

Cycle view of the study programme

B1 Or Th Pr Au Cr

Depending on your track record or your professional/research focus, some prerequisites/corequisites of your first year program might appear in bloc 2. You are therefore invited to go through the list of courses suggested in bloc 2 even if you enroll for the first time in this master program.

Compulsory Courses (B1 : 35Cr, B2 : 25Cr)

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|------------|--|----|----|----|----|-----|----|
| INFO0085-1 | <i>Compilers</i> (english language) - Pascal FONTAINE - [75h Proj.] Corequisite : INFO0016-1 - Introduction to the theory of computation INFO2050-1 - Programmation avancée INFO0012-2 - Computation structures INFO0940-1 - Operating systems | B1 | Q2 | 25 | - | [+] | 5 |
| ELEN0062-1 | <i>Introduction to machine learning</i> (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.] | B1 | Q1 | 30 | 5 | [+] | 5 |
| INFO0016-1 | <i>Introduction to the theory of computation</i> (english language) - Quentin LOUVEAUX | B1 | Q1 | 26 | 26 | - | 5 |
| ELEN0060-2 | <i>Information and coding theory</i> (english language) - Louis WEHENKEL - [30h Proj.] | B1 | Q2 | 30 | 15 | [+] | 5 |
| PROJ0010-1 | <i>Software project engineering and management</i> (english language) - JeanLouis BINOT, Benoît DONNET, Guy LEDUC, Laurent MATHY - [280h Proj.] Prerequisite : INFO0062-1 - Object-oriented programming Corequisite : INFO0010-4 - Introduction to computer networking | B1 | TA | 20 | - | [+] | 10 |

[...] As a transitional measure in 2020-2021, students who have earned GEST3162-1 credits will be required to include the course INFO9012-1 "Parallel Programming" in their curriculum

| | | | | | | | |
|------------|---|----|----|----|----|-----|----|
| GEST3162-1 | <i>Principles of management</i> (english language) - Michael GHILISSEN, François PICHAULT | B1 | Q1 | 25 | 25 | - | 5 |
| INFO9012-1 | <i>Parallel Programming</i> (english language) - Pascal FONTAINE | B1 | Q2 | 25 | 25 | - | 5 |
| ATFE0002-1 | <i>Master thesis</i> (english language) - COLLÉGIALITÉ, Laurent MATHY - [750h Proj.] | B2 | TA | - | - | [+] | 25 |

Optional courses (B1 : 25Cr, B2 : 35Cr)

Choose one focus among the three below : (B1 : 15Cr, B2 : 15Cr)

Professional focus on "Computer systems security" (B1 : 15Cr, B2 : 15Cr)

Students choosing this focus shall select, in addition to 10 credits of compulsory courses, 50 credits of elective courses inside or outside the focus. However, for his/her whole master program (block 1 and block 2), a total of 20 credits of options must be taken inside the focus. The regulation allows students to choose elective courses during the block of their choice, in accordance with the prerequisites and co-requisites. Students must also be attentive to schedule constraints.

Compulsory Courses

| | | | | | | | |
|------------|--|----|----|----|---|-----|---|
| INFO0031-1 | <i>Network Engineering</i> (english language) - Benoît DONNET, Guy LEDUC - [12h Labo., 30h Proj.] Corequisite : INFO0010-4 - Introduction to computer networking | B1 | Q2 | 30 | - | [+] | 5 |
| INFO0045-3 | <i>Introduction to computer security</i> (english language) - Benoît DONNET - [10h Labo., 30h Proj.] Corequisite : INFO2050-1 - Programmation avancée INFO0010-4 - Introduction to computer networking | B1 | Q1 | 30 | 6 | [+] | 5 |

Choose 20 credits in the following list : (B1 : 5Cr, B2 : 15Cr)

| | | | | | | | |
|------------|--|---|----|----|----|-----|----------|
| INFO0064-2 | <i>Embedded systems</i> (english language) - Bernard BOIGELOT | - | Q1 | 25 | 20 | - | 3 |
| INFO2055-1 | <i>Embedded systems project</i> (english language) - Bernard BOIGELOT - [60h Proj.] Corequisite : INFO0064-2 - Embedded systems | - | Q2 | - | - | [+] | 2 |
| INFO2051-1 | <i>Object-oriented programming on mobile devices</i> (english language) - Laurent MATHY - [90h Proj.] | - | Q1 | 15 | 10 | [+] | 5 |
| INFO0056-1 | <i>Securing Networks</i> (english language) - Guy LEDUC - [12h Labo., 30h Proj.] (Even years) Corequisite : INFO0045-3 - Introduction to computer security INFO0010-4 - Introduction to computer networking | - | Q2 | 30 | - | [+] | 5 |
| ELEN0002-2 | <i>Introduction to audio and video techniques</i> (english language) - JeanJacques EMBRECHTS - [8h Labo.] | - | Q1 | 30 | 22 | [+] | 5 |
| INFO0939-1 | <i>High performance scientific computing</i> (english language) - Christophe GEUZAIN - [20h Proj.] | - | Q1 | 30 | 15 | [+] | 5 |
| INFO8002-1 | <i>Large-scale data systems</i> (english language) - Gilles LOUPPE - [45h Proj.] | - | Q1 | 25 | 10 | [+] | 5 |
| INFO8012-1 | <i>Digital Forensics</i> (english language) - Benoît DONNET, Laurent MATHY - [12h Labo., 30h Proj.] (Even years) Corequisite : INFO0940-1 - Operating systems INFO0085-1 - Compilers INFO0010-4 - Introduction to computer networking | - | Q2 | 30 | - | [+] | 5 |
| INFO8011-1 | <i>Network infrastructures</i> (english language) - Benoît DONNET, Guy LEDUC, Laurent MATHY - [12h Labo., 30h Proj.] (Odd years) Corequisite : INFO0010-4 - Introduction to computer networking | - | Q1 | 30 | - | [+] | 5 |
| INFO8013-1 | <i>Advanced Computer Security</i> (english language) - Benoît DONNET, Laurent MATHY - [20h Labo., 30h Proj.] (Odd years) Prerequisite : INFO0045-3 - Introduction to computer security | - | Q2 | 20 | - | [+] | 5 |

Professional focus on "Intelligent Systems" (B1 : 15Cr, B2 : 15Cr)

Students choosing this focus shall select, in addition to 5 credits of compulsory courses, 55 credits of elective courses inside or outside the focus. However, for his/her whole master program (block 1 and block 2), a total of 25 credits of options must be taken inside the focus. The regulation allows students to choose elective courses during the block of their choice, in accordance with the prerequisites and co-requisites. Students must also be attentive to schedule constraints.

Compulsory Courses

| | | | | | | | |
|------------|---|----|----|----|----|-----|----------|
| INFO8010-1 | <i>Deep learning</i> (english language) - Gilles LOUPPE - [55h Proj.] | B1 | Q2 | 25 | 10 | [+] | 5 |
|------------|---|----|----|----|----|-----|----------|

Choose 25 credits in the following list : (B1 : 10Cr, B2 : 15Cr)

| | | | | | | | |
|------------|---|---|----|----|----|-----|----------|
| ELEN0016-2 | <i>Computer vision</i> (english language) - Marc VAN DROOGENBROECK - [50h Proj.] | - | Q1 | 30 | 10 | [+] | 5 |
| INFO0051-1 | <i>Logic</i> (english language) - Pascal GRIBOMONT - [10h Proj.] | - | Q1 | 25 | 25 | [+] | 5 |
| INFO0948-2 | <i>Introduction to intelligent robotics</i> (english language) - Pierre SACRÉ - [80h Proj.] | - | Q2 | 30 | 4 | [+] | 5 |
| INFO0049-1 | <i>Knowledge representation</i> (english language) - Pascal GRIBOMONT - [50h Proj.] Corequisite : INFO0051-1 - Logic | - | Q2 | 28 | 4 | [+] | 5 |

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|------------|---|---|----|----|----|-----|---|
| INFO2049-1 | <i>Web and Text Analytics</i> (english language) - Ashwin ITTOO | - | Q1 | 30 | - | - | 5 |
| GBIO0002-1 | <i>Genetics and bioinformatics</i> (english language) - Franck DEQUIEDT, Kristel VAN STEEN - [15h Proj.] | - | Q1 | 30 | 15 | [+] | 5 |
| DROI1357-1 | <i>European law, (big) data and artificial intelligence applications seminar</i> (english language) - Pieter VAN CLEYNENBREUGEL | - | Q1 | 24 | - | - | 5 |
| INFO8003-1 | <i>Optimal decision making for complex problems</i> (english language) - Damien ERNST - [45h Proj.] | - | Q2 | 25 | 10 | [+] | 5 |
| INFO8004-1 | <i>Advanced Machine learning</i> (english language) - Pierre GEURTS, Gilles LOUPPE, Louis WEHENKEL - [45h Proj.] | - | Q2 | 25 | - | [+] | 5 |
| INFO8005-1 | <i>Semantic Data</i> (english language) - - Suppl : JeanLouis BINOT - [45h Proj.] | - | Q2 | 25 | 10 | [+] | 5 |
| INFO0050-1 | <i>Constraint programming projects</i> (english language) - Pascal GRIBOMONT - [80h Proj.] Prerequisite : INFO0049-1 - Knowledge representation | - | TA | 15 | 10 | [+] | 5 |

Professional focus on "Management" (B1 : 15Cr, B2 : 15Cr)

Students choosing this focus shall select, in addition to 27 credits of compulsory courses, 33 credits of elective courses inside or outside the focus. One of the 3 language courses belonging to the focus must necessarily be chosen as an option in either block 1 or block 2, for 3 credits. The regulation allows students to choose elective courses during the block of their choice, in accordance with the prerequisites and co-requisites. Students must also be attentive to schedule constraints.

Registration to this focus only with a file (contact: C. Puit)

Compulsory Courses

| | | | | | | | |
|------------|---|----|----|----|----|-----|---|
| FINA0001-1 | <i>Financial statement analysis and financing an enterprise</i> - Wouter TORSIN | B1 | Q2 | 45 | - | - | 5 |
| FINA0017-1 | <i>General accounting (Evening classes)</i> - Anne BILS, Wilfried NIESSEN | B1 | Q1 | 30 | 15 | - | 5 |
| LOGI0010-1 | <i>Supply Chain Management</i> (english language) - Yasemin ARDA | B1 | Q2 | 45 | - | - | 5 |
| ERAS0011-1 | <i>Business Simulation</i> (english language) - Anne CHANTEUX - [50h Mon. WS] | B2 | Q1 | - | - | [+] | 2 |
| GRHO0001-4 | <i>Strategic Human Resources Management</i> - François PICHAULT | B2 | Q1 | 45 | - | - | 5 |
| DROI2003-2 | <i>Legal management of a company and its employees</i> - <i>Droit des sociétés</i> - Frédéric DAERDEN, Laurent STAS DE RICHELLE - <i>Droit fiscal</i> - Isabelle RICHELLE - [5h Conf.] | B2 | Q2 | 25 | - | - | 5 |
| | | | | 25 | - | [+] | |

Choose one of the three following courses : (B2 : 3Cr)

| | | | | | | | |
|------------|--|----|----|----|---|---|---|
| LANG1936-1 | <i>Elementary Dutch 1</i> - Stéphane GHIJSEN, Isabelle VAN DEN HOVE | B2 | TA | 30 | - | - | 3 |
| LANG1933-1 | <i>Elementary German 1</i> - Marie MAWHIN | B2 | Q2 | 30 | - | - | 3 |
| LANG1934-1 | <i>Elementary Spanish 1</i> - Alexis ALVAREZ BARBOSA | B2 | TA | 30 | - | - | 3 |

Choose remaining credits in the lists below : (B1 : 10Cr, B2 : 20Cr)

The following courses are corequisite to some compulsory courses of the master program. They must be taken as a priority, unless they were already taken as part of the bachelor in computer science, or unless the corresponding knowledge and skills have been acquired previously (Are involved in these courses bachelors in "Informatique de gestion" and "Informatique et systèmes who must take these courses during the block 1").

| | | | | | | | |
|------------|---|----|----|----|----|-----|---|
| MATH0500-1 | <i>Introduction to numerical algorithmic</i> - Quentin LOUVEAUX - [6h Labo., 45h Proj.] | B1 | Q1 | 24 | 14 | [+] | 5 |
|------------|---|----|----|----|----|-----|---|

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|------------|--|----|----|----|----|-----|---|
| INFO2050-1 | <i>Advanced computer programming</i> - Pascal FONTAINE, Pierre GEURTS - [40h Proj.] | B1 | Q1 | 25 | 20 | [+] | 5 |
| INFO0010-4 | <i>Introduction to computer networking</i> (english language) - Guy LEDUC - [12h Labo., 40h Proj.] | B1 | Q1 | 35 | 2 | [+] | 5 |
| INFO0012-2 | <i>Computation structures</i> (english language) - Pascal FONTAINE, Laurent MATHY - [40h Proj.] | B1 | Q1 | 26 | 26 | [+] | 5 |
| INFO0940-1 | <i>Operating systems</i> (english language) - Laurent MATHY - [30h Proj.] | B1 | Q2 | 30 | 6 | [+] | 5 |
| INFO8006-1 | <i>Introduction to artificial intelligence</i> (english language) - Gilles LOUPPE - [45h Proj.] | B1 | Q1 | 25 | 20 | [+] | 5 |

[...] With the agreement of the jury, choose 5 credits in any course programme of the University :

Computer systems security

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|------------|---|---|----|----|----|-----|---|
| INFO0031-1 | <i>Network Engineering</i> (english language) - Benoît DONNET, Guy LEDUC - [12h Labo., 30h Proj.] | - | Q2 | 30 | - | [+] | 5 |
| INFO0045-3 | <i>Introduction to computer security</i> (english language) - Benoît DONNET - [10h Labo., 30h Proj.] Corequisite : INFO2050-1 - Programmation avancée INFO0012-2 - Computation structures INFO0010-4 - Introduction to computer networking | - | Q1 | 30 | 6 | [+] | 5 |
| INFO0056-1 | <i>Securing Networks</i> (english language) - Guy LEDUC - [12h Labo., 30h Proj.] (Even years) Corequisite : INFO0045-3 - Introduction to computer security INFO0010-4 - Introduction to computer networking | - | Q2 | 30 | - | [+] | 5 |
| ELEN0002-2 | <i>Introduction to audio and video techniques</i> (english language) - JeanJacques EMBRECHTS - [8h Labo.] | - | Q1 | 30 | 22 | [+] | 5 |
| INFO0939-1 | <i>High performance scientific computing</i> (english language) - Christophe GEUZAIN - [20h Proj.] | - | Q1 | 30 | 15 | [+] | 5 |
| INFO8002-1 | <i>Large-scale data systems</i> (english language) - Gilles LOUPPE - [45h Proj.] | - | Q1 | 25 | 10 | [+] | 5 |
| INFO8012-1 | <i>Digital Forensics</i> (english language) - Benoît DONNET, Laurent MATHY - [12h Labo., 30h Proj.] (Even years) Corequisite : INFO0085-1 - Compilers INFO0010-4 - Introduction to computer networking INFO0940-1 - Operating systems | - | Q2 | 30 | - | [+] | 5 |
| INFO8011-1 | <i>Network infrastructures</i> (english language) - Benoît DONNET, Guy LEDUC, Laurent MATHY - [12h Labo., 30h Proj.] (Odd years) Corequisite : INFO0010-4 - Introduction to computer networking | - | Q1 | 30 | - | [+] | 5 |
| INFO8013-1 | <i>Advanced Computer Security</i> (english language) - Benoît DONNET, Laurent MATHY - [20h Labo., 30h Proj.] (Odd years) Corequisite : INFO0045-3 - Introduction to computer security | - | Q2 | 20 | - | [+] | 5 |

Intelligent Systems

| | | | | | | | |
|------------|--|---|----|----|----|-----|---|
| INFO8010-1 | <i>Deep learning</i> (english language) - Gilles LOUPPE - [55h Proj.] Corequisite : ELEN0062-1 - Introduction to machine learning | - | Q2 | 25 | 10 | [+] | 5 |
| ELEN0016-2 | <i>Computer vision</i> (english language) - Marc VAN DROOGENBROECK - [50h Proj.] | - | Q1 | 30 | 10 | [+] | 5 |
| INFO0948-2 | <i>Introduction to intelligent robotics</i> (english language) - Pierre SACRÉ - [80h Proj.] | - | Q2 | 30 | 4 | [+] | 5 |

| | | | | | | | |
|-------------------------------|---|---|----|----|----|-----|---|
| INFO0051-1 | <i>Logic</i> (english language) - Pascal GRIBOMONT - [10h Proj.] | - | Q1 | 25 | 25 | [+] | 5 |
| INFO0049-1 | <i>Knowledge representation</i> (english language) - Pascal GRIBOMONT - [50h Proj.] Corequisite : INFO0051-1 - Logic | - | Q2 | 28 | 4 | [+] | 5 |
| INFO2049-1 | <i>Web and Text Analytics</i> (english language) - Ashwin ITTOO Corequisite : ELEN0062-1 - Introduction to machine learning | - | Q1 | 30 | - | - | 5 |
| GBIO0002-1 | <i>Genetics and bioinformatics</i> (english language) - Franck DEQUIEDT, Kristel VAN STEEN - [15h Proj.] | - | Q1 | 30 | 15 | [+] | 5 |
| INFO8004-1 | <i>Advanced Machine learning</i> (english language) - Pierre GEURTS, Gilles LOUPPE, Louis WEHENKEL - [45h Proj.] | - | Q2 | 25 | - | [+] | 5 |
| INFO8005-1 | <i>Semantic Data</i> (english language) - - Suppl : JeanLouis BINOT - [45h Proj.] | - | Q2 | 25 | 10 | [+] | 5 |
| INFO0050-1 | <i>Constraint programming projects</i> (english language) - Pascal GRIBOMONT - [80h Proj.] Prerequisite : INFO0049-1 - Knowledge representation | - | TA | 15 | 10 | [+] | 5 |
| Other optional courses | | | | | | | |
| INFO0064-2 | <i>Embedded systems</i> (english language) - Bernard BOIGELOT | - | Q1 | 25 | 20 | - | 3 |
| INFO2055-1 | <i>Embedded systems project</i> (english language) - Bernard BOIGELOT - [60h Proj.] Corequisite : INFO0064-2 - Embedded systems | - | Q2 | - | - | [+] | 2 |
| INFO2051-1 | <i>Object-oriented programming on mobile devices</i> (english language) - Laurent MATHY - [90h Proj.] | - | Q1 | 15 | 10 | [+] | 5 |
| INFO0060-1 | <i>Concurrent system verification and temporal logic</i> (english language) - Bernard BOIGELOT, Pascal GRIBOMONT - [20h Proj.] Prerequisite : INFO0016-1 - Introduction to the theory of computation INFO0051-1 - Logic | - | Q2 | 30 | 10 | [+] | 5 |
| MECA0524-1 | <i>CAD & Geometric Algorithms</i> - Eric BÉCHET - [60h Proj.] | - | Q1 | 20 | 20 | [+] | 5 |
| GBIO0009-1 | <i>Topics in bioinformatics</i> (english language) - Kristel VAN STEEN - [35h Proj.] Prerequisite : GBIO0002-1 - Genetics and bioinformatics | - | Q1 | 25 | 15 | [+] | 5 |
| MATH0461-2 | <i>Introduction to numerical optimization</i> (english language) - Quentin LOUVEAUX - [25h Proj.] | - | Q1 | 30 | 20 | [+] | 5 |
| MATH0462-1 | <i>Discrete optimization</i> (english language) - Quentin LOUVEAUX - [25h Proj.] Corequisite : MATH0500-1 - Introduction à l'algorithmique numérique | - | Q2 | 30 | 20 | [+] | 5 |
| GBIO0030-1 | <i>Computational approaches to statistical generics</i> (english language) - Kristel VAN STEEN - [35h Proj.] Prerequisite : GBIO0002-1 - Genetics and bioinformatics | - | Q2 | 25 | 15 | [+] | 5 |
| GBIO0031-1 | <i>Learning from genomic data</i> (english language) - Kristel VAN STEEN - [150h Proj.] Prerequisite : GBIO0002-1 - Genetics and bioinformatics | - | Q2 | - | - | [+] | 5 |
| INGE0012-1 | <i>Scientific research in engineering and its impact on innovation</i> (english language) - Rodolphe SEPULCHRE | - | Q2 | 26 | 26 | - | 5 |

| | | | | | | | |
|--|--|----|----|----|----|-----|-----------|
| INFO9012-1 | <i>Parallel Programming</i> (english language) - Pascal FONTAINE | - | Q2 | 25 | 25 | - | 5 |
| Internships and projects (maximum 15 credits) | | | | | | | |
| ASTG9005-1 | <i>Research Internship</i> (english language) - Benoît DONNET - [300h Proj.] | B2 | TA | - | - | [+] | 10 |
| ASTG0021-1 | <i>Technical company internship</i> (english language) - Laurent MATHY - [300h Proj.] | B2 | TA | - | - | [+] | 10 |
| <i>Notice</i> : the two company internships are mutually exclusive | | | | | | | |
| PROJ0011-1 | <i>Personal student project</i> (english language) - Bernard BOIGELOT, COLLÉGIALITÉ - [150h Proj.] | B2 | TA | - | - | [+] | 5 |

Additional ECTS Master in computer science (for students who have not obtained a Bachelor's degree in computer science)

Students that are admitted to the master of science in Computer Science without having obtained a degree of bachelor in Computer Science must add to their programme the following list of courses, to be taken in the first year of the master.

Compulsory Courses (B0 : 27Cr)

| | | | | | | | |
|------------|--|----|----|----|----|-----|----------|
| INFO9012-1 | <i>Parallel Programming</i> (english language) - Pascal FONTAINE | B0 | Q2 | 25 | 25 | - | 5 |
| INFO0062-1 | <i>Object-oriented programming</i> (english language) - Bernard BOIGELOT - [20h Proj.] | B0 | Q2 | 25 | 20 | [+] | 5 |
| INFO0054-1 | <i>Functional programming</i> - Pascal GRIBOMONT - [15h Proj.] | B0 | Q2 | 28 | 24 | [+] | 5 |
| MATH2019-1 | <i>Mathematics for computing 1</i> - Emilie CHARLIER, N... | B0 | Q1 | 26 | 26 | - | 5 |
| INFO0058-1 | <i>Introduction to Recursive Programming</i> - Pascal GRIBOMONT | B0 | Q1 | 15 | 15 | - | 2 |
| INFO0027-2 | <i>Programming techniques</i> (english language) - Laurent MATHY - [70h Proj.] | B0 | Q2 | 24 | 24 | [+] | 5 |

Optional courses (B0 : 3Cr)

Students who pass the entrance test may replace LANG6011-1 with the advanced course LANG0988-1 "Advanced for ICT studies". (B0 : 3Cr)

| | | | | | | | |
|------------|---|----|----|---|----|---|----------|
| LANG6011-1 | <i>Remedial English for Computer Science</i> (english language) - Adnan VESSEUR | B0 | Q2 | 3 | 27 | - | 3 |
| LANG0988-1 | <i>Advanced English for ICT studies</i> (english language) - Christine FILOT, ISLV, Adnan VESSEUR | B0 | Q1 | 5 | 25 | - | 3 |