

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.

To complete their curriculum, students must earn or validate the 70 credits of the compulsory courses (including the master thesis), choose one option for 20 credits and 30 credits from one of the three professional foci.

Ideally, students enrolling in the master program should have acquired the skills and knowledge corresponding to the 40 credits in "Computer science" offered as part of the bachelor program in engineering.

Compulsory Courses (B1 : 45Cr, B2 : 25Cr)

| | | | | | | | |
|------------|--|----|----|----|----|-----|----|
| INFO0085-1 | <i>Compilers</i> (english language) - Pierre GEURTS - [75h Proj.] Corequisite : INFO0016-1 - Introduction to the theory of computation INFO0012-3 - Computation structures INFO0940-1 - Operating systems | B1 | Q2 | 25 | - | [+] | 5 |
| INFO0063-1 | <i>Object-oriented software engineering</i> (english language) - Bernard BOIGELOT - [30h Proj.] Corequisite : INFO0062-1 - Object-oriented programming | B1 | Q1 | 30 | 24 | [+] | 5 |
| INFO0016-1 | <i>Introduction to the theory of computation</i> (english language) - Pierre WOLPER | B1 | Q1 | 30 | 30 | - | 5 |
| MATH0462-1 | <i>Discrete optimization</i> (english language) - Quentin LOUVEAUX - [25h Proj.] | B1 | Q1 | 30 | 20 | [+] | 5 |
| INFO0051-1 | <i>Logic</i> (english language) - Pascal GRIBOMONT - [10h Proj.] | B1 | Q1 | 30 | 25 | [+] | 5 |
| ELEN0060-2 | <i>Information and coding theory</i> (english language) - Louis WEHENKEL - [30h Proj.] | B1 | Q2 | 30 | 15 | [+] | 5 |
| GEST3162-1 | <i>Principles of management</i> (english language) - Michael GHILISSEN, François PICHault, Thierry PIRONET, Didier VAN CAILLIE - Suppl : Fanny FOX | B1 | Q1 | 25 | 25 | - | 5 |
| PROJ0010-1 | <i>Integrated software project, including fundamentals in project management</i> (english language) - JeanLouis BINOT, Bernard BOIGELOT, Benoît DONNET, Guy LEDUC, Laurent MATHY - [290h Proj.] Corequisite : INFO0063-1 - Object-oriented software engineering INFO0010-4 - Introduction to computer networking | B1 | TA | 10 | - | [+] | 10 |
| ATFE0015-1 | <i>Master thesis</i> (english language) - COLLÉGIALITÉ, Laurent MATHY - [750h Proj.] | B2 | TA | - | - | [+] | 25 |

Optional courses (B1 : 15Cr, B2 : 35Cr)

Students will choose one of the focus below and will carry it on during the second bloc (B1 : 15Cr, B2 : 15Cr)

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

Compulsory Courses

| | | | | | | | |
|------------|--|----|----|----|----|-----|---|
| INFO0031-1 | <i>Computer network architectures and multimedia</i> (english language) - Guy LEDUC - [10h Labo., 25h Proj.] Corequisite : INFO0010-4 - Introduction to computer networking | B1 | Q1 | 35 | - | [+] | 5 |
| INFO0045-3 | <i>Introduction to computer security</i> (english language) - Benoît DONNET - [8h Labo., 30h Proj.] | B1 | Q2 | 30 | 10 | [+] | 5 |

Students choosing this focus shall select, in addition to 10 credits of compulsory courses, 40 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. (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.] | - | Q2 | - | - | [+] | 2 |
| | Corequisite : INFO0064-2 - Embedded systems | | | | | | |
| INFO0941-1 | <i>Network measurement and monitoring</i> (english language) - Benoît DONNET - [60h Proj.] | - | Q2 | 20 | - | [+] | 5 |
| | Corequisite : INFO0031-1 - Computer network architectures and multimedia | | | | | | |
| INFO2051-1 | <i>Object-oriented programming on mobile devices</i> (english language) - Laurent MATHY - [90h Proj.] | - | Q2 | 15 | 10 | [+] | 5 |
| INFO0056-1 | <i>Managing and securing computer networks</i> (english language) - Guy LEDUC - [12h Labo., 55h Proj.] | - | Q2 | 30 | - | [+] | 5 |
| | Corequisite : INFO0045-3 - Introduction to computer security | | | | | | |
| 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 |

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

Compulsory Courses

| | | | | | | | |
|------------|--|----|----|----|----|-----|----------|
| ELEN0062-1 | <i>Introduction to machine learning</i> (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.] | B1 | Q1 | 30 | 5 | [+] | 5 |
| | Corequisite : MATH0462-1 - Discrete optimization | | | | | | |
| SYST0003-1 | <i>Linear control systems</i> (english language) - Guillaume DRION - [6h Labo.] | B2 | Q1 | 30 | 30 | [+] | 5 |

Students choosing this focus shall select, in addition to 10 credits of compulsory courses, 40 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. (B1 : 10Cr, B2 : 10Cr)

| | | | | | | | |
|------------|---|---|----|----|----|-----|----------|
| 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) - Renaud DETRY, Louis WEHENKEL - [80h Proj.] | - | Q2 | 30 | 4 | [+] | 5 |
| | Corequisite : ELEN0062-1 - Introduction to machine learning ELEN0016-2 - Computer vision | | | | | | |
| INFO0049-1 | <i>Knowledge representation</i> (english language) - Pascal GRIBOMONT - [50h Proj.] | - | Q2 | 30 | 25 | [+] | 5 |
| | Corequisite : INFO0051-1 - Logic | | | | | | |
| INFO2049-1 | <i>Web and Text Analytics</i> (english language) - Ashwin ITTOO | - | Q1 | 30 | - | - | 5 |
| | Corequisite : ELEN0062-1 - Introduction to machine learning | | | | | | |
| INFO2046-2 | <i>Computational geometry</i> (english language) - Eric BÉCHET - [95h Proj.] | - | Q1 | 25 | - | [+] | 5 |
| MECA0031-2 | <i>Kinematics and dynamics of mechanisms</i> (english language) - Olivier BRULS - [40h Proj.] | - | Q2 | 30 | 20 | [+] | 5 |

GBIO0002-1 *Genetics and bioinformatics* (english language) - Franck DEQUIEDT, Kristel VAN STEEN - [15h Proj.] - Q1 30 15 [+] 5

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

Compulsory Courses

| | | | | | | | |
|------------|--|----|----|----|----|-----|---|
| FINA0001-1 | <i>Financial statement analysis and financing an enterprise</i> - Jacques BERWART | B1 | Q2 | 45 | - | - | 5 |
| ECON2259-1 | <i>Microeconomics and industrial economy</i> - Axel GAUTIER, Bernard THIRY | B1 | Q2 | 40 | 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 - Suppl : Frédéric NAEDENOEN | B2 | Q1 | 45 | - | - | 5 |
| DROI0174-2 | <i>Commercial law</i> - Frédéric DAERDEN, Laurent STAS DE RICHELLE | B2 | Q2 | 45 | - | - | 5 |

Students choosing this focus shall select, in addition to 27 credits of compulsory courses, 23 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. (B2 : 3Cr)

| | | | | | | | |
|------------|--|----|----|----|---|---|---|
| LANG1936-1 | <i>Elementary Dutch 1</i> - Doris DE LAET | 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 | Q2 | 30 | - | - | 3 |

Research focus (B1 : 15Cr, B2 : 15Cr)

Aimed at students who have taken this focus in 2015-2016.

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

Optional courses outside the focus

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.

| | | | | | | | |
|------------|--|----|----|----|----|-----|---|
| MATH0500-1 | <i>Introduction to numerical algorithmic</i> - Quentin LOUVEAUX - [6h Labo., 45h Proj.] | B2 | Q1 | 24 | 14 | [+] | 5 |
| INFO2050-1 | <i>Advanced computer programming</i> - Pierre GEURTS - [40h Proj.] | B2 | Q1 | 25 | 20 | [+] | 5 |
| INFO0010-4 | <i>Introduction to computer networking</i> (english language) - Guy LEDUC - [12h Labo., 40h Proj.] | B2 | Q2 | 35 | 2 | [+] | 5 |
| INFO0012-2 | <i>Computation structures</i> (english language) - Pierre WOLPER - [40h Proj.] | B2 | Q1 | 30 | 25 | [+] | 5 |
| INFO0940-1 | <i>Operating systems</i> (english language) - Laurent MATHY - [80h Proj.] | B2 | Q2 | 30 | 6 | [+] | 5 |

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

Computer systems and networks

| | | | | | | | |
|------------|--|----|----|----|----|-----|---|
| INFO0031-1 | <i>Computer network architectures and multimedia</i> (english language) - Guy LEDUC - [10h Labo., 25h Proj.] | B2 | Q1 | 35 | - | [+] | 5 |
| INFO0045-3 | <i>Introduction to computer security</i> (english language) - Benoît DONNET - [8h Labo., 30h Proj.] | B2 | Q2 | 30 | 10 | [+] | 5 |
| INFO0941-1 | <i>Network measurement and monitoring</i> (english language) - Benoît DONNET - [60h Proj.] | B2 | Q2 | 20 | - | [+] | 5 |

Corequisite :

INFO0031-1 - Computer network architectures and multimedia

INFO2051-1 *Object-oriented programming on mobile devices* (english language) - B2 Q2 15 10 [+] 5
Laurent MATHY - [90h Proj.]

INFO0056-1 *Managing and securing computer networks* (english language) - B2 Q2 30 - [+] 5
Guy LEDUC - [12h Labo., 55h Proj.]

Corequisite :

INFO0045-3 - Introduction to computer security

ELEN0002-2 *Introduction to audio and video techniques* (english language) - B2 Q1 30 22 [+] 5
JeanJacques EMBRECHTS - [8h Labo.]

INFO0939-1 *High performance scientific computing* (english language) - B2 Q1 30 15 [+] 5
Christophe GEUZAINÉ - [20h Proj.]

Intelligent Systems

ELEN0062-1 *Introduction to machine learning* (english language) - B2 Q1 30 5 [+] 5
Pierre GEURTS, Louis WEHENKEL - [40h Proj.]

Corequisite :

MATH0462-1 - Discrete optimization

ELEN0016-2 *Computer vision* (english language) - Marc VAN DROOGENBROECK - B2 Q1 30 10 [+] 5
[50h Proj.]

INFO0948-2 *Introduction to intelligent robotics* (english language) - B2 Q2 30 4 [+] 5
Renaud DETRY, Louis WEHENKEL - [80h Proj.]

Corequisite :

ELEN0062-1 - Introduction to machine learning

ELEN0016-2 - Computer vision

INFO0049-1 *Knowledge representation* (english language) - Pascal GRIBOMONT - B2 Q2 30 25 [+] 5
[50h Proj.]

Corequisite :

INFO0051-1 - Logic

INFO2046-2 *Computational geometry* (english language) - Eric BÉCHET - [95h Proj.] B2 Q1 25 - [+] 5

INFO2049-1 *Web and Text Analytics* (english language) - Ashwin ITTOO B2 Q1 30 - - 5

Corequisite :

ELEN0062-1 - Introduction to machine learning

GBIO0002-1 *Genetics and bioinformatics* (english language) - Franck DEQUIEDT, B2 Q1 30 15 [+] 5
Kristel VAN STEEN - [15h Proj.]

Other optional courses

INFO0064-2 *Embedded systems* (english language) - Bernard BOIGELOT B2 Q1 25 20 - 3

INFO2055-1 *Embedded systems project* (english language) - Bernard BOIGELOT - B2 Q2 - - [+] 2
[60h Proj.]

Corequisite :

INFO0064-2 - Embedded systems

INFO0050-1 *Constraint programming projects* (english language) - B2 TA 15 10 [+] 5
Pascal GRIBOMONT - [80h Proj.]

Corequisite :

INFO0049-1 - Knowledge representation

INFO0060-1 *Concurrent system verification and temporal logic* (english language) - Bernard BOIGELOT, Pascal GRIBOMONT, Pierre WOLPER B2 Q2 30 10 [+] 5
- [20h Proj.]

Prerequisite :

INFO0016-1 - Introduction to the theory of computation

INFO0051-1 - Logic

INFO0026-3 *Computer graphics* (english language) - Eric BÉCHET - [45h Proj.] B2 Q2 24 24 [+] 5

| | | | | | | | |
|--|---|----|----|----|----|-----|----|
| GBIO0009-1 | <i>Topics in bioinformatics</i> (english language) - Kristel VAN STEEN - [35h Proj.] Prerequisite : GBIO0002-1 - Genetics and bioinformatics | B2 | Q1 | 25 | 15 | [+] | 5 |
| ELEN0019-2 | <i>Audio signal processing : principles and experiments</i> (english language) - JeanJacques EMBRECHTS - [24h Labo., 30h Proj.] | B2 | Q1 | 5 | - | [+] | 5 |
| MATH0461-2 | <i>Introduction to numerical optimization</i> (english language) - Quentin LOUVEAUX - [25h Proj.] | B2 | Q1 | 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 | B2 | Q2 | 25 | 15 | [+] | 5 |
| INGE0012-1 | <i>Scientific research in engineering and its impact on innovation</i> (english language) - Rodolphe SEPULCHRE | B2 | Q2 | 30 | 30 | - | 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.] <i>Notice : the two company internships are mutually exclusive</i> | B2 | TA | - | - | [+] | 10 |
| PROJ0011-1 | <i>Personal student project</i> (english language) - Bernard BOIGELOT, COLLÉGIALITÉ - [150h Proj.] | B2 | TA | - | - | [+] | 5 |

Additional ECTS Master in computer science and engineering

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

| | | | | | | | |
|------------|---|----|----|----|----|-----|---|
| INFO2050-1 | <i>Advanced computer programming</i> - Pierre GEURTS - [40h Proj.] | B0 | Q1 | 25 | 20 | [+] | 5 |
| MATH0495-1 | <i>Elements of probability calculus</i> - Pascal GRIBOMONT - [5h Proj.] | B0 | Q1 | 15 | 15 | [+] | 3 |
| MATH0500-1 | <i>Introduction to numerical algorithmic</i> - Quentin LOUVEAUX - [6h Labo., 45h Proj.] | B0 | Q1 | 24 | 14 | [+] | 5 |
| INFO0027-2 | <i>Programming techniques</i> (english language) - Laurent MATHY - [70h Proj.] | B0 | Q2 | 30 | 24 | [+] | 5 |
| INFO0030-3 | <i>Programming Projects</i> - Benoît DONNET - [100h Proj.] | B0 | Q2 | 20 | - | [+] | 5 |
| MATH1222-3 | <i>Introduction to stochastic processes, Markov chains</i> - Pierre GEURTS, Yvik SWAN - [10h Mon. WS] | B0 | Q2 | 20 | 10 | [+] | 5 |