

Block view of the study programme

Or Th Pr Au Cr

Block 1

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 65 credits of the compulsory courses (including the master thesis), choose 30 credits from one of the three professional foci and take 25 credits of optional courses. 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

| | | | | | | |
|------------|--|----|----|----|-----|----|
| INFO0085-1 | <i>Compilers</i> (english language) - Pascal FONTAINE - [75h Proj.] Corequisite : INFO0016-1 - Introduction to the theory of computation INFO0012-2 - Computation structures INFO0940-1 - Operating systems | Q2 | 25 | - | [+] | 5 |
| ELEN0062-1 | <i>Introduction to machine learning</i> (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.] | Q1 | 30 | 5 | [+] | 5 |
| INFO0016-1 | <i>Introduction to the theory of computation</i> (english language) - Quentin LOUVEAUX | Q1 | 26 | 26 | - | 5 |
| INFO0940-1 | <i>Operating systems</i> (english language) - Laurent MATHY - [30h Proj.] Prerequisite : INFO0012-2 - Computation structures Corequisite : INFO9012-1 - Parallel Programming | Q2 | 30 | 6 | [+] | 5 |
| ELEN0060-2 | <i>Information and coding theory</i> (english language) - Louis WEHENKEL - [30h Proj.] | Q2 | 30 | 15 | [+] | 5 |
| GEST3162-1 | <i>Principles of management</i> (english language) - François PICHAULT, Willem STANDAERT - [25h Proj.] | Q1 | 30 | - | [+] | 5 |
| PROJ0010-1 | <i>Software project engineering and management</i> (english language) - Benoît DONNET, Bernard HAUZEUR, Guy LEDUC, Laurent MATHY - [280h Proj.] Prerequisite : INFO0062-1 - Object-oriented programming Corequisite : INFO0010-4 - Introduction to computer networking INFO0902-1 - Structures des données et algorithmes | TA | 20 | - | [+] | 10 |

Optional courses

Choose one focus among the three below :

Professional focus on "Computer systems security"

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 | Q2 | 30 | - | [+] | 5 |
| INFO0045-3 | <i>Introduction to computer security</i> (english language) - Benoît DONNET - [10h Labo., 30h Proj.] Corequisite : INFO0902-1 - Structures des données et algorithmes INFO0010-4 - Introduction to computer networking INFO0012-2 - Computation structures | Q1 | 30 | 6 | [+] | 5 |

Students choosing this focus shall select, in addition to 10 credits of compulsory courses, 5 credits of elective courses

inside the focus. The remaining credits can be taken inside or outside the focus.

| | | | | | | |
|------------|--|----|----|----|-----|---|
| 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 : INFO0010-4 - Introduction to computer networking INFO0045-3 - Introduction to computer security | Q2 | 30 | - | [+] | 5 |
| INFO0939-1 | <i>High performance scientific computing</i> (english language) - Christophe GEUZAINÉ - Suppl : David COLIGNON - [20h Proj.] | Q1 | 30 | 15 | [+] | 5 |
| INFO8002-1 | <i>Large-scale data systems</i> (english language) - [45h Proj.] (Odd years) | 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 - [8h Labo., 30h Proj.] Corequisite : INFO0010-4 - Introduction to computer networking | Q1 | 30 | - | [+] | 5 |
| INFO8013-1 | <i>Advanced Computer Security</i> (english language) - [20h Labo., 30h Proj.] (Odd years) Corequisite : INFO0045-3 - Introduction to computer security | Q1 | 20 | - | [+] | 5 |
| INFO9016-1 | <i>Advanced Databases</i> (english language) - Christophe DEBRUYNE | Q2 | 24 | 20 | - | 5 |

Professional focus on "Intelligent Systems"

Compulsory Courses

| | | | | | | |
|------------|--|----|----|----|-----|---|
| INFO8010-1 | <i>Deep learning</i> (english language) - Gilles LOUPPE - [55h Proj.] | Q2 | 25 | 10 | [+] | 5 |
| SYST0003-1 | <i>Linear control systems</i> (english language) - <i>Theory</i> - Guillaume DRION - <i>Control system design in time domain and frequency domain</i> - Guillaume DRION - [6h Labo.] | Q1 | 26 | 6 | - | 5 |
| | | | - | 20 | [+] | |

Students choosing this focus shall select, in addition to 10 credits of compulsory courses, 5 credits of elective courses inside the focus. The remaining credits can be taken inside or outside the focus.

| | | | | | | |
|------------|--|----|----|----|-----|---|
| 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 |
| 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 |
| DROI1357-1 | <i>European law, (big) data and artificial intelligence applications</i> | Q1 | 24 | - | - | 5 |

| | | | | | | | |
|------------|---|----|----|----|-----|---|--|
| | <i>seminar</i> (english language) - - Suppl : Ljupcho GROZDANOVSKI | | | | | | |
| 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 | |
| INFO8006-1 | <i>Introduction to artificial intelligence</i> (english language) - Gilles LOUPPE - [45h Proj.] | Q1 | 25 | 20 | [+] | 5 | |
| INFO9014-1 | <i>Knowledge representation and reasoning</i> (english language) - Christophe DEBRUYNE Corequisite : INFO9015-1 - Logic for Computer Science | Q2 | 24 | 20 | - | 5 | |

Professional focus on "Management"

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 | Q2 | 45 | - | - | 5 | |
| FINA0017-1 | <i>General accounting (Evening classes)</i> - Anne BILS, Vincent COMPAGNIE | Q1 | 30 | 15 | - | 5 | |
| LOGI0010-1 | <i>Supply Chain Management</i> (english language) - Yasemin ARDA | Q2 | 45 | - | - | 5 | |

Choose remaining credits in the lists below :

Optional courses outside the focus

Computer Science foundation courses

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 of science in engineering, or unless the corresponding knowledge and skills have been acquired previously.

| | | | | | | | |
|------------|--|----|----|----|-----|---|--|
| INFO0902-1 | <i>Data structures and algorithms</i> - Pierre GEURTS - [40h Proj.] | Q2 | 26 | 20 | [+] | 5 | |
| INFO0010-4 | <i>Introduction to computer networking</i> (english language) - Guy LEDUC - [12h Labo., 40h Proj.] | Q1 | 35 | 2 | [+] | 5 | |
| INFO0012-2 | <i>Computation structures</i> (english language) - Pascal FONTAINE, Laurent MATHY - [40h Proj.] | Q1 | 26 | 26 | [+] | 5 | |
| INFO0062-1 | <i>Object-oriented programming</i> (english language) - Bernard BOIGELOT - [20h Proj.] | Q2 | 25 | 20 | [+] | 5 | |
| INFO9012-1 | <i>Parallel Programming</i> (english language) - Pascal FONTAINE | Q2 | 25 | 25 | - | 5 | |

Computer systems security

| | | | | | | | |
|------------|---|----|----|----|-----|---|--|
| 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 : INFO0902-1 - Structures des données et algorithmes 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 | |
| INFO0939-1 | <i>High performance scientific computing</i> (english language) - | Q1 | 30 | 15 | [+] | 5 | |

EUZAINÉ - Suppl : David COLIGNON - [20h Proj.]

| | | | | | | |
|------------|---|----|----|----|-----|---|
| INFO8002-1 | <i>Large-scale data systems</i> (english language) - [45h Proj.] (Odd years) | Q1 | 25 | 10 | [+] | 5 |
| INFO8012-1 | <i>Digital Forensics</i> (english language) - Benoît DONNET, Laurent MATHY - [12h Labo., 30h Proj.] (Even years) Prerequisite : INFO0940-1 - Operating systems Corequisite : 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 - [8h Labo., 30h Proj.] Corequisite : INFO0010-4 - Introduction to computer networking | Q1 | 30 | - | [+] | 5 |
| INFO8013-1 | <i>Advanced Computer Security</i> (english language) - [20h Labo., 30h Proj.] (Odd years) Corequisite : INFO0045-3 - Introduction to computer security | Q1 | 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 |
| INFO9015-1 | <i>Logic for Computer Science</i> (english language) - Pascal FONTAINE | Q1 | 24 | 20 | - | 5 |
| INFO0948-2 | <i>Introduction to intelligent robotics</i> (english language) - Pierre SACRÉ - [80h Proj.] Corequisite : ELEN0062-1 - Introduction to machine learning ELEN0016-2 - Computer vision | Q2 | 30 | 4 | [+] | 5 |
| 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 |
| 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.] Corequisite : ELEN0062-1 - Introduction to machine learning INFO8010-1 - Deep learning | Q2 | 25 | - | [+] | 5 |
| INFO8006-1 | <i>Introduction to artificial intelligence</i> (english language) - Gilles LOUPPE - [45h Proj.] | Q1 | 25 | 20 | [+] | 5 |
| INFO9014-1 | <i>Knowledge representation and reasoning</i> (english language) - Christophe DEBRUYNE Corequisite : INFO9015-1 - Logic for Computer Science | Q2 | 24 | 20 | - | 5 |

Other optional courses

| | | | | | | |
|------------|---|----|----|----|-----|---|
| INFO9015-1 | <i>Logic for Computer Science</i> (english language) - Pascal FONTAINE | Q1 | 24 | 20 | - | 5 |
| INFO9016-1 | <i>Advanced Databases</i> (english language) - Christophe DEBRUYNE | Q2 | 24 | 20 | - | 5 |
| 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

| | | | | | | |
|------------|---|----|----|----|-----|---|
| INFO2051-1 | <i>Object-oriented programming on mobile devices</i> (english language) - Laurent MATHY - [90h Proj.] | Q1 | 15 | 10 | [+] | 5 |
| INFO0060-1 | <i>Introduction to computer systems verification</i> (english language) - Bernard BOIGELOT, Pascal FONTAINE - [20h Proj.] | Q2 | 20 | 20 | [+] | 5 |
| | Corequisite : | | | | | |
| | INFO0016-1 - Introduction to the theory of computation | | | | | |
| | INFO9014-1 - Knowledge representation and reasoning | | | | | |
| INFO0027-2 | <i>Programming techniques</i> (english language) - <i>Algorithmics</i> - Laurent MATHY - [40h Proj.] - <i>Software patterns</i> - Laurent MATHY - [30h Proj.] | Q2 | | | | 5 |
| | | | 14 | 14 | [+] | |
| | | | 10 | 10 | [+] | |
| GBIO0009-1 | <i>Topics in bioinformatics</i> (english language) - Kristel VAN STEEN - [35h Proj.] | Q1 | 25 | 15 | [+] | 5 |
| | Prerequisite : | | | | | |
| | GBIO0002-1 - Genetics and bioinformatics | | | | | |
| 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.] | Q2 | 30 | 20 | [+] | 5 |
| GBIO0030-1 | <i>Computational approaches to statistical generics</i> (english language) - Kristel VAN STEEN - [35h Proj.] | Q2 | 25 | 15 | [+] | 5 |
| | Prerequisite : | | | | | |
| | GBIO0002-1 - Genetics and bioinformatics | | | | | |
| INGE0012-1 | (pas organisé en 2022-2023) <i>Scientific research in engineering and its impact on innovation</i> (english language) | Q2 | 26 | 26 | - | 5 |
| MECA0524-1 | <i>CAD & Geometric Algorithms</i> - Eric BÉCHET - [60h Proj.] | Q1 | 20 | 20 | [+] | 5 |
| INFO0004-2 | <i>Object-oriented programming projects</i> (english language) - Laurent MATHY - [90h Proj.] | Q2 | 20 | - | [+] | 5 |
| GBIO0031-1 | <i>Learning from genomic data</i> (english language) - Kristel VAN STEEN - [150h Proj.] | Q2 | - | - | [+] | 5 |

Internships and projects (maximum 15 credits)

| | | | | | | |
|------------|--|----|---|---|-----|---|
| PROJ0011-1 | <i>Personal student project</i> (english language) - Bernard BOIGELOT, COLLÉGIALITÉ - [150h Proj.] | TA | - | - | [+] | 5 |
|------------|--|----|---|---|-----|---|

Block 2

Compulsory Courses

| | | | | | | |
|------------|--|----|---|---|-----|----|
| ATFE0015-1 | <i>Master thesis</i> (english language) - COLLÉGIALITÉ, Laurent MATHY - [750h Proj.] | TA | - | - | [+] | 25 |
|------------|--|----|---|---|-----|----|

Optional courses

Carry on the focus during the second bloc :

Professional focus on "Computer systems security"

Students choosing this focus shall select 15 credits of elective courses inside the focus. The remaining credits can be taken inside or outside the focus.

| | | | | | | |
|------------|---|----|----|----|-----|---|
| 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 | | | | | |
| INFO2051-1 | <i>Object-oriented programming on mobile devices</i> (english language) - | Q1 | 15 | 10 | [+] | 5 |

| | | | | | | | | |
|------------|--|----|----|----|-----|---|--|--|
| | Laurent MATHY - [90h Proj.] | | | | | | | |
| INFO0056-1 | <i>Securing Networks</i> (english language) - Guy LEDUC - [12h Labo., 30h Proj.] (Even years) Corequisite : INFO0010-4 - Introduction to computer networking INFO0045-3 - Introduction to computer security | Q2 | 30 | - | [+] | 5 | | |
| INFO0939-1 | <i>High performance scientific computing</i> (english language) - Christophe GEUZAINÉ - Suppl : David COLIGNON - [20h Proj.] | Q1 | 30 | 15 | [+] | 5 | | |
| INFO8002-1 | <i>Large-scale data systems</i> (english language) - [45h Proj.] (Odd years) | 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 - [8h Labo., 30h Proj.] Corequisite : INFO0010-4 - Introduction to computer networking | Q1 | 30 | - | [+] | 5 | | |
| INFO8013-1 | <i>Advanced Computer Security</i> (english language) - [20h Labo., 30h Proj.] (Odd years) Corequisite : INFO0045-3 - Introduction to computer security | Q1 | 20 | - | [+] | 5 | | |
| INFO9016-1 | <i>Advanced Databases</i> (english language) - Christophe DEBRUYNE | Q2 | 24 | 20 | - | 5 | | |

Professional focus on "Intelligent Systems"

Students choosing this focus shall select 15 credits of elective courses inside the focus. The remaining credits can be taken inside or outside the focus.

| | | | | | | | | |
|------------|---|----|----|----|-----|---|--|--|
| 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 | | |
| 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 | | |
| DROI1357-1 | <i>European law, (big) data and artificial intelligence applications seminar</i> (english language) - - Suppl : Ljupcho GROZDANOVSKI | 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 | | |
| INFO8006-1 | <i>Introduction to artificial intelligence</i> (english language) - Gilles LOUPPE - [45h Proj.] | Q1 | 25 | 20 | [+] | 5 | | |
| INFO9014-1 | <i>Knowledge representation and reasoning</i> (english language) - Christophe DEBRUYNE Corequisite : INFO9015-1 - Logic for Computer Science | Q2 | 24 | 20 | - | 5 | | |

Professional focus on "Management"

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

Compulsory Courses

| | | | | | | |
|------------|--|----|----|---|-----|---|
| ERAS0011-1 | <i>Business Simulation</i> (english language) - Anne CHANTEUX - [50h Mon. WS] | Q1 | - | - | [+] | 2 |
| GRHO0001-4 | <i>Strategic Human Resources Management</i> - François PICHAULT | 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.] | Q2 | | | | 5 |
| | | | 25 | - | - | |
| | | | 25 | - | [+] | |

Students choosing this focus shall select, in addition to 12 credits of compulsory courses, 3 credits of elective courses inside 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. The remaining credits can be taken outside the focus.

| | | | | | | |
|------------|---|----|----|---|---|---|
| LANG1936-1 | <i>Elementary Dutch 1</i> - Fanny NSITA | Q2 | 30 | - | - | 3 |
| LANG1933-1 | <i>Elementary German 1</i> - Marie MAWHIN | TA | 30 | - | - | 3 |
| LANG1934-1 | <i>Elementary Spanish 1</i> - Alexis ALVAREZ BARBOSA, Alba CARVAJAL LAGAREJO | TA | 30 | - | - | 3 |

Choose remaining credits in the lists below :

Optional courses outside the focus

Computer Science foundation courses

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 of science in engineering, or unless the corresponding knowledge and skills have been acquired previously.

Computer systems security

| | | | | | | |
|------------|---|----|----|----|-----|---|
| 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 : INFO0902-1 - Structures des données et algorithmes 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 |
| INFO0939-1 | <i>High performance scientific computing</i> (english language) - Christophe GEUZAINÉ - Suppl : David COLIGNON - [20h Proj.] | Q1 | 30 | 15 | [+] | 5 |
| INFO8002-1 | <i>Large-scale data systems</i> (english language) - [45h Proj.] (Odd years) | Q1 | 25 | 10 | [+] | 5 |
| INFO8012-1 | <i>Digital Forensics</i> (english language) - Benoît DONNET, Laurent MATHY - [12h Labo., 30h Proj.] (Even years) Prerequisite : INFO0940-1 - Operating systems Corequisite : 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 - [8h Labo., 30h Proj.] Corequisite : INFO0010-4 - Introduction to computer networking | Q1 | 30 | - | [+] | 5 |
| INFO8013-1 | <i>Advanced Computer Security</i> (english language) - [20h Labo., 30h Proj.] (Odd years) | Q1 | 20 | - | [+] | 5 |

Corequisite :

INFO0045-3 - Introduction to computer security

Intelligent Systems

| | | | | | | |
|------------|--|----|----|----|-----|---|
| INFO8010-1 | <i>Deep learning</i> (english language) - Gilles LOUPPE - [55h Proj.] | Q2 | 25 | 10 | [+] | 5 |
| | Corequisite : ELEN0062-1 - Introduction to machine learning | | | | | |
| ELEN0016-2 | <i>Computer vision</i> (english language) - Marc VAN DROOGENBROECK - [50h Proj.] | Q1 | 30 | 10 | [+] | 5 |
| INFO9015-1 | <i>Logic for Computer Science</i> (english language) - Pascal FONTAINE | Q1 | 24 | 20 | - | 5 |
| INFO0948-2 | <i>Introduction to intelligent robotics</i> (english language) - Pierre SACRÉ - [80h Proj.] | Q2 | 30 | 4 | [+] | 5 |
| | Corequisite : ELEN0062-1 - Introduction to machine learning ELEN0016-2 - Computer vision | | | | | |
| 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 |
| 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 |
| | Corequisite : ELEN0062-1 - Introduction to machine learning INFO8010-1 - Deep learning | | | | | |
| INFO8006-1 | <i>Introduction to artificial intelligence</i> (english language) - Gilles LOUPPE - [45h Proj.] | Q1 | 25 | 20 | [+] | 5 |
| INFO9014-1 | <i>Knowledge representation and reasoning</i> (english language) - Christophe DEBRUYNE | Q2 | 24 | 20 | - | 5 |
| | Corequisite : INFO9015-1 - Logic for Computer Science | | | | | |

Other optional courses

| | | | | | | |
|------------|---|----|----|----|-----|---|
| INFO9015-1 | <i>Logic for Computer Science</i> (english language) - Pascal FONTAINE | Q1 | 24 | 20 | - | 5 |
| INFO9016-1 | <i>Advanced Databases</i> (english language) - Christophe DEBRUYNE | Q2 | 24 | 20 | - | 5 |
| 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 | | | | | |
| INFO2051-1 | <i>Object-oriented programming on mobile devices</i> (english language) - Laurent MATHY - [90h Proj.] | Q1 | 15 | 10 | [+] | 5 |
| INFO0060-1 | <i>Introduction to computer systems verification</i> (english language) - Bernard BOIGELOT, Pascal FONTAINE - [20h Proj.] | Q2 | 20 | 20 | [+] | 5 |
| | Corequisite : INFO0016-1 - Introduction to the theory of computation INFO9014-1 - Knowledge representation and reasoning | | | | | |
| INFO0027-2 | <i>Programming techniques</i> (english language) | Q2 | | | | 5 |
| | - <i>Algorithmics</i> - Laurent MATHY - [40h Proj.] | | 14 | 14 | [+] | |
| | - <i>Software patterns</i> - Laurent MATHY - [30h Proj.] | | 10 | 10 | [+] | |
| GBIO0009-1 | <i>Topics in bioinformatics</i> (english language) - Kristel VAN STEEN - [35h Proj.] | Q1 | 25 | 15 | [+] | 5 |
| | Prerequisite : | | | | | |

| | | | | | |
|---|---|----|----|----|-------|
| GBIO0002-1 - Genetics and bioinformatics | | | | | |
| 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.] | Q2 | 30 | 20 | [+] 5 |
| GBIO0030-1 | <i>Computational approaches to statistical generics</i> (english language) - Kristel VAN STEEN - [35h Proj.] | Q2 | 25 | 15 | [+] 5 |
| Prerequisite : GBIO0002-1 - Genetics and bioinformatics | | | | | |
| INGE0012-1 | (pas organisé en 2022-2023) <i>Scientific research in engineering and its impact on innovation</i> (english language) | Q2 | 26 | 26 | - 5 |
| MECA0524-1 | <i>CAD & Geometric Algorithms</i> - Eric BÉCHET - [60h Proj.] | Q1 | 20 | 20 | [+] 5 |
| INFO0004-2 | <i>Object-oriented programming projects</i> (english language) - Laurent MATHY - [90h Proj.] | Q2 | 20 | - | [+] 5 |
| GBIO0031-1 | <i>Learning from genomic data</i> (english language) - Kristel VAN STEEN - [150h Proj.] | Q2 | - | - | [+] 5 |

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

Internships and projects (maximum 15 credits)

| | | | | | |
|--|--|----|---|---|--------|
| ASTG9005-1 | <i>Research Internship</i> (english language) - Benoît DONNET - [300h Proj.] | TA | - | - | [+] 10 |
| ASTG0021-1 | <i>Technical company internship</i> (english language) - Laurent MATHY - [300h Proj.] | TA | - | - | [+] 10 |
| <i>Notice : the two company internships are mutually exclusive</i> | | | | | |
| PROJ0011-1 | <i>Personal student project</i> (english language) - Bernard BOIGELOT, COLLÉGIALITÉ - [150h Proj.] | TA | - | - | [+] 5 |

Bloc d'aménagement du programme de l'année

Additional ECTS Master of science in computer science and engineering

Compulsory Courses

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.

| | | | | | |
|------------|--|----|----|----|-------|
| MATH0495-1 | <i>Elements for calculating probabilities</i> - Céline ESSER - [5h Proj.] | Q1 | 15 | 15 | [+] 3 |
| MATH0006-3 | <i>Introduction to numerical analysis</i> (english language) - Quentin LOUVEAUX | Q1 | 20 | 20 | - 4 |
| INFO0054-1 | <i>Functional programming</i> - Christophe DEBRUYNE - [15h Proj.] | Q1 | 28 | 24 | [+] 5 |
| MATH0488-1 | <i>Elements of stochastic processes</i> - Maarten ARNST, Vincent DENOËL, Pierre GEURTS - [30h Proj.] | Q2 | 10 | 10 | [+] 2 |
| INFO0030-3 | <i>Programming Projects</i> - Benoît DONNET - [100h Proj.] | Q2 | 20 | - | [+] 5 |
| ELEN0040-1 | <i>Digital electronics</i> (english language) - JeanMichel REDOUTÉ | Q2 | 26 | 26 | - 5 |
| MATH0013-1 | <i>Algebra</i> - Eric DELHEZ | Q1 | 26 | 26 | - 5 |
| MECA0003-2 | <i>Rational Mechanics</i> - Eric DELHEZ | Q1 | 20 | 30 | - 4 |
| LANG6011-1 | <i>Remedial English for Computer Science</i> (english language) - Adnan VESSEUR | Q2 | 3 | 27 | - 3 |
| DROI0724-1 | <i>Law and engineering</i> - Roman AYDOGDU, Christine BIQUET, | Q1 | 26 | - | - 2 |

RANSSEN, Fabienne KÉFER, Pascale LECOCQ, Bernard VANBRABANT,
Cécile VERCHEVAL

| | | | | | | |
|------------|---|----|----|----|-----|----------|
| GENV0002-1 | <i>Energy and sustainable development</i> - Pierre DEWALLEF, Damien ERNST, Benoît HEINRICHS, Sigrid REITER - [20h Proj.] | Q2 | 26 | 8 | [+] | 3 |
| MATH0504-1 | <i>Applied mathematics</i> - Benjamin DEWALS, Christophe GEUZAINÉ | Q1 | 26 | 26 | - | 5 |