

## 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 25 credits of compulsory courses, one of the 3 language courses for 5 credits and 30 credits of elective courses. 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.

**Students who intend to take the "Financial Engineering" focus in the Business Engineering Master, must take "GEST0832-4 Marchés Financiers", as the 5-credit free option course in this programme, prior to joining the Business Engineering Master.**

### Compulsory courses within the focus (B1 : 15Cr, B2 : 10Cr)

FINA0001-1	<i>Analyse des états financiers et financement de l'entreprise</i> - Wouter TORSIN	B1	Q2	45	-	-	5
CHIM0092-2	<i>Chimie générale</i> - Christine BERTRAND	B1	Q2	40	20	-	5
LOGI0010-1	<i>Supply Chain Management</i> (anglais) - Yasemin ARDA	B1	Q2	45	-	-	5
GRHO0001-4	<i>Gestion stratégique des ressources humaines</i> - Grégory JEMINE	B2	Q1	45	-	-	5
DROI2003-2	<i>Gestion juridique générale de l'entreprise</i> - <i>Droit des sociétés</i> - Laurent STAS DE RICHELLE - <i>Droit fiscal</i> - Isabelle RICHELLE - [5h Conf.]	B2	Q2	25	-	-	5
				25	-	[+]	

### Optional courses within the focus (B2 : 5Cr)

Choose one of the three following courses : (B2 : 5Cr)

LANG1936-1	<i>Néerlandais élémentaire 1</i> - Fanny NSITA	B2	Q2	30	-	-	5
LANG1933-1	<i>Allemand élémentaire 1</i> - Marie MAWHIN	B2	TA	30	-	-	5
LANG1934-1	<i>Espagnol élémentaire 1</i> - Alexis ALVAREZ BARBOSA	B2	TA	30	-	-	5

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

INFO0085-1	<i>Compilers</i> (anglais) - Pascal FONTAINE - [75h Proj.] <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	B1	Q2	25	-	[+]	5
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.] <b>Prérequis :</b> INFO0062-1 - Object-oriented programming <b>Corequis :</b> INFO0010-4 - Introduction to computer networking	B1	TA	20	-	[+]	10
GEST3162-1	<i>Principles of management</i> (anglais) - Michaël PARMENTIER - [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 BOIGÉLOT, 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, Laurent MATHY - [8h Labo., 30h Proj.] <b>Corequis :</b> INFO0010-4 - Introduction to computer networking	-	Q1	30	-	[+]	5
INFO8013-1	<i>Advanced Computer Security</i> (anglais) - Benoît DONNET, Laurent MATHY - [20h Labo., 30h Proj.] (années impaires) <b>Corequis :</b> INFO0045-3 - Introduction to computer security	-	Q2	20	-	[+]	5

**Intelligent Systems**

INFO8010-1	<i>Deep learning</i> (anglais) - Gilles LOUPPE - [60h Proj.] <b>Corequis :</b> ELEN0062-1 - Introduction to machine learning	-	Q2	30	-	[+]	5
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
INFO9015-1	<i>Logic for Computer Science</i> (anglais) - Pascal FONTAINE	-	Q1	24	20	-	5
INFO2049-1	<i>Web and Text Analytics</i> (anglais) - Ashwin ITTOO <b>Corequis :</b> ELEN0062-1 - Introduction to machine learning	-	Q1	30	-	-	5
GBIO0002-1	<i>Genetics and bioinformatics</i> (anglais) - Franck DEQUIEDT, Kristel VAN STEEN - [15h Proj.]	-	Q1	30	15	[+]	5
INFO8004-1	<i>Advanced Machine learning</i> (anglais) - Pierre GEURTS, Gilles LOUPPE, Louis WEHENKEL - [20h Proj.] <b>Corequis :</b> INFO8010-1 - Deep learning ELEN0062-1 - Introduction to machine learning	-	Q2	25	-	[+]	5
INFO9014-1	<i>Knowledge representation and reasoning</i> (anglais) - Christophe DEBRUYNE - [45h Proj.] <b>Corequis :</b> INFO9015-1 - Logic for Computer Science	-	Q2	24	20	[+]	5

**Other optional courses**

INFO2051-1	<i>Object-oriented programming on mobile devices</i> (anglais) - Laurent MATHY - [90h Proj.]	-	Q1	15	10	[+]	5
INFO0064-2	<i>Embedded systems</i> (anglais) - Bernard BOIGELOT	-	Q1	25	20	-	3
INFO2055-1	<i>Embedded systems project</i> (anglais) - Bernard BOIGELOT - [60h Proj.] <b>Corequis :</b> INFO0064-2 - Embedded systems	-	Q2	-	-	[+]	2
INFO0060-1	<i>Introduction to computer systems verification</i> (anglais) - Bernard BOIGELOT, Pascal FONTAINE - [20h Proj.] <b>Corequis :</b> INFO9015-1 - Logic for Computer Science INFO0016-1 - Introduction to the theory of computation	-	Q2	20	20	[+]	5
MECA0524-1	<i>CAD &amp; Geometric Algorithms</i> - Eric BÉCHET - [60h Proj.]	-	Q1	20	20	[+]	5
MATH0461-2	<i>Introduction to numerical optimization</i> (anglais) - Quentin LOUVEAUX - [25h Proj.]	-	Q1	30	20	[+]	5
MATH0462-1	<i>Discrete optimization</i> (anglais) - Quentin LOUVEAUX - [25h Proj.] <b>Corequis :</b> MATH0500-1 - Introduction à l'algorithmique numérique	-	Q2	30	20	[+]	5
GBIO0030-1	<i>Computational approaches to statistical genetics</i> (anglais) - Kristel VAN STEEN - [35h Proj.] <b>Prérequis :</b> GBIO0002-1 - Genetics and bioinformatics	-	Q2	25	15	[+]	5
GBIO0031-1	<i>Learning from genomic data</i> (anglais) - Kristel VAN STEEN - [150h Proj.] <b>Prérequis :</b> GBIO0002-1 - Genetics and bioinformatics	-	Q2	-	-	[+]	5
INFO9012-1	<i>Parallel Programming</i> (anglais) - Pascal FONTAINE	-	Q2	25	25	-	5

INFO9015-1	<i>Logic for Computer Science</i> (anglais) - Pascal FONTAINE	-	Q1	24	20	-	<b>5</b>
INFO9016-1	<i>Advanced Databases</i> (anglais) - Christophe DEBRUYNE - [20h Proj.]	-	Q2	24	20	[+]	<b>5</b>
INFO9023-1	<i>Machine Learning Systems Design</i> (anglais) - Thomas VRANCKEN - [17h Labo., 18h Proj.]	-	Q2	17	-	[+]	<b>5</b>
	<b>Corequis :</b> ELEN0062-1 - Introduction to machine learning						
<b>Internships and projects (maximum 15 credits)</b>							
ASTG9005-1	<i>Research Internship</i> (anglais) - Benoît DONNET - [300h Proj.]	B2	TA	-	-	[+]	<b>10</b>
	<b>Prérequis :</b> PROJ0010-1 - Software project engineering and management						
ASTG0021-1	<i>Technical company internship</i> (anglais) - Laurent MATHY - [300h Proj.]	B2	TA	-	-	[+]	<b>10</b>
	<b>Prérequis :</b> PROJ0010-1 - Software project engineering and management						
	<i>Remarque :</i> the two company internships are mutually exclusive						
PROJ0011-1	<i>Personal student project</i> (anglais) - Bernard BOIGELOT, COLLÉGIALITÉ - [150h Proj.]	B2	TA	-	-	[+]	<b>5</b>

### 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	<i>Parallel Programming</i> (anglais) - Pascal FONTAINE	B0	Q2	25	25	-	<b>5</b>
INFO0062-1	<i>Object-oriented programming</i> (anglais) - Bernard BOIGELOT - [20h Proj.]	B0	Q2	25	20	[+]	<b>5</b>
INFO0054-1	<i>Programmation fonctionnelle</i> - Christophe DEBRUYNE - [20h Proj.]	B0	Q1	24	24	[+]	<b>5</b>
MATH2019-1	<i>Mathématiques pour l'informatique 1</i> - Emilie CHARLIER	B0	Q1	26	26	-	<b>5</b>
INFO0027-3	<i>Programming techniques, Software patterns</i> (anglais) - Laurent MATHY - [30h Proj.]	B0	Q2	10	10	[+]	<b>2</b>
MATH0495-1	<i>Éléments du calcul des probabilités</i>	B0					<b>5</b>
	- <i>Partim 1 : Outils d'analyse pour les probabilités</i> - Laurent LOOSVELDT		6	-	-		
	- <i>Partim 2 : Théorie des probabilités</i> - 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	<i>Remedial English for Computer Science</i> (anglais) - Adnan VESSEUR	B0	Q2	3	27	-	<b>3</b>
LANG0988-1	<i>Advanced English for ICT studies</i> (anglais) - Adnan VESSEUR	B0	Q1	5	25	-	<b>3</b>

### Crédits supplémentaires Master en sciences informatiques (destinés aux bacheliers Hautes Ecoles en sciences informatiques)

**Compulsory courses (B0 : 57Cr)**

MATH0500-1	<i>Introduction à l'algorithmique numérique</i> - Quentin LOUVEAUX - [6h Labo., 45h Proj.]	B0	Q1	24	14	[+]	5
INFO0902-1	<i>Structures des données et algorithmes</i> - Pierre GEURTS - [40h Proj.]	B0	Q2	26	20	[+]	5
INFO9012-1	<i>Parallel Programming</i> (anglais) - Pascal FONTAINE	B0	Q2	25	25	-	5
INFO0010-4	<i>Introduction to computer networking</i> (anglais) - Guy LEDUC - [12h Labo., 40h Proj.]	B0	Q1	32	2	[+]	5
INFO0012-2	<i>Computation structures</i> (anglais) - Pascal FONTAINE, Laurent MATHY - [40h Proj.]	B0	Q1	26	26	[+]	5
INFO0940-1	<i>Operating systems</i> (anglais) - Laurent MATHY - [30h Proj.]	B0	Q2	30	6	[+]	5
INFO0062-1	<i>Object-oriented programming</i> (anglais) - Bernard BOIGELOT - [20h Proj.]	B0	Q2	25	20	[+]	5
INFO0054-1	<i>Programmation fonctionnelle</i> - Christophe DEBRUYNE - [20h Proj.]	B0	Q1	24	24	[+]	5
MATH2019-1	<i>Mathématiques pour l'informatique 1</i> - Emilie CHARLIER	B0	Q1	26	26	-	5
INFO0027-3	<i>Programming techniques, Software patterns</i> (anglais) - Laurent MATHY - [30h Proj.]	B0	Q2	10	10	[+]	2
MATH0495-1	<i>Eléments du calcul des probabilités</i> - Partim 1 : Outils d'analyse pour les probabilités - Laurent LOOSVELDT - Partim 2 : Théorie des probabilités - Laurent LOOSVELDT	B0		6	-	-	5
INFO8006-1	<i>Introduction to artificial intelligence</i> (anglais) - Gilles LOUPPE - [45h Proj.]	B0	Q1	25	20	[+]	5

**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	<i>Remedial English for Computer Science</i> (anglais) - Adnan VESSEUR	B0	Q2	3	27	-	3
LANG0988-1	<i>Advanced English for ICT studies</i> (anglais) - Adnan VESSEUR	B0	Q1	5	25	-	3