

## Two-Year Master Program (120 ECTS)

### First Year

#### Compulsory courses

|            |   |    |    |   |   |
|------------|---|----|----|---|---|
| SYST0003-1 | <i>Linear control systems</i> (english language) - Eric BULLINGER, Rodolphe SEPULCHRE | 30 | 30 | - | 5 |
| INFO0009-1 | <i>Introduction to Data Bases</i> - Pierre WOLPER                                     | 30 | 30 | - | 5 |
| INFO0085-1 | <i>Compilers</i> - Xavier BOYEN   | 30 | 30 | - | 5 |
| INFO0063-1 | <i>Object-Oriented Software Engineering</i> - Bernard BOIGELOT                        | 30 | 30 | - | 5 |
| INFO0016-1 | <i>Introduction to the theory of computation</i> (english language) - Pierre WOLPER   | 30 | 30 | - | 5 |
| MATH0461-1 | <i>Introduction to numerical optimization</i> (english language) - Quentin LOUVEAUX   | 30 | 30 | - | 5 |
| INFO0051-1 | <i>Artificial Intelligence Logics</i> - Pascal GRIBOMONT                              | 30 | 30 | - | 5 |
| INFO0045-2 | <i>Cryptography and Computer Security</i> - Xavier BOYEN                              | 30 | 30 | - | 5 |
| INFO0030-4 | <i>Programming Projects - N... - Suppl</i> : Pascal GRIBOMONT                         | 10 | 20 | - | 2 |
| INFO0004-1 | <i>Object-oriented programming project - N... - Suppl</i> : Guy LEDUC                 | 10 | 30 | - | 3 |
| INFO0031-1 | <i>Computer network architectures and multimedia</i> (english language) - Guy LEDUC   | 30 | 30 | - | 5 |
| ELEN0060-1 | <i>Information and Coding Theory</i> - Louis WEHENKEL, Louis WEHENKEL                 | 30 | 30 | - | 5 |

#### Optional courses

Choose 1 of the three courses, not taken during the BAC programme, amongst :

|            |  |    |    |   |   |
|------------|--|----|----|---|---|
| ELEN0075-1 | <i>Analog Electronics</i> - Benoît VANDERHEYDEN  | 30 | 30 | - | 5 |
| ELEN0008-1 | <i>Principles of analog and digital telecommunications systems</i> -<br>Marc VAN DROOGENBROECK | 30 | 30 | - | 5 |
| ELEN0070-1 | <i>Signal Processing</i> - Jacques VERLY   | 30 | 30 | - | 5 |

*Notice* : Students who have already followed one or several compulsory course(s) from the Bachelor programme have to replace it (them) by one or several course(s) from the optional courses of this master or from the courses'programme of the Faculty ; this choice must be approved by the cycle's Jury President. Ditto if students have already followed all the optional courses from above.

### Second year

#### Compulsory courses

|            |   |   |   |   |    |
|------------|---|---|---|---|----|
| ATFE0015-1 | <i>Final Work (including an introduction to methodology and research)</i> - COLLÉGIALITÉ -  | - | - | - | 25 |
| [...]      | A general course to be chosen from the University's programmes of courses ; this choice must be approved by the cycle's President of the Jury |   |   |   |    |

Choose one of the following focus :

#### Research Focus

#### Optional courses

Choose courses totalling 30 ECTS out of the following :

|            |  |    |    |   |   |
|------------|--|----|----|---|---|
| INFO2036-1 | <i>Design and analysis of algorithms</i> (english language)                          | 30 | 30 | - | 5 |
| ELEN0017-1 | <i>Analysis and Design of Telecommunications Systems</i> -<br>Marc VAN DROOGENBROECK | 30 | 30 | - | 5 |
| ELEN0062-1 | <i>Applied Inductive Learning</i> - Pierre GEURTS, Louis WEHENKEL                    | 30 | 30 | - | 5 |
| GBIO0009-1 | <i>Bioinformatics</i> (english language) - Kristel VAN STEEN                         | 30 | 30 | - | 5 |
| GBIO0010-1 | <i>Bioinstrumentation</i> - Jacques DESTINÉ  | 30 | 30 | - | 5 |
| ELEN0018-1 | <i>Electroacoustics</i> - Jean-Jacques EMBRECHTS                                     | 30 | 30 | - | 5 |
| INFO0056-1 | <i>Managing and securing computer networks</i> (english language) - Guy LEDUC        | 30 | 30 | - | 5 |
| GBIO0008-1 | <i>Medical imaging</i> - Christophe PHILLIPS   | 30 | 30 | - | 5 |
| ELEN0002-1 | <i>Introduction to Audio and Video Techniques</i> - Jean-Jacques EMBRECHTS           | 30 | 30 | - | 5 |

|            |   |    |    |   |    |
|------------|---|----|----|---|----|
| ELEN0037-1 | <i>Microelectronics. Analysis and CAD of integrated circuits</i> - Jacques DESTINÉ                              | 30 | 30 | - | 5  |
| ELEN0038-1 | <i>Microsystems</i> - Jacques DESTINÉ   | 30 | 30 | - | 5  |
| GBIO0011-1 | <i>Biological systems modeling</i> - Pierre DAUBY, Rodolphe SEPULCHRE   | 30 | 30 | - | 5  |
| INFO0939-1 | <i>High performance scientific computing (english language)</i> -<br>Christophe GEUZAINÉ                        | 30 | 30 | - | 5  |
| MATH0462-1 | <i>Discrete optimization</i> - Quentin LOUVEAUX   | 30 | 30 | - | 5  |
| INFO0049-1 | <i>Knowledge Representation</i> - Pascal GRIBOMONT  | 30 | 30 | - | 5  |
| INFO0065-1 | <i>Seminar on Intrusion Systems</i> - Marc DACIER   | 10 | 50 | - | 5  |
| INFO0050-1 | <i>Constrained programming</i> - Pascal GRIBOMONT   | 30 | 30 | - | 5  |
| SYST0017-1 | <i>Non linear systems</i> - Rodolphe SEPULCHRE  | 30 | 30 | - | 5  |
| ELEN0019-1 | <i>Treatment of the audio signals : principles and experiments</i> -<br>Jean-Jacques EMBRECHTS                  | 30 | 30 | - | 5  |
| ELEN0016-1 | <i>Digital Image Processing</i> - Marc VAN DROOGENBROECK  | 30 | 30 | - | 5  |
| ELEN0071-1 | <i>Digital Signal Processing</i> - Jacques VERLY  | 30 | 30 | - | 5  |
| ELEN0072-1 | <i>Statistical Signal Processing</i> - Jacques VERLY  | 30 | 30 | - | 5  |
| INFO0060-1 | <i>Concurrent System Verification and Temporal Logic</i> - Bernard BOIGELOT,<br>Pascal GRIBOMONT, Pierre WOLPER | 30 | 30 | - | 5  |
| INFO0013-1 | (pas organisé en 2010-2011) <i>Computer vision (english language)</i>   | 30 | 30 | - | 5  |
| ELEN0442-1 | <i>Introduction to statistical training</i> - Pierre GEURTS, Louis WEHENKEL                                     | 30 | 30 | - | 5  |
| INFO0027-2 | <i>Programming techniques</i> - Xavier BOYEN  | 30 | 30 | - | 5  |
| INFO2044-1 | <i>Mathematical cryptography</i> - Xavier BOYEN   | 30 | 30 | - | 5  |
| INFO2046-1 | <i>Computational Geometry</i> - Eric BÉCHET   | 30 | 30 | - | 5  |
| ASTG0020-1 | <i>Placement</i> - COLLÉGIALITÉ   | -  | -  | - | 10 |

Notice : Students who have, in their BAC studies, already taken one or more option courses found in this list must not take them again.

### Professional focus in management

#### Compulsory courses

|            |  |    |    |     |   |
|------------|--|----|----|-----|---|
| GEST3001-1 | <i>People management and organisation</i> - Jocelyne ROBERT                                  | 24 | 24 | -   | 4 |
| GEST3002-1 | <i>Human Resources</i> - Jocelyne ROBERT   | 24 | -  | -   | 2 |
| GEST3003-1 | <i>Competitive strategy in the marketplace</i> - Michael GHILISSEN                           | 16 | 16 | -   | 3 |
| GEST3004-1 | <i>Marketing (operations and management)</i> - Michael GHILISSEN                             | 16 | 16 | -   | 3 |
| GEST3005-2 | <i>Accountancy and Finance</i> - Jacques BERWART   | 24 | 24 | -   | 4 |
| GEST3006-1 | <i>Operations and supply chain management I</i> - Yasemin ARDA - Suppl :<br>Robert NONDONFAZ | 16 | 16 | -   | 3 |
| GSTG3001-1 | <i>Business plan</i> - COLLÉGIALITÉ  | -  | 30 | -   | 4 |
| GSTG3002-1 | <i>Functional analysis of a company</i> - COLLÉGIALITÉ - [30h Internship]                    | -  | -  | [+] | 4 |

#### Optional courses

Choose one of the following courses :

|            |  |    |    |   |   |
|------------|--|----|----|---|---|
| GEST3010-1 | <i>Operations and supply chain management II</i> - Sabine LIMBOURG | 16 | 16 | - | 3 |
| GEST3011-2 | <i>ICT for Business</i> - Alain DUBOIS                             | 16 | 16 | - | 3 |
| GEST3012-1 | <i>Financial and actuarial modelling</i> - Louis ESCH              | 16 | 16 | - | 3 |

### Adjusted programme for student of the Bachelors in Civil Engineering who have not taken the "Computer" option

#### Students studying for the Bachelors in Civil Engineering who have not chosen the appropriate option :

- \* must take all the so-called "prerequisite" courses hereafter, if they were not taken during the 1st cycle. These courses must be taken during the 1st year of the masters and some 1st-year compulsory courses must be rolled over to the 2nd year.
- \* must subsequently reduce the number of courses they choose to take in the 2nd year of the masters. If all the "prerequisite" courses must be taken, it will be impossible for them to choose which courses they take.
- \* cannot choose the professional "management" focus.

The adapted programme for these students must first gain be approved by the Jury.

#### Compulsory prerequisites

Study programmes 2010-2011  
Faculty of Applied Sciences  
Master in Computer Engineering

|            |   |    |    |   |          |
|------------|---|----|----|---|----------|
| ELEN0040-1 | <i>Digital Electronics</i> - Jacques DESTINÉ                              | 30 | 30 | - | <b>5</b> |
| INFO0010-1 | <i>Introduction to Computer Networks</i> - Guy LEDUC                      | 30 | 30 | - | <b>5</b> |
| INFO0012-1 | <i>Computation Structures</i> - Pierre WOLPER                             | 30 | 30 | - | <b>5</b> |
| INFO0054-1 | <i>Functional programming</i> - Pascal GRIBOMONT                          | 30 | 30 | - | <b>5</b> |
| INFO0062-1 | <i>Object-Oriented Programming</i> - Bernard BOIGELOT                     | 30 | 30 | - | <b>5</b> |
| INFO0064-1 | <i>Embedded Systems</i> - Bernard BOIGELOT                                | 30 | 30 | - | <b>5</b> |
| INFO0902-1 | <i>Data structures and algorithms</i> - N... - Suppl : Sébastien COLLETTE | 30 | 30 | - | <b>5</b> |