

*L'étudiant·e choisit un cours parmi:*

| | | | |
|---|---|---|---|
| LINFO1123 | Calculability and Complexity | Charles Pecheur | FR [q2] [30h+30h] [5 Credits] |
| LSINC1123 | Calculability, Logic and Complexity | | FR [q2] [30h+30h] [5 Credits] |

## Course prerequisites

There are no prerequisites between course units (CUs) for this programme, i.e. the programme activity (course unit, CU) whose learning outcomes are to be certified and the corresponding credits awarded by the jury before registration in another CU.

## 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.

# SINF2M - 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


- > General access requirements
- > 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 Access on the file.

### 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<br>Bachelor in Mathematics<br>Bachelor in Engineering : Architecture | Minor in Computer Sciences | Access with additional training | maximum 60 additional credits integrated into their Master's degree programme<br>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** | | | |
| Bachelor in computer science | | Direct access | |
| **Bachelors of the Dutch speaking Community of Belgium** | | | |
| Bachelor in de informatica | | Direct access | |
| **Foreign Bachelors** | | | |
| Bachelor in computer science | | 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<br>BA en informatique et systèmes, orientation informatique industrielle - crédits supplémentaires entre 30 et 60<br>BA en informatique et systèmes, orientation réseaux et télécommunications - crédits supplémentaires entre 30 et 60<br>BA en informatique et systèmes, orientation sécurité des systèmes - crédits supplémentaires entre 30 et 60<br>BA en informatique et systèmes, orientation technologie de l'informatique - crédits supplémentaires entre 30 et 60<br>BA en informatique, orientation développement d'applications - crédits supplémentaires entre 30 et 60<br>BA en informatique, orientation informatique industrielle - crédits supplémentaires entre 30 et 60<br>BA en informatique, orientation intelligence artificielle - crédits supplémentaires entre 30 et 60<br>BA en informatique, orientation réseaux et télécommunications - crédits supplémentaires entre 30 et 60<br>BA en informatique, orientation sécurité des systèmes - crédits supplémentaires entre 30 et 60<br>BA en informatique, orientation technologies de l'informatique - crédits supplémentaires entre 30 et 60 | Les enseignements supplémentaires éventuels peuvent être consultés dans le module complémentaire. | Type court |

## Holders of a 2nd cycle University degree

| Diploma | Special Requirements | Access | Remarks |
|---|---|---|---|
| **"Licenciés"** | | | |
| "Licencié en informatique" | | - | |
| **Masters** | | | |
| Master in computer science | | - | |

## 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

## 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 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) and to take part in exchange programmes.

**Interdisciplinary approach**

Over the course of their careers, computer scientists are expected to manage projects as well as teams and show interest in the complex socio-economic environment in which computer science belongs. It is therefore suggested that students learn about disciplines through elective courses or certain major courses such as the interfaculty major "small and medium sized business creation".

## 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

The EPL has developed over a hundred partnerships in 36 countries (both within and outside EU) to offer exchange programmes to its students. EPL also provides opportunities to obtain double degrees, joint degrees or dual master's degrees in several fields. Currently, EPL participates in two Erasmus Mundus programmes: FAME and STRAINS..

In addition to exchange programmes under the Erasmus+ programme, numerous agreements have been established with a broad range of universities through various partner networks such as:

- TIME (Top Industrial Managers en Europe).
- CLUSTER
- Magalhães
- Circle U

There are therefore ample opportunities to gain an additional qualification and/or spend part of the year abroad during your two-year master's degree! It's the perfect opportunity to discover or improve your knowledge of a foreign language, tackle subjects from a new angle and gain unique experience in Europe or the rest of the world.

For more information (destinations, testimonials, application procedures), please visit the webpages of the Cellule internationale de l'EPL.

## Possible trainings at the end of the programme

Accessible supplementary Master's degree programme: not applicable.

Accessible Doctoral Programmes.

The Master's degree in Computer Science may be followed by a doctoral programme in engineering sciences.

Most of the UCLouvain master's degree programmes (generally 60 credits) are open to UCLouvain master's degree diploma holders.

Different master's degree programmes (60) in management (automatic admission based on written application): see this list.

The master's degree (60) in Information and Communication at Louvain-la-Neuve or the master's degree (60) in Information and Communication at Mons.

## Contacts

### Curriculum Management

Entity

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|---|---|
| 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: Ramin Sadre

Jury

- Président du Jury: Claude Oestges
- Secrétaire du Jury: Eric Piette

Useful Contact(s)

- Secrétariat: Vanessa Maons
- faculty secretariat: masters-epl-sinf@uclouvain.be