

**Vue cycle du programme des cours**

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.

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 within the focus (B1 : 5Cr)**

INFO8010-1	<i>Deep learning</i> (anglais) - Gilles LOUPPE - [60h Proj.]	B1	Q2	30	-	[+]	5
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**Optional courses within the focus (B1 : 10Cr, B2 : 15Cr)**

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

ELEN0016-2	<i>Computer vision</i> (anglais) - Anthony CIOPPA, Marc VAN DROOGENBROECK - [50h Proj.]	-	Q1	30	10	[+]	5
INFO0948-2	<i>Introduction to intelligent robotics</i> (anglais) - Pierre SACRÉ - [80h Proj.]	-	Q2	30	4	[+]	5
INFO2049-1	<i>Web and Text Analytics</i> (anglais) - Ashwin ITTOO	-	Q1	30	-	-	5
GBIO0002-1	<i>Genetics and bioinformatics</i> (anglais) - Franck DEQUIEDT, Kristel VAN STEEN - [15h Proj.]	-	Q1	30	15	[+]	5
DROI1357-1	<i>European law, (big) data and artificial intelligence applications seminar</i> (anglais) - Jérôme DE COOMAN, Ljupcho GROZDANOVSKI	-	Q1	24	-	-	5
INFO8003-1	<i>Reinforcement learning</i> (anglais) - Damien ERNST - [45h Proj.]	-	Q2	25	10	[+]	5
INFO8004-1	<i>Advanced Machine learning</i> (anglais) - Pierre GEURTS, Gilles LOUPPE, Louis WEHENKEL - [20h Proj.]	-	Q2	25	-	[+]	5
INFO9014-1	<i>Knowledge representation and reasoning</i> (anglais) - Christophe DEBRUYNE - [45h Proj.]	-	Q2	24	20	[+]	5
	<b>Corequis :</b> INFO9015-1 - Logic for Computer Science						
INFO9023-1	<i>Machine Learning Systems Design</i> (anglais) - Thomas VRANCKEN - [17h Labo., 18h Proj.]	-	Q2	17	-	[+]	5
	<b>Corequis :</b> ELEN0062-1 - Introduction to machine learning						

**Compulsory courses from the core curriculum (B1 : 35Cr, B2 : 25Cr)**

INFO0085-1	<i>Compilers</i> (anglais) - Pascal FONTAINE - [75h Proj.]	B1	Q2	25	-	[+]	5
	<b>Corequis :</b> INFO0940-1 - Operating systems INFO0012-2 - Computation structures INFO0902-1 - Structures des données et algorithmes INFO0016-1 - Introduction to the theory of computation						
ELEN0062-1	<i>Introduction to machine learning</i> (anglais) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	B1	Q1	30	5	[+]	5
INFO0016-1	<i>Introduction to the theory of computation</i> (anglais) - Quentin LOUVEAUX	B1	Q1	26	26	-	5
ELEN0060-2	<i>Information and coding theory</i> (anglais) - Louis WEHENKEL - [30h Proj.]	B1	Q2	30	15	[+]	5
PROJ0010-1	<i>Software project engineering and management</i> (anglais) - Benoît DONNET, Bernard HAUZEUR, Guy LEDUC, Laurent MATHY - [280h Proj.]	B1	TA	20	-	[+]	10
	<b>Prérequis :</b>						

INFO0062-1 - Object-oriented programming

**Corequis :**

INFO0010-4 - Introduction to computer networking

GEST3162-1	<i>Principles of management</i> (anglais) - Thomas PIRSOUL, Willem STANDAERT - [25h Proj.]	B1	Q1	30	-	[+]	5
ATFE0002-1	<i>Master thesis</i> (anglais) - COLLÉGIALITÉ, Laurent MATHY - [750h Proj.]	B2	TA	-	-	[+]	25

**Optional courses from the core curriculum (B1 : 10Cr, B2 : 20Cr)**

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

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

**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 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 à l'algorithmique numérique</i> - Quentin LOUVEAUX - [6h Labo., 45h Proj.]	B1	Q1	24	14	[+]	5
INFO0902-1	<i>Structures des données et algorithmes</i> - Pierre GEURTS - [40h Proj.]	B1	Q2	26	20	[+]	5
INFO0010-4	<i>Introduction to computer networking</i> (anglais) - Guy LEDUC - [12h Labo., 40h Proj.]	B1	Q1	32	2	[+]	5
INFO0012-2	<i>Computation structures</i> (anglais) - Pascal FONTAINE, Laurent MATHY - [40h Proj.]	B1	Q1	26	26	[+]	5
INFO0940-1	<i>Operating systems</i> (anglais) - Laurent MATHY - [30h Proj.]	B1	Q2	30	6	[+]	5
INFO8006-1	<i>Introduction to artificial intelligence</i> (anglais) - Gilles LOUPPE - [45h Proj.]	B1	Q1	25	20	[+]	5

**Computer systems security**

INFO0031-1	<i>Network Engineering</i> (anglais) - Benoît DONNET, Guy LEDUC - [12h Labo., 30h Proj.]	-	Q2	30	-	[+]	5
INFO0045-3	<i>Introduction to computer security</i> (anglais) - Benoît DONNET - [10h Labo., 30h Proj.] <b>Corequis :</b> INFO0010-4 - Introduction to computer networking INFO0012-2 - Computation structures INFO0902-1 - Structures des données et algorithmes	-	Q1	30	6	[+]	5
INFO0056-1	<i>Securing Networks</i> (anglais) - Guy LEDUC - [12h Labo., 30h Proj.] (années paires) <b>Corequis :</b> INFO0010-4 - Introduction to computer networking INFO0045-3 - Introduction to computer security	-	Q2	30	-	[+]	5
INFO0939-1	<i>High performance scientific computing</i> (anglais) - Christophe GEUZAINÉ - [20h Proj.]	-	Q1	30	15	[+]	5
INFO8002-1	<i>Topics in Distributed Systems</i> (anglais) - Bernard BOIGELOT, Christophe DEBRUYNE, Pascal FONTAINE, Guy LEDUC, Laurent MATHY - [35h Proj.] (années impaires)	-	Q2	30	-	[+]	5
INFO8012-1	<i>Digital Forensics</i> (anglais) - Benoît DONNET, Laurent MATHY - [12h Labo., 30h Proj.] (années paires) <b>Corequis :</b> INFO0940-1 - Operating systems INFO0010-4 - Introduction to computer networking INFO0085-1 - Compilers	-	Q2	30	-	[+]	5
INFO8011-1	<i>Network infrastructures</i> (anglais) - Benoît DONNET, Guy LEDUC,	-	Q1	30	-	[+]	5

Laurent MATHY - [8h Labo., 30h Proj.]

**Corequis :**

INFO0010-4 - Introduction to computer networking

INFO8013-1 *Advanced Computer Security* (anglais) - Benoît DONNET, - Q2 20 - [+] 5

Laurent MATHY - [20h Labo., 30h Proj.] (années impaires)

**Corequis :**

INFO0045-3 - Introduction to computer security

**Intelligent Systems**

INFO8010-1 *Deep learning* (anglais) - Gilles LOUPPE - [60h Proj.] - Q2 30 - [+] 5

**Corequis :**

ELEN0062-1 - Introduction to machine learning

ELEN0016-2 *Computer vision* (anglais) - Anthony CIOPPA, - Q1 30 10 [+] 5

Marc VAN DROOGENBROECK - [50h Proj.]

INFO0948-2 *Introduction to intelligent robotics* (anglais) - Pierre SACRÉ - [80h - Q2 30 4 [+] 5

Proj.]

INFO9015-1 *Logic for Computer Science* (anglais) - Pascal FONTAINE - Q1 24 20 - 5

INFO2049-1 *Web and Text Analytics* (anglais) - Ashwin ITTOO - Q1 30 - - 5

**Corequis :**

ELEN0062-1 - Introduction to machine learning

GBIO0002-1 *Genetics and bioinformatics* (anglais) - Franck DEQUIEDT, - Q1 30 15 [+] 5

Kristel VAN STEEN - [15h Proj.]

INFO8004-1 *Advanced Machine learning* (anglais) - Pierre GEURTS, - Q2 25 - [+] 5

Gilles LOUPPE, Louis WEHENKEL - [20h Proj.]

**Corequis :**

INFO8010-1 - Deep learning

ELEN0062-1 - Introduction to machine learning

INFO9014-1 *Knowledge representation and reasoning* (anglais) - - Q2 24 20 [+] 5

Christophe DEBRUYNE - [45h Proj.]

**Corequis :**

INFO9015-1 - Logic for Computer Science

**Other optional courses**

INFO2051-1 *Object-oriented programming on mobile devices* (anglais) - - Q1 15 10 [+] 5

Laurent MATHY - [90h Proj.]

INFO0064-2 *Embedded systems* (anglais) - Bernard BOIGELOT - Q1 25 20 - 3

INFO2055-1 *Embedded systems project* (anglais) - Bernard BOIGELOT - [60h - Q2 - - [+] 2

Proj.]

**Corequis :**

INFO0064-2 - Embedded systems

INFO0060-1 *Introduction to computer systems verification* (anglais) - - Q2 20 20 [+] 5

Bernard BOIGELOT, Pascal FONTAINE - [20h Proj.]

**Corequis :**

INFO9015-1 - Logic for Computer Science

INFO0016-1 - Introduction to the theory of computation

MECA0524-1 *CAD & Geometric Algorithms* - Eric BÉCHET - [60h Proj.] - Q1 20 20 [+] 5

MATH0461-2 *Introduction to numerical optimization* (anglais) - - Q1 30 20 [+] 5

Quentin LOUVEAUX - [25h Proj.]

MATH0462-1 *Discrete optimization* (anglais) - Quentin LOUVEAUX - [25h Proj.] - Q2 30 20 [+] 5

**Corequis :**

MATH0500-1 - Introduction à l'algorithmique numérique

GBIO0030-1 *Computational approaches to statistical genetics* (anglais) - - Q2 25 15 [+] 5

Kristel VAN STEEN - [35h Proj.]

**Prérequis :**

GBIO0002-1 - Genetics and bioinformatics

GBIO0031-1 *Learning from genomic data* (anglais) - Kristel VAN STEEN - [150h Proj.] - Q2 - - [+] 5

**Prérequis :**

GBIO0002-1 - Genetics and bioinformatics

INFO9012-1 *Parallel Programming* (anglais) - Pascal FONTAINE - Q2 25 25 - 5

INFO9015-1 *Logic for Computer Science* (anglais) - Pascal FONTAINE - Q1 24 20 - 5

INFO9016-1 *Advanced Databases* (anglais) - Christophe DEBRUYNE - [20h Proj.] - Q2 24 20 [+] 5

INFO9023-1 *Machine Learning Systems Design* (anglais) - Thomas VRANCKEN - [17h Labo., 18h Proj.] - Q2 17 - [+] 5

**Corequis :**

ELEN0062-1 - Introduction to machine learning

**Internships and projects (maximum 15 credits)**

ASTG9005-1 *Research Internship* (anglais) - Benoît DONNET - [300h Proj.] B2 TA - - [+] 10

**Prérequis :**

PROJ0010-1 - Software project engineering and management

ASTG0021-1 *Technical company internship* (anglais) - Laurent MATHY - [300h Proj.] B2 TA - - [+] 10

**Prérequis :**

PROJ0010-1 - Software project engineering and management

*Remarque :* the two company internships are mutually exclusive

PROJ0011-1 *Personal student project* (anglais) - Bernard BOIGELOT, COLLÉGIALITÉ - [150h Proj.] B2 TA - - [+] 5

**Crédits supplémentaires Master en sciences informatiques (pour les étudiants qui n'ont pas obtenu un Bachelier en sciences informatiques)**

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 *Parallel Programming* (anglais) - Pascal FONTAINE B0 Q2 25 25 - 5

INFO0062-1 *Object-oriented programming* (anglais) - Bernard BOIGELOT - [20h Proj.] B0 Q2 25 20 [+] 5

INFO0054-1 *Programmation fonctionnelle* - Christophe DEBRUYNE - [20h Proj.] B0 Q1 24 24 [+] 5

MATH2019-1 *Mathématiques pour l'informatique 1* - Emilie CHARLIER B0 Q1 26 26 - 5

INFO0027-3 *Programming techniques, Software patterns* (anglais) - Laurent MATHY - [30h Proj.] B0 Q2 10 10 [+] 2

MATH0495-1 *Eléments du calcul des probabilités*  
- *Partim 1 : Outils d'analyse pour les probabilités* - Laurent LOOSVELDT B0 Q1 6 - - 5  
- *Partim 2 : Théorie des probabilités* - Laurent LOOSVELDT 20 - -

**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 *Remedial English for Computer Science* (anglais) - Adnan VESSEUR B0 Q2 3 27 - 3

