Block view of the study programme

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.

Compulsory Courses

INFO0085-1  Compilers (english language) - Pierre GEURTS - [75h Proj.]
Corequisite :
INFO00940-1 - Operating systems
INFO0012-2 - Computation structures
INFO02050-1 - Programmation avancée
INFO0016-1 - Introduction to the theory of computation

INFO0051-1  Logic (english language) - Pascal GRIBOMONT - [10h Proj.]

INFO0016-1  Introduction to the theory of computation (english language) - Pierre WOLPER

MATH0462-1  Discrete optimization (english language) - Quentin LOUVEAUX - [25h Proj.]
Corequisite :
MATH0500-1 - Introduction à l’algorithmique numérique

PROJ0010-1  Integrated software project, including fundamentals in project management (english language) - JeanLouis BINOT, Benoît DONNET, Guy LEDUC, Laurent MATHY - [290h Proj.]
Corequisite :
INFO0063-1 - Object-oriented software engineering
INFO0010-4 - Introduction to computer networking

Optional courses

Choose one focus among the three below

Professional focus on "Computer systems and networks"

Students choosing this focus shall select, in addition to 10 credits of compulsory courses, 20 credits of elective courses inside the focus. The remaining credits can be taken inside or outside 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  Computer network architectures and multimedia (english language) - Guy LEDUC - [10h Labo., 25h Proj.]
Corequisite :
INFO0010-4 - Introduction to computer networking

INFO0045-3  Introduction to computer security (english language) - Benoît DONNET - [8h Labo., 30h Proj.]

Choose 20 credits in the following list :

INFO0064-2  Embedded systems (english language) - Bernard BOIGELOT

INFO2055-1  Embedded systems project (english language) - Bernard BOIGELOT - [60h Proj.]
Corequisite :
INFO0064-2 - Embedded systems

INFO0941-1  Network measurement and monitoring (english language) - Benoît DONNET - [60h Proj.]
Corequisite :
INFO0031-1 - Computer network architectures and multimedia

INFO2051-1  Object-oriented programming on mobile devices (english language)
Laurent MATHY - [90h Proj.]

INFO0056-1  Managing and securing computer networks (english language) -
Guy LEDUC - [12h Labo., 55h Proj.]
Corequisite :
INFO0045-3 - Introduction to computer security

ELEN0002-2  Introduction to audio and video techniques (english language) -
JeanJacques EMBRECHTS - [8h Labo.]

INFO0939-1  High performance scientific computing (english language) -
Christophe GEUZAIN - [20h Proj.]

INFO8002-1  Large-scale database systems (english language) - Gilles LOUPPE -
[45h Proj.]

Professional focus on "Intelligent Systems"

Students choosing this focus shall select, in addition to 5 credits of compulsory courses, 25 credits of elective courses inside the focus. The remaining credits can be taken inside or outside 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

ELEN0062-1  Introduction to machine learning (english language) - Pierre GEURTS,
Louis WEHENKEL - [40h Proj.]
Corequisite :
MATH0462-1 - Discrete optimization

Choose 25 credits in the following list :

ELEN0016-2  Computer vision (english language) - Marc VAN DROOGENBROECK -
[50h Proj.]

INFO0948-2  Introduction to intelligent robotics (english language) -
Renaud DETRY - [80h Proj.]
Corequisite :
ELEN0016-2 - Computer vision
ELEN0062-1 - Introduction to machine learning

INFO0049-1  Knowledge representation (english language) - Pascal GRIBOMONT -
[50h Proj.]
Corequisite :
INFO0051-1 - Logic

INFO2049-1  Web and Text Analytics (english language) - Ashwin ITTOK
Corequisite :
ELEN0062-1 - Introduction to machine learning

INFO2046-2  Computational geometry (english language) - Eric BÉCHET - [95h
Proj.]

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

SYST0021-1  (pas organisé en 2017-2018) Optimal Control and Dynamic
Programming (english language) - N...

DROI8031-3  Introduction to the law of robots, including linguistic support, Law
of artificial intelligence, robots and data-driven algorithmic
applications (english language) - Nicolas PETIT

INFO8004-1  Advanced Machine learning (english language) - [45h Proj.]

Professional focus on "Management"

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

Students choosing this focus shall select, in addition to 27 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, for 3 credits. The remaining credits can be taken inside or outside 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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Block</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINA0001-1</td>
<td>Financial statement analysis and financing an enterprise</td>
<td>5</td>
<td>Q2</td>
<td></td>
</tr>
<tr>
<td>ECON2259-1</td>
<td>Microeconomics and industrial economy - Axel GAUTIER, Bernard THIRY</td>
<td>5</td>
<td>Q2</td>
<td>15</td>
</tr>
<tr>
<td>LOGI0010-1</td>
<td>Supply Chain Management (english language) - Yasemin ARDA</td>
<td>5</td>
<td>Q2</td>
<td></td>
</tr>
<tr>
<td>ERAS0011-1</td>
<td>Business Simulation (english language) - Anne CHANTEUX - [50h Mon. WS]</td>
<td>2</td>
<td>Q1</td>
<td></td>
</tr>
<tr>
<td>GRHO0001-4</td>
<td>Strategic Human Resources Management - François PICHALT</td>
<td>5</td>
<td>Q2</td>
<td></td>
</tr>
<tr>
<td>DROI0174-2</td>
<td>Commercial law - Frédéric DAERDEN, Laurent STAS DE RICHELLE</td>
<td>5</td>
<td>Q2</td>
<td></td>
</tr>
<tr>
<td>LANG1936-1</td>
<td>Elementary Dutch 1 - Doris DE LAET</td>
<td>3</td>
<td>TA</td>
<td></td>
</tr>
<tr>
<td>LANG1933-1</td>
<td>Elementary German 1 - Marie MAWHIN</td>
<td>3</td>
<td>Q2</td>
<td></td>
</tr>
<tr>
<td>LANG1934-1</td>
<td>Elementary Spanish 1 - Alexis ALVAREZ BARBOSA</td>
<td>3</td>
<td>Q2</td>
<td></td>
</tr>
</tbody>
</table>

### Block 2

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>Block</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATFE0002-1</td>
<td>Master thesis (english language) - COLLEGIALITÉ, Laurent MATHY - [750h Proj.]</td>
<td>25</td>
<td>TA</td>
<td></td>
</tr>
</tbody>
</table>

### Optional courses

Choose remaining credits in the lists below:

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").

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Block</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH0500-1</td>
<td>Introduction to numerical algorithmic - Quentin LOUVEAUX - [6h Labo., 45h Proj.]</td>
<td>5</td>
<td>Q1</td>
<td>14</td>
</tr>
<tr>
<td>INFO2050-1</td>
<td>Advanced computer programming - Pierre GEURTS - [40h Proj.]</td>
<td>5</td>
<td>Q1</td>
<td>20</td>
</tr>
<tr>
<td>INFO0010-4</td>
<td>Introduction to computer networking (english language) - Guy LEDUC - [12h Labo., 40h Proj.]</td>
<td>5</td>
<td>Q2</td>
<td>2</td>
</tr>
<tr>
<td>INFO0012-2</td>
<td>Computation structures (english language) - Pierre WOLPER - [40h Proj.]</td>
<td>5</td>
<td>Q1</td>
<td>25</td>
</tr>
<tr>
<td>INFO0940-1</td>
<td>Operating systems (english language) - Laurent MATHY - [30h Proj.]</td>
<td>5</td>
<td>Q2</td>
<td>6</td>
</tr>
<tr>
<td>INFO0063-1</td>
<td>Object-oriented software engineering (english language) - Bernard BOIGELOT - [30h Proj.]</td>
<td>5</td>
<td>Q1</td>
<td>24</td>
</tr>
</tbody>
</table>

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

### Computer systems and networks

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Block</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>INFO0031-1</td>
<td>Computer network architectures and multimedia (english language) - Guy LEDUC - [10h Labo., 25h Proj.]</td>
<td>5</td>
<td>Q1</td>
<td></td>
</tr>
<tr>
<td>INFO0045-3</td>
<td>Introduction to computer security (english language) - Benoît DONNET - [8h Labo., 30h Proj.]</td>
<td>5</td>
<td>Q2</td>
<td>10</td>
</tr>
<tr>
<td>INFO0941-1</td>
<td>Network measurement and monitoring (english language) -</td>
<td>5</td>
<td>Q2</td>
<td>20</td>
</tr>
</tbody>
</table>
ONNET - [60h Proj.]
Corequisite : INFO0031-1 - Computer network architectures and multimedia

INFO2051-1 Object-oriented programming on mobile devices (english language) - Laurent MATHY - [90h Proj.]

INFO0056-1 Managing and securing computer networks (english language) - Guy LEDUC - [12h Labo., 55h Proj.]
Corequisite : INFO0045-1 - Introduction to computer security

ELEN0002-2 Introduction to audio and video techniques (english language) - JeanJacques EMBRECHTS - [8h Labo.]

INFO0939-1 High performance scientific computing (english language) - Christophe GEUZAIN - [20h Proj.]

INFO2060-1 Advanced operating systems (english language) - Laurent MATHY
Prerequisite : INFO0940-1 - Operating systems

Intelligent Systems

ELEN0062-1 Introduction to machine learning (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]
Corequisite : MATH0462-1 - Discrete optimization

ELEN0016-2 Computer vision (english language) - Marc VAN DROOGENBROECK - [50h Proj.]

INFO0948-2 Introduction to intelligent robotics (english language) - Renaud DETRY - [80h Proj.]
Corequisite : ELEN0016-2 - Computer vision
ELEN0062-1 - Introduction to machine learning

INFO0049-1 Knowledge representation (english language) - Pascal GRIBOMONT - [50h Proj.]
Corequisite : INFO0051-1 - Logic

INFO2046-2 Computational geometry (english language) - Eric BÉCHET - [95h Proj.]

INFO2049-1 Web and Text Analytics (english language) - Ashwin ITTOO
Corequisite : ELEN0062-1 - Introduction to machine learning

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

Other optional courses

INFO0064-2 Embedded systems (english language) - Bernard BOIGELOT

INFO2055-1 Embedded systems project (english language) - Bernard BOIGELOT - [60h Proj.]
Corequisite : INFO0064-2 - Embedded systems

INFO0050-1 Constraint programming projects (english language) - 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 - [20h Proj.]
Prerequisite : INFO0051-1 - Logic
INFO0016-1 - Introduction to the theory of computation

INFO0026-3 Computer graphics (english language) - Eric BÉCHET - [45h Proj.]
GBIO0009-1 Topics in bioinformatics (english language) - Kristel VAN STEEN - [35h Proj.]

Prerequisite:
GBIO0002-1 - Genetics and bioinformatics

ELEN0019-2 Audio signal processing : principles and experiments (english language) -
JeanJacques EMBRECHTS - [24h Labo., 30h Proj.]

MATH0461-2 Introduction to numerical optimization (english language) -
Quentin LOUVEAUX - [25h Proj.]

GBIO0030-1 Computational approaches to statistical generics (english language) -
Kristel VAN STEEN - [35h Proj.]

Prerequisite:
GBIO0002-1 - Genetics and bioinformatics

GBIO0031-1 Learning from genomic data (english language) - Kristel VAN STEEN -
[150h Proj.]
Prerequisite:
GBIO0002-1 - Genetics and bioinformatics

INGE0012-1 Scientific research in engineering and its impact on innovation (english language) -
Rodolphe SEPULCHRE

INFO0005-1 Semantic Data (english language) - N... - [45h Proj.]
INFO0006-1 Introduction to artificial intelligence (english language) - Gilles LOUPPE -
[45h Proj.]

Internships and projects (maximum 15 credits)

ASTG9005-1 Research Internship (english language) - Benoît DONNET - [300h Proj.]
ASTG0021-1 Technical company internship (english language) - Laurent MATHY -
[300h Proj.]

Notice : the two company internships are mutually exclusive

PROJ0011-1 Personal student project (english language) - Bernard BOIGELOT,
COLLÉGIALITÉ - [150h Proj.]

Bloc d’aménagement du programme de l’année

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 120" in Computer Science without having obtained a degree of bachelor in computer science (which includes bachelors in "Informatique de gestion" and "Informatique et Systèmes") must add to their programme the following list of courses, to be taken in the first year of the master.

Compulsory Courses

MATH0499-1 Graph theory - Michel RIGO
INFO0062-1 Object-oriented programming (english language) - Bernard BOIGELOT -
[20h Proj.]
INFO0054-1 Functional programming - Pascal GRIBOMONT - [15h Proj.]
MATH2019-1 Mathématiques pour l'informatique 1 - N...
INFO0058-1 Introduction to Recursive Programming - Pascal GRIBOMONT
INFO0027-2 Programming techniques (english language) - Laurent MATHY - [70h Proj.]
Optional courses

Choose one of the courses below:

- **LANG0310-2**  *Computing English* (english language) - Christine FILOT, ISLV, Adnan VESSEUR
  
  *Notice*: Students who pass the entrance test will replace LANG0310-2 by the higher level course LANG0988 "Advanced English for ICT studies"

- **LANG0988-1**  *Advanced English for ICT studies* (english language) - Christine FILOT, ISLV, Adnan VESSEUR