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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 words the world, has a growing need for computer scientists who are competent, creative and motivated. We cannot count the daily-used IT systems: Internet, mobile, social networks, robotics, home automation, e-commerce, search engines, business management, hospitals, road safety, exhibitions and management of theatres or museums, transport, energy supply and many other areas rely on IT. There will be more and more areas impacted by ICT tomorrow and more complex applications will be needed.

With the bachelor’s degree in computer science, you will
• understand in depth the foundations for the design and implementation of simple computer applications;
• master the basic underlying computer technologies;
• have developed your ability for reasoning and abstraction, required to design future applications;
• master the mathematical techniques involved in such reasoning;
• get the luggage necessary for the future “master in computer science,” oriented toward the development of complex software applications.

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 ;
• economics, management and social sciences;
• English;
• sciences and technology.
You choose a minor to complete your training. This option allows to open your study program to domains you are interested outside the computer science or to deepen some fields closer to the mandatory part of the program (computer science or management).
Once bachelor, you will continue your training by the Master in Computer Science.
Learning outcomes

General objectives

This bachelor's programme offers a general approach to computer science in the context of basic university training. The bachelor's programme leads to the title of "Bachelor of Computer Science" and upon completion of this first cycle of studies, the student will be granted access to the master's programme in Computer Science.

This university-level training in computer science prepares future specialists capable of creating and elaborating complex and efficient computing systems that satisfy the numerous and ever-increasing needs in our society. It thus trains "software creators" rather than pure programmers. More specifically, the bachelor's programme in computer science aims at the acquisition of the following technical competences and skills:

- Gaining an in-depth understanding of the basic essentials needed to design and implement simple software systems;
- Mastering the underlying foundations of computer science;
- Developing the reasoning and abstraction abilities necessary for the creation of such systems;
- Mastering the mathematical skills needed to carry out such reasoning;
- Acquisition of the knowledge and skills necessary for the future "master's in computer science" which will be oriented towards the engineering of more complex software system;
- Acquisition of a lasting 'know-how', readily adaptable to the continuously evolving field of computer science; learning how to learn.

Computer science comprises the theoretical knowledge and practical skills needed to develop and understand complex software systems. In addition to this technical and more applied knowledge, to become a professional computer scientist, the student has to develop some extra skills such as a creative ability and critical mindset. These studies also train students to become responsible young professionals, capable of apprehending the complex socio-economic world into which computing science is embedded, and to take decisions which are both technically sound and morally responsible. The bachelor's programme in computer science thus aims at the acquisition of other competences, such as:

- Understanding the mechanisms which govern the socio-economic and/or technical environment in which a given computer system has to be deployed;
- Integration of the acquired technical competences and skills in a multidisciplinary context;
- Developing an intellectual curiosity, an analytic mind, a capacity for critical reflection, sound communication skills and the ability to organise and manage one's studies.

Objectives of the foundation studies

The objective of the basic university-level studies is to allow the student to acquire essential competences and skills in the areas of computer science, mathematics, science and technology, economics and management, human sciences and English.

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

1. demonstrate a solid basic knowledge of computer science, which, being supplemented by a solid education in other areas, allows him to solve problems within his discipline

   The bachelor's program aims the acquisition of knowledge in:
   - Discrete structures;
   - Programming Fundamentals;
   - Algorithms and Complexity;
   - Architecture of computers and operating systems;
   - Program Design Method;
   - Information management.
   - Moreover, the bachelor’s program is open to other disciplines. A solid basic education is offered in the following areas:
     - Mathematics to model a situation and prove the accuracy of a statement;
     - Statistics to be able to make a quantitative analysis of data;
     - Economics, management and humanities to understand the socio-economic world in which IT tools are inserted.

2. to organize and carry out successfully the development process of a "classic" computer system with medium complexity in order to meet the customer's needs

   • Analyse the problem, identify the functional requirements and formulate the corresponding specifications;
   • Model the problem and design one or more technical solutions to meet these specifications;
   • Assess and classify these solutions in the light of all the criteria listed in the specifications: effectiveness, feasibility;
   • Implement and test the selected solution.
3. contribute in team to a project taking into account the objectives, allocated resources and constraints on feature

- Crop and clarify the objectives of a project in collaboration with customers;
- Commit collectively on a work plan, schedule and roles to keep;
- Make decisions as a team when there is a choice to make: either on technical solutions or on the organization of work to make the project.

4. communicate effectively in French orally and in writing to carry out the projects, use cleverly technical documents in English and understand the information transmitted orally in English

- Identify the needs of the customer who has a basic computer science culture: questioning, listening and understanding the client, keeping in mind the existence of non-technical dimensions;
- Argue and convince while adapting his communication to the language of the interlocutors: colleagues, clients, superiors;
- Communicate in graphical and schematic form, interpret a diagram, present the results of a task, structuring information;
- Read, analyse and use technical documentation (diagrams, tutorials, ...);
- Prepare written documents taking into account contextual requirements and social conventions (manual, documentation, project report);
- Make a persuasive oral presentation using modern communication techniques.

5. demonstrate both rigorous, open and critical mind in his work

- Apply the standards of its discipline (terminology, quality standards in terms of documentation and programming methods, ...);
- Demonstrate critical attitude with respect to a technical solution, checking robustness and relevance in its context of use;
- Develop autonomously learning to remain competent in his field.

Programme structure

The student who enrols in the bachelor's programme in Computer Science will follow a programme of 180 credits, usually spread over 3 years. This programme entitles access to the corresponding master's programme in Computer Science, which is a programme of 120 credits, usually spread over 2 years.

The programme includes a major of 150 credits and a minor of 30 credits.

- The major consists of a set of polyvalent courses of 82 credits in total and a set of Computer Science courses of 68 credits. The general polyvalent formation comprises a solid training in Economics, Management and Human Sciences (34 credits) as well as in Mathematics (32 credits).
- Regarding the minor, UCL university proposes a large variety of minors in sciences (statistics, scientific culture,...) as well as in human sciences (philosophy, economy,...). For more details, please consult the following web-page: https://uclouvain.be/programme-mineures.html. Whereas, some minors are freely accessible by any student, some others are subject to certain accessibility conditions. When a student would like to access a minor but encounters certain problems, he or she is advised to contact his or her student counsellor.

The principal subjects addressed in this programme are :

- Computer Science - 68 credits
- Mathematics- 32 credits
- Economics, Management and Human sciences - 34 credits
- Science and Techniques - 10 credits
- English - 6 credits
- Minor - 30 credits

The computer-science courses adhere to those of the standard curricula proposed by international standard organisations in the domain (ACM and IEEE).
## Programme by subject

### Core study

#### General and training (80 credits)

##### Mathematics (32 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Credits</th>
<th>Hours</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBIR1212</td>
<td>Probabilities and statistics (I)</td>
<td>Patrick Bogaert</td>
<td>4</td>
<td>30h+15h</td>
<td>1q</td>
</tr>
<tr>
<td>LEPL1109</td>
<td>Statistiques et sciences des données</td>
<td></td>
<td>5</td>
<td>30h+30h</td>
<td>1q △</td>
</tr>
<tr>
<td>LINFO1111</td>
<td>Analysis</td>
<td>Abdou Koulider Ben-Naoum</td>
<td>7</td>
<td>45h +37.5h</td>
<td>1q</td>
</tr>
<tr>
<td>LINFO1112</td>
<td>Algebra</td>
<td>Christophe Craye Thomas Peters</td>
<td>5</td>
<td>30h+30h</td>
<td>2q</td>
</tr>
<tr>
<td>LINFO1113</td>
<td>Algorithmique numérique</td>
<td></td>
<td>6</td>
<td>30h+30h</td>
<td>1q △</td>
</tr>
<tr>
<td>LINFO1114</td>
<td>Mathématiques discrètes</td>
<td></td>
<td>5</td>
<td>30h+15h</td>
<td>2q △</td>
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</table>

##### Scientific and technical Courses (11 credits)

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Instructor(s)</th>
<th>Credits</th>
<th>Hours</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>LLELC1930</td>
<td>Introduction to telecommunication</td>
<td>Jérôme Louveaux</td>
<td>5</td>
<td>30h+15h</td>
<td>2q</td>
</tr>
<tr>
<td>LINFO1140</td>
<td>Bases électroniques de l'informatique</td>
<td>Jean-Didier Legat</td>
<td>6</td>
<td>30h+30h</td>
<td>2q</td>
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##### Human Sciences, Economy, and Management Courses (28 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Credits</th>
<th>Hours</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCOPS1124C</td>
<td>Philosophy - S. Camilleri</td>
<td>Sylvain Camilleri</td>
<td>5</td>
<td>30h</td>
<td>2q</td>
</tr>
<tr>
<td>LESPO1113D</td>
<td>Sociology and Anthropology of the Contemporary Worlds - H. DRAELANTS</td>
<td>Hugues Draelants</td>
<td>5</td>
<td>40h</td>
<td>1q</td>
</tr>
<tr>
<td>LCOPS1115K</td>
<td>Economic Policy - A. Khatibi</td>
<td>Arastou Khatibi</td>
<td>5</td>
<td>45h+15h</td>
<td>1q</td>
</tr>
<tr>
<td>LEPL1805</td>
<td>Gestion des personnes</td>
<td></td>
<td>3</td>
<td>22.5h+15h</td>
<td>1q △</td>
</tr>
<tr>
<td>LESPO1122H</td>
<td>Foundations of Law - J. Hausman</td>
<td>Jean-Marc Hausman</td>
<td>5</td>
<td>40h</td>
<td>2q</td>
</tr>
<tr>
<td>LECGE1212S</td>
<td>Macroeconomics - E. de Callatay</td>
<td>Etienne De Callatay</td>
<td>5</td>
<td>45h+15h</td>
<td>2q</td>
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</table>

##### Religion courses for students in exact sciences (2 credits)

The students choose one course between:

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Credits</th>
<th>Hours</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTECO2100</td>
<td>Questions of religious sciences: Biblical readings</td>
<td>Hans Ausloos</td>
<td>2</td>
<td>15h</td>
<td>1q</td>
</tr>
<tr>
<td>LTECO2200</td>
<td>Questions of religious sciences: reflections about Christian faith</td>
<td>Dominique Martens</td>
<td>2</td>
<td>15h</td>
<td>2q</td>
</tr>
<tr>
<td>LTECO2300</td>
<td>Questions of religious sciences: questions about ethics</td>
<td>Marcela Lobo Bustamante</td>
<td>2</td>
<td>15h</td>
<td>1q</td>
</tr>
</tbody>
</table>

##### Cours de langues

##### English Courses (7 credits)

A placement test is organized at the beginning of the annual unit. Depending on the obtained mark, the students follow an adapted course based on their competence level. The students with a mark greater or equal to 16/20 keep their mark and could take an additional language course (out of the 180 credits); this additional course will only affect their average mark if credited (mark greater or equal to 10/20)

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Credits</th>
<th>Hours</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>LANGL1181</td>
<td>English for Computer Scientists I [TM]</td>
<td>Dominique François (coord.) Thibaud Stevens</td>
<td>2</td>
<td>12h</td>
<td>2q</td>
</tr>
<tr>
<td>LANGL1372</td>
<td>English for Computer Scientists</td>
<td>Marc Piwnik (coord.)</td>
<td>3</td>
<td>30h</td>
<td>2q</td>
</tr>
<tr>
<td>LANGL1383</td>
<td>English for Computer Scientists III [C]</td>
<td></td>
<td>2</td>
<td>30h</td>
<td>1q △</td>
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</table>

##### Dutch courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Credits</th>
<th>Hours</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNER1300</td>
<td>General and academic Dutch - intermediate level</td>
<td>Hilde Bulkens (coord.)</td>
<td>2</td>
<td>30h</td>
<td>1q</td>
</tr>
<tr>
<td>LNER1500</td>
<td>Interfaculty teaching unit - General and academic Dutch - upper-intermediate level</td>
<td>Hilde Bulkens (coord.) Valérie Dachy</td>
<td>2</td>
<td>30h</td>
<td>1q</td>
</tr>
<tr>
<td>LNEER2500</td>
<td>Seminar of Entry to professional life in Dutch - Intermediate level</td>
<td>Isabelle Demeulemaere (coord.) Marken Smit Quentin Zéques</td>
<td>2</td>
<td>30h</td>
<td>1q △</td>
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</table>

##### German courses
<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Credits</th>
<th>Language</th>
<th>Hours</th>
<th>Grade Mode</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LALLE1100</td>
<td>German - Elementary level</td>
<td>2</td>
<td>Caroline Klein Ann Rinder (coord.)</td>
<td>90h</td>
<td>1 or 2q</td>
<td>x</td>
</tr>
<tr>
<td>LALLE1300</td>
<td>General German - Upper-intermediate</td>
<td>2</td>
<td>Virginie Godin (coord.)</td>
<td>90h</td>
<td>1 or 2q</td>
<td>x</td>
</tr>
<tr>
<td>LALLE1500</td>
<td>General German - Advanced</td>
<td>2</td>
<td>Virginie Godin (coord.)</td>
<td>90h</td>
<td>1 or 2q</td>
<td>x</td>
</tr>
<tr>
<td>LESPA1100</td>
<td>Spanish (beginner's level) 0-A2</td>
<td>2</td>
<td>Begona Garcia Migura Carmen Vallejo Villamor (coord.)</td>
<td>90h</td>
<td>1 or 2q</td>
<td>x</td>
</tr>
<tr>
<td>LESPA1300</td>
<td>Spanish middle level</td>
<td>2</td>
<td>Carmen Vallejo Villamor</td>
<td>90h</td>
<td>1 or 2q</td>
<td>x</td>
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<tr>
<td>LESPA1500</td>
<td>Spanish Advanced level (B1.2 , B2.1)</td>
<td>2</td>
<td>Alicia Maria Tirado Fernandez Carmen Vallejo Villamor (coord.)</td>
<td>45h</td>
<td>1q</td>
<td>x</td>
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<tr>
<td>LESPA1101</td>
<td>Spanish beginner's level 1st part (0-A1)</td>
<td>2</td>
<td>Begona Garcia Migura Alicia Maria Tirado Fernandez Carmen Vallejo Villamor (coord.)</td>
<td>45h</td>
<td>1 ou 2q</td>
<td>x</td>
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</table>

**Computer science training (70 credits)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Credits</th>
<th>Language</th>
<th>Hours</th>
<th>Grade Mode</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>LINFO1115</td>
<td>Reasoning about a highly connected world: graph theory, game theory and networks</td>
<td>5</td>
<td>Kim Mens Siegfried Nijssen Charles Pecheur</td>
<td>30h+30h</td>
<td>2q</td>
<td>x</td>
</tr>
<tr>
<td>LINFO1101</td>
<td>Introduction à la programmation</td>
<td>5</td>
<td>Siegfried Nijssen Charles Pecheur</td>
<td>30h+30h</td>
<td>1q</td>
<td>x</td>
</tr>
<tr>
<td>LINFO1102</td>
<td>Projets en informatique 1</td>
<td>9</td>
<td>Olivier Bonaventure Etienne Riviere</td>
<td>30h+30h</td>
<td>1 ou 2q</td>
<td>x</td>
</tr>
<tr>
<td>LINFO1103</td>
<td>Introduction à l'algorithimic</td>
<td>6</td>
<td>Pierre Dupont</td>
<td>30h+30h</td>
<td>2q</td>
<td>x</td>
</tr>
<tr>
<td>LINFO1104</td>
<td>Paradigmes de programmation et concurrence</td>
<td>5</td>
<td></td>
<td>30h+30h</td>
<td>1q</td>
<td>x</td>
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<tr>
<td>LINFO1121</td>
<td>Algorithimic and structures de données</td>
<td>5</td>
<td></td>
<td>30h+30h</td>
<td>1q</td>
<td>x</td>
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<tr>
<td>LINFO1225</td>
<td>Conception orientée objet et gestion de données</td>
<td>5</td>
<td></td>
<td>30h+30h</td>
<td>2q</td>
<td>x</td>
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<tr>
<td>LINFO1252</td>
<td>Systèmes informatiques</td>
<td>5</td>
<td></td>
<td>30h+30h</td>
<td>2q</td>
<td>x</td>
</tr>
<tr>
<td>LINFO1123</td>
<td>Calculabilité, logique et complexité</td>
<td>5</td>
<td></td>
<td>30h+30h</td>
<td>2q</td>
<td>x</td>
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<tr>
<td>LINFO1341</td>
<td>Réseaux informatiques</td>
<td>5</td>
<td></td>
<td>30h+30h</td>
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<tr>
<td>LEPL1402</td>
<td>Informatique 2</td>
<td>5</td>
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<td>30h+30h</td>
<td>2q</td>
<td>x</td>
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<tr>
<td>LEPL1509</td>
<td>Projet 4 (en informatique)</td>
<td>5</td>
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<tr>
<td>LEPL1503</td>
<td>Projet 3</td>
<td>5</td>
<td></td>
<td>30h+30h</td>
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**Minor (30 credits)**

The student completes his formation with the additional module in computer sciences or a minor.

<table>
<thead>
<tr>
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<th>Course</th>
<th>Credits</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>Option in 2nd year</td>
<td>15</td>
<td>x</td>
</tr>
<tr>
<td>3</td>
<td>Option in 3rd year</td>
<td>15</td>
<td>x</td>
</tr>
</tbody>
</table>
List of available minors

Besides the core study, students will choose:

• the Additional module in Computer Science
• or one of the minors in the list below.

> Minor in European Studies  [https://www.uclouvain.be/en-prog-2018-min-leuro100]
> Minor in Gender Studies  [https://www.uclouvain.be/en-prog-2018-min-lgenr100]
> Minor in Human and Social Sciences  [https://www.uclouvain.be/en-prog-2018-min-lhsa100]
> Minor in Information and Communication (*)  [https://www.uclouvain.be/en-prog-2018-min-lcomu100]
> Minor in Law (access)  [https://www.uclouvain.be/en-prog-2018-min-ladrt100]
> Minor in Management (ESPO students)  [https://www.uclouvain.be/en-prog-2018-min-lgesb100]
> Minor in law (open)  [https://www.uclouvain.be/en-prog-2018-min-lodrt100]

(*) This program is the subject of access criteria
Course prerequisites

A document entitled en-prerequis-2018-sinf1ba.pdf specifies the activities (course units - CU) with one or more pre-requisite(s) within the study programme, that is the CU whose learning outcomes must have been certified and for which the credits must have been granted by the jury before the student is authorised to sign up for that activity.

These activities are identified in the study programme: their title is followed by a yellow square.

As the prerequisites are a requirement of enrolment, there are none within a year of a course.

The prerequisites are defined for the CUs for different years and therefore influence the order in which the student can enrol in the programme's CUs.

In addition, when the panel validates a student's individual programme at the beginning of the year, it ensures the consistency of the individual programme:
- It can change a prerequisite into a corequisite within a single year (to allow studies to be continued with an adequate annual load);
- It can require the student to combine enrolment in two separate CUs it considers necessary for educational purposes.

For more information, please consult regulation of studies and exams.

The programme's courses and learning outcomes

For each UCL training programme, a reference framework of learning outcomes specifies the competences expected of every graduate on completion of the programme. You can see the contribution of each teaching unit to the programme's reference framework of learning outcomes in the document "In which teaching units are the competences and learning outcomes in the programme's reference framework developed and mastered by the student?"

The document is available by clicking this link after being authenticated with UCL account.

Programme type

SINF1BA - 1ST ANNUAL UNIT

<table>
<thead>
<tr>
<th>Core study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics</td>
</tr>
<tr>
<td>LINFO1111 Analysis</td>
</tr>
<tr>
<td>LINFO1112 Algebra</td>
</tr>
</tbody>
</table>

| Scientific and technical Courses |
| LINFO1140 Bases électroniques de l'informatique | Jean-Didier Legat | 30h+30h | 6 Credits | 2q |

| Human Sciences, Economy, and Management Courses |
| LCOPS1124C Philosophy - S. Camilleri | Sylvain Camilleri | 30h | 5 Credits | 2q |
| LESPO1113D Sociology and Anthropology of the Contemporary Worlds - H. DRAELANTS | Hugues Draelants | 40h | 5 Credits | 1q |
| LCOPS1115K Economic Policy - A. Khatibi | Arastou Khatibi | 45h+15h | 5 Credits | 1q |
| LESPO1122H Foundations of Law - J. Hausman | Jean-Marc Hausman | 40h | 5 Credits | 2q |

Cours de langues
A placement test is organized at the beginning of the annual unit. Depending on the obtained mark, the students follow an adapted course based on their competence level. The students with a mark greater or equal to 16/20 keep their mark and could take an additional language course (out of the 180 credits); this additional course will only affect their average mark if credited (mark greater or equal to 10/20).

### English Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Coordinator(s)</th>
<th>Hours</th>
<th>Credits</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>LANGL1181</td>
<td>English for Computer Scientists I</td>
<td>François (coord.)</td>
<td>12h</td>
<td>2</td>
<td>2q</td>
</tr>
<tr>
<td></td>
<td>[TM]</td>
<td>Thibaud Stevens</td>
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</tbody>
</table>

### Dutch Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Coordinator(s)</th>
<th>Hours</th>
<th>Credits</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNEER1300</td>
<td>General and academic Dutch - intermediate level</td>
<td>Bulkens (coord.)</td>
<td>30h</td>
<td>2</td>
<td>1q</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>

### German Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Coordinator(s)</th>
<th>Hours</th>
<th>Credits</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>LALLE1100</td>
<td>German - Elementary level</td>
<td>Klein Ann Rinder</td>
<td>90h</td>
<td>2</td>
<td>1 + 2q</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>

### Spanish Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Coordinator(s)</th>
<th>Hours</th>
<th>Credits</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>LESP1100</td>
<td>Spanish (beginner's level) 0-A2</td>
<td>Garcia Miguel Carmen Vallejo Villamor (coord.)</td>
<td>90h</td>
<td>2</td>
<td>1 + 2q</td>
</tr>
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<td></td>
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</tbody>
</table>

### Computer science training

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Coordinator(s)</th>
<th>Hours</th>
<th>Credits</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>LINFO1101</td>
<td>Introduction à la programmation</td>
<td>Mens Siegfried Nijssen Pecheur</td>
<td>30h+30h</td>
<td>5</td>
<td>1q</td>
</tr>
<tr>
<td>LINFO1102</td>
<td>Projets en informatique 1</td>
<td>Bonaventure Etienne Riviere</td>
<td>30h+30h</td>
<td>9</td>
<td>1 + 2q</td>
</tr>
<tr>
<td>LINFO1103</td>
<td>Introduction à l'algorithme</td>
<td>Dupont</td>
<td>30h+30h</td>
<td>6</td>
<td>2q</td>
</tr>
</tbody>
</table>
SINF1BA - 2ND ANNUAL UNIT

- Mandatory
- Courses not taught during 2018-2019
- Optional
- Periodic courses not taught during 2018-2019
- Periodic courses taught during 2018-2019
- Activity with requisites

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

- Core study

- General and training

- Mathematics
  - LBIR1212: Probabilities and statistics (I)  
    Patrick Bogaert  
    30h+15h  
    4 Credits  
    1q
  - LINFO1113: Algorithme numérique  
    30h+30h  
    6 Credits  
    1q  
    LINFO1114: Mathématiques discrètes  
    30h+15h  
    5 Credits  
    2q

- Human Sciences, Economy, and Management Courses
  - LECGE1212S: Macroeconomics - E. de Callatay  
    Etienne De Callatay  
    45h+15h  
    5 Credits  
    2q

- Religion courses for students in exact sciences
  The students choose one course between:
  - LTECO2100: Questions of religious sciences: Biblical readings  
    Hans Ausloos  
    15h  
    2 Credits  
    1q
  - LTECO2200: Questions of religious sciences: reflections about Christian faith  
    Dominique Martens  
    15h  
    2 Credits  
    2q
  - LTECO2300: Questions of religious sciences: questions about ethics  
    Marcela Lobo Bustamante  
    15h  
    2 Credits  
    1q

- Cours de langues

- English Courses
  An placement test is organized at the beginning of the annual unit. Depending on the obtained mark, the students follow an adapted course based on their competence level. The students with a mark greater or equal to 16/20 keep their mark and could take an additional language course ( out of the 180 credits); this additional course will only affect their average mark if credited (mark greater or equal to 10/20)
  - LANGL1372: English for Computer Scientists  
    Marc Piwnik (coord.)  
    30h  
    3 Credits  
    2q

- Dutch courses
  - LNEER1500: Interfaculty teaching unit - General and academic Dutch - upper-intermediate level  
    Hilde Bulkens (coord.)  
    Valérie Dachy  
    30h  
    2 Credits  
    1q

- German courses
  - LALLE1300: General German - Upper-intermediate  
    Virginie Godin (coord.)  
    90h  
    2 Credits  
    1 + 2q

- Spanish Courses
  - LESPA1300: spanish middle level  
    Carmen Vallejo Villamor  
    90h  
    2 Credits  
    1 + 2q

- Computer science training
  - LINFO1104: Paradigmes de programmation et concurrence  
    30h+30h  
    5 Credits  
    1q  
    LINFO1225: Conception orientée objet et gestion de données  
    30h+30h  
    5 Credits  
    2q  
    LEPL1402: Informatique 2  
    30h+30h  
    5 Credits  
    1q  
    LEPL1503: Projet 3  
    30h+30h  
    5 Credits  
    2q

- Minor

The student completes his formation with the additional module in computer sciences or a minor.

- Option in 2nd year

15 Credits
### SINF1BA - 3RD ANNUAL UNIT

**Core study**

#### General and training

**Mathematics**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEPL1109</td>
<td>Statistiques et sciences des données</td>
<td>5</td>
<td>30h+30h</td>
</tr>
</tbody>
</table>

**Scientific and technical Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>LINFO1115</td>
<td>Reasoning about a highly connected world: graph theory, game theory and networks</td>
<td>5</td>
<td>30h+30h</td>
</tr>
<tr>
<td>LINFO1121</td>
<td>Algorithm et structures de données</td>
<td>5</td>
<td>30h+30h</td>
</tr>
<tr>
<td>LINFO1252</td>
<td>Systèmes informatiques</td>
<td>5</td>
<td>30h+30h</td>
</tr>
<tr>
<td>LINFO1341</td>
<td>Réseaux informatiques</td>
<td>5</td>
<td>30h+30h</td>
</tr>
<tr>
<td>LEPL1509</td>
<td>Projet 4 (en informatique)</td>
<td>5</td>
<td>30h+30h</td>
</tr>
</tbody>
</table>

**Human Sciences, Economy, and Management Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEPL1805</td>
<td>Gestion des personnes</td>
<td>3</td>
<td>22.5h +15h</td>
</tr>
</tbody>
</table>

**Cours de langues**

**English Courses**

A placement test is organized at the beginning of the annual unit. Depending on the obtained mark, the students follow an adapted course based on their competence level. The students with a mark greater or equal to 16/20 keep their mark and could take an additional language course (out of the 180 credits); this additional course will only affect their average mark if credited (mark greater or equal to 10/20)

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>LANGL1383</td>
<td>English for Computer Scientists III</td>
<td>2</td>
<td>30h</td>
</tr>
</tbody>
</table>

**Dutch courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNEER2500</td>
<td>Seminar of Entry to professional life in Dutch - Intermediate level</td>
<td>2</td>
<td>30h</td>
</tr>
</tbody>
</table>

**German courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>LALLE1500</td>
<td>General German - Advanced</td>
<td>2</td>
<td>90h</td>
</tr>
</tbody>
</table>

**Spanish Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>LESPA1101</td>
<td>Spanish beginner's level 1st part (0-A1)</td>
<td>2</td>
<td>45h</td>
</tr>
<tr>
<td>LESPA1500</td>
<td>Spanish Advanced level (B1.2 , B2.1)</td>
<td>2</td>
<td>45h</td>
</tr>
</tbody>
</table>

**Computer science training**

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>LINFO1115</td>
<td>Algorithm et structures de données</td>
<td>5</td>
<td>30h+30h</td>
</tr>
<tr>
<td>LINFO1121</td>
<td>Systèmes informatiques</td>
<td>5</td>
<td>30h+30h</td>
</tr>
<tr>
<td>LINFO1123</td>
<td>Calculabilité, logique et complexité</td>
<td>5</td>
<td>30h+30h</td>
</tr>
<tr>
<td>LINFO1341</td>
<td>Réseaux informatiques</td>
<td>5</td>
<td>30h+30h</td>
</tr>
<tr>
<td>LEPL1509</td>
<td>Projet 4 (en informatique)</td>
<td>5</td>
<td>30h+30h</td>
</tr>
</tbody>
</table>

**Minor**

The student completes his formation with the additional module in computer sciences or a minor.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Option in 3rd year</td>
<td>15 Credits</td>
</tr>
</tbody>
</table>
Admission

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.

- General requirements
- Specific requirements
- Knowledge of the French language exam
- Special requirements

General requirements

Except as otherwise provided by other specific legal provisions, admission to undergraduate courses leading to the award of a Bachelor’s degree will be granted to students with one of the following qualifications:

1. A Certificate of Upper Secondary Education issued during or after the 1993-1994 academic year by an establishment offering full-time secondary education or an adult education centre in the French Community of Belgium and, as the case may be, approved if it was issued by an educational institution before 1 January 2008 or affixed with the seal of the French Community if it was issued after this date, or an equivalent certificate awarded by the Examination Board of the French Community during or after 1994;

2. A Certificate of Upper Secondary Education issued no later than the end of the 1992-1993 academic year, along with official documentation attesting to the student’s ability to pursue higher education for students applying for a full-length undergraduate degree programme;

3. A diploma awarded by a higher education institution within the French Community that confers an academic degree issued under the above-mentioned Decree, or a diploma awarded by a university or institution dispensing full-time higher education in accordance with earlier legislation;

4. A higher education certificate or diploma awarded by an adult education centre;

5. A pass certificate for one of the entrance examinations organized by higher education institutions or by an examination board of the French Community; this document gives admission to studies in the sectors, fields or programmes indicated therein;

6. A diploma, certificate of studies or other qualification similar to those mentioned above, issued by the Flemish Community of Belgium (this qualification does not grant exemption from the French language proficiency examination), 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 no later than 14 July 2018 to the Equivalence department (Service des équivalences) of the Ministry of Higher Education and Scientific Research of the French Community of Belgium.

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.

These two qualifications do not, however, provide automatic exemption from the French language proficiency examination.

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 requirements

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.

Anyone not demonstrating sufficient French language proficiency will not be admitted to the first-year undergraduate examinations.

- 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).
Teaching method

A significant part of the courses in Computer Science will focus on learning techniques through problem solving. Amongst others, two integrated computer science projects will enable the students to integrate the various course topics and expose them to the problem of realizing small-scale projects (via laboratory sessions in the first year), or medium-scale projects (via a project during the second quadrimester of the third year).

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”.

The course content and activities are evaluated in accordance with the prevailing rules of the University (see the exam regulations). Most of the courses include at least one evaluation during the course of the quadrimester (ongoing evaluation), in addition to a final examination during the exam sessions (in January, June or September). Evaluations are either in written or in oral form. The specific evaluation details and procedures for each course are presented at the start of each study period.

Mobility and/or Internationalisation outlook

The computer-science related components of the programme adhere to the standard curricula proposed by international standard organisations such as ACM and IEEE. This fosters student mobility to or from the numerous universities offering similar programmes that conform to these norms.

The programme respects the harmonisation rules established by universities of the CFB; the degree obtained upon completion of the programme therefore entitles direct access, without the need for any complementary prerequisites, to the master's programme in Computer Science at any one of those universities.

In the context of the master studies in Computer Science at UCL, the student also has the opportunity to participate in the Erasmus/Socrates exchange programmes which UCL has subscribed to, together with universities from numerous European and extra-European countries, as well as with the Catholic University of Leuven (Katholieke Universiteit Leuven) in Flanders.

Possible trainings at the end of the programme

Access to the master's in Computer Science

The bachelor's programme in Computer Science grants direct access to the master's programme in Computer Science.

Access to the master in Management

The master's programme in Management is accessible to students having followed a minor in Management, under certain conditions which are described on the web page dedicated to this minor https://uclouvain.be/prog-lmingest3.html

Contacts

Curriculum Management

Entity

Structure entity:
SST/EPL/INFO

Denomination:
(INFO)

Faculty:
Louvan 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)10 473 150 - Fax: +32 (0)10 450 345

Contact person:
Kim MENS
Jury

- Président du Jury : Jean-Didier LEGAT
- Secrétaire du Jury :

Usefull Contacts

- Conseillère aux études : Chantal PONCIN