Vue cycle du programme des cours

		Bl	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.

Compulsory courses from the core curriculum (B1 : 30Cr, B2 : 25Cr)

INFO0085-1	*Compilers* (anglais) - Pascal FONTAINE - [75h Proj.] **Corequis :** 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	*Introduction to machine learning* (anglais) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	B1	Q1	30	5	[+]	**5**
INFO0016-1	*Introduction to the theory of computation* (anglais) - Quentin LOUVEAUX	B1	Q1	26	26	-	**5**
PROJ0010-1	*Software project engineering and management* (anglais) - Benoît DONNET, Bernard HAUZEUR, Laurent MATHY - [280h Proj.] **Prérequis :** INFO0062-1 - Object-oriented programming INFO0010-4 - Introduction to computer networking INFO0902-1 - Structures des données et algorithmes	B1	TA	20	-	[+]	**10**
GEST3162-1	*Principles of management* (anglais) - Michaël PARMENTIER, Willem STANDAERT - [25h Proj.]	B1	Q1	30	-	[+]	**5**
ATFE0002-1	*Master thesis* (anglais) - COLLÉGIALITÉ, Laurent MATHY - [750h Proj.]	B2	TA	-	-	[+]	**25**

Optional courses from the core curriculum (B1 : 15Cr, B2 : 20Cr)

Choose remaining credits in the lists below : (B1 : 15Cr, 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").

MATH0006-3	*Introduction to numerical analysis* (anglais) - Quentin LOUVEAUX	B1	Q1	20	20	-	**5**
INFO0902-1	*Structures des données et algorithmes* - Pierre GEURTS - [40h Proj.]	B1	Q2	26	20	[+]	**5**
INFO0010-4	*Introduction to computer networking* (anglais) - [12h Labo., 40h Proj.]	B1	Q1	32	2	[+]	**5**
INFO0012-2	*Computation structures* (anglais) - Pascal FONTAINE, Laurent MATHY - [40h Proj.]	B1	Q1	26	26	[+]	**5**
INFO0940-1	*Operating systems* (anglais) - Laurent MATHY - [30h Proj.]	B1	Q2	30	6	[+]	**5**
INFO8006-1	*Introduction to artificial intelligence* (anglais) - Gilles LOUPPE - [45h Proj.]	B1	Q1	25	20	[+]	**5**
ELEN0060-2	*Information and coding theory* (anglais) - Louis WEHENKEL - [30h Proj.]	B1	Q2	30	15	[+]	**5**

Computer systems security

INFO0031-1	*Network Engineering* (anglais) - Benoît DONNET - [12h Labo., 30h Proj.]	-	Q2	30	-	[+]	**5**
INFO0045-3	*Introduction to computer security* (anglais) - Benoît DONNET - [10h Labo., 30h Proj.]	-	Q1	30	6	[+]	**5**

	Corequis : INFO0010-4 - Introduction to computer networking INFO0012-2 - Computation structures INFO0902-1 - Structures des données et algorithmes						
INFO0056-1	*Securing Networks* (anglais) - [12h Labo., 30h Proj.] (années paires) **Corequis :** INFO0010-4 - Introduction to computer networking INFO0045-3 - Introduction to computer security	-	Q2	30	-	[+]	**5**
INFO0939-1	*High performance scientific computing* (anglais) - Christophe GEUZAINE - [20h Proj.]	-	Q1	30	15	[+]	**5**
INFO8002-1	*Topics in Distributed Systems* (anglais) - Bernard BOIGELOT, Christophe DEBRUYNE, Pascal FONTAINE, Laurent MATHY - [35h Proj.] (années impaires)	-	Q2	30	-	[+]	**5**
INFO8012-1	*Digital Forensics* (anglais) - Benoît DONNET, Laurent MATHY - [12h Labo., 30h Proj.] (années paires) **Corequis :** INFO0940-1 - Operating systems INFO0010-4 - Introduction to computer networking INFO0085-1 - Compilers	-	Q2	30	-	[+]	**5**
INFO8011-1	*Network infrastructures* (anglais) - Benoît DONNET, Laurent MATHY - [8h Labo., 30h Proj.] **Corequis :** INFO0010-4 - Introduction to computer networking	-	Q1	30	-	[+]	**5**
INFO8013-1	*Advanced Computer Security* (anglais) - Benoît DONNET, Laurent MATHY - [20h Labo., 30h Proj.] (années impaires) **Corequis :** INFO0045-3 - Introduction to computer security	-	Q2	20	-	[+]	**5**
ELEN0450-1	*Multimedia Systems* (anglais) - Anthony CIOPPA	-	Q1	24	30	-	**5**
Intelligent Systems							
INFO8010-1	*Deep learning* (anglais) - Gilles LOUPPE - [60h Proj.] **Corequis :** ELEN0062-1 - Introduction to machine learning	-	Q2	30	-	[+]	**5**
ELEN0016-2	*Computer vision* (anglais) - Anthony CIOPPA, Adrien DELIÈGE, Marc VAN DROOGENBROECK - [50h Proj.]	-	Q1	30	10	[+]	**5**
INFO0948-2	*Introduction to intelligent robotics* (anglais) - Pierre SACRÉ - [80h Proj.]	-	Q2	30	4	[+]	**5**
INFO9015-1	*Logic for Computer Science* (anglais) - Pascal FONTAINE	-	Q1	24	20	-	**5**
INFO2049-1	*Artificial Intelligence Methods for Natural Language Processing* (anglais) - Ashwin ITTOO **Corequis :** ELEN0062-1 - Introduction to machine learning	-	Q1	30	-	-	**5**
GBIO0002-1	*Genetics and bioinformatics* (anglais) - Franck DEQUIEDT, Kristel VAN STEEN - [15h Proj.]	-	Q1	30	15	[+]	**5**
INFO8004-1	*Advanced Machine learning* (anglais) - Pierre GEURTS, Gilles LOUPPE, Louis WEHENKEL - [20h Proj.] **Corequis :** INFO8010-1 - Deep learning ELEN0062-1 - Introduction to machine learning	-	Q2	25	-	[+]	**5**
INFO9014-1	*Knowledge representation and reasoning* (anglais) - Christophe DEBRUYNE - [45h Proj.] **Corequis :** INFO9015-1 - Logic for Computer Science	-	Q2	24	20	[+]	**5**
INFO9023-1	*Machine Learning Systems Design* (anglais) - Thomas VRANCKEN -	-	Q2	17	-	[+]	**5**

	[17h Labo., 18h Proj.] **Corequis :** ELEN0062-1 - Introduction to machine learning						
INFO9030-1	*Explainable Artificial Intelligence* (anglais) - Vân Anh HUYNHTHU - [50h Proj.]	-	Q2	24	-	[+]	**5**
ELEN0449-1	*Computer Vision understanding* (anglais) - Anthony CIOPPA - [50h Proj.]	-	Q2	24	10	[+]	**5**
Other optional courses							
INFO2051-1	*Object-oriented programming on mobile devices* (anglais) - Laurent MATHY - [90h Proj.]	-	Q1	15	10	[+]	**5**
INFO0064-2	*Embedded systems* (anglais) - Bernard BOIGELOT	-	Q1	25	20	-	**3**
INFO2055-1	*Embedded systems project* (anglais) - Bernard BOIGELOT - [60h Proj.] **Corequis :** INFO0064-2 - Embedded systems	-	Q2	-	-	[+]	**2**
INFO0060-1	*Introduction to computer systems verification* (anglais) - Bernard BOIGELOT, Pascal FONTAINE - [20h Proj.] **Corequis :** INFO9015-1 - Logic for Computer Science INFO0016-1 - Introduction to the theory of computation	-	Q2	20	20	[+]	**5**
MECA0524-1	*CAD & Geometric Algorithms* - Eric BÉCHET - [60h Proj.]	-	Q1	20	20	[+]	**5**
MATH0461-2	*Introduction to numerical optimization* (anglais) - Quentin LOUVEAUX - [25h Proj.]	-	Q1	30	20	[+]	**5**
MATH0462-1	*Discrete optimization* (anglais) - Quentin LOUVEAUX - [25h Proj.] **Corequis :** MATH0500-1 - Introduction à l'algorithmique numérique	-	Q2	30	20	[+]	**5**
GBIO0030-1	*Computational approaches to statistical genetics* (anglais) - Kristel VAN STEEN - [35h Proj.] **Prérequis :** GBIO0002-1 - Genetics and bioinformatics	-	Q2	25	15	[+]	**5**
GBIO0031-1	*Learning from genomic data* (anglais) - Kristel VAN STEEN - [150h Proj.] **Prérequis :** GBIO0002-1 - Genetics and bioinformatics	-	Q2	-	-	[+]	**5**
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.]	-	Q1	24	20	[+]	**5**
MQGE9007-1	*Advanced Modeling Techniques in Optimization* (anglais) - Quentin LOUVEAUX, N... **Corequis :** MATH0461-2 - Introduction to numerical optimization	-	Q1	30	-	-	**5**
Internships and projects (maximum 15 credits)							
ASTG9005-1	*Research Internship* (anglais) - Benoît DONNET - [300h Proj.] **Prérequis :** PROJ0010-1 - Software project engineering and management	B2	TA	-	-	[+]	**10**
ASTG0021-1	*Technical company internship* (anglais) - Laurent MATHY - [300h Proj.] **Prérequis :** PROJ0010-1 - Software project engineering and management *Remarque* : the two company internships are mutually exclusive	B2	TA	-	-	[+]	**10**

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

Students choosing this focus shall select, in addition to 5 credits of compulsory courses, 60 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	*Deep learning* (anglais) - Gilles LOUPPE - [60h Proj.]	B1	Q2	30	-	[+]	**5**

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

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

ELEN0016-2	*Computer vision* (anglais) - Anthony CIOPPA, Adrien DELIÈGE, Marc VAN DROOGENBROECK - [50h Proj.]	-	Q1	30	10	[+]	**5**
INFO0948-2	*Introduction to intelligent robotics* (anglais) - Pierre SACRÉ - [80h Proj.]	-	Q2	30	4	[+]	**5**
INFO2049-1	*Artificial Intelligence Methods for Natural Language Processing* (anglais) - Ashwin ITTOO	-	Q1	30	-	-	**5**
GBIO0002-1	*Genetics and bioinformatics* (anglais) - Franck DEQUIEDT, Kristel VAN STEEN - [15h Proj.]	-	Q1	30	15	[+]	**5**
DROI1357-1	*European law, (big) data and artificial intelligence applications seminar* (anglais) - Jérôme DE COOMAN, Ljupcho GROZDANOVSKI	-	Q1	24	-	-	**5**
INFO8003-1	*Reinforcement learning* (anglais) - Damien ERNST - [45h Proj.]	-	Q2	25	10	[+]	**5**
INFO8004-1	*Advanced Machine learning* (anglais) - Pierre GEURTS, Gilles LOUPPE, Louis WEHENKEL - [20h Proj.]	-	Q2	25	-	[+]	**5**
INFO9014-1	*Knowledge representation and reasoning* (anglais) - Christophe DEBRUYNE - [45h Proj.] **Corequis :** INFO9015-1 - Logic for Computer Science	-	Q2	24	20	[+]	**5**
INFO9023-1	*Machine Learning Systems Design* (anglais) - Thomas VRANCKEN - [17h Labo., 18h Proj.] **Corequis :** ELEN0062-1 - Introduction to machine learning	-	Q2	17	-	[+]	**5**
INFO9030-1	*Explainable Artificial Intelligence* (anglais) - Vân Anh HUYNHTHU - [50h Proj.]	-	Q2	24	-	[+]	**5**
ELEN0449-1	*Computer Vision understanding* (anglais) - Anthony CIOPPA - [50h Proj.]	-	Q2	24	10	[+]	**5**

Test d'entrée

LANG6011-1	*Remedial English for Computer Science* (anglais) - Adnan VESSEUR	B0	Q2	3	27	-	**3**
LANG0988-1	*Advanced English for ICT studies* (anglais) - Adnan VESSEUR	B0	Q1	5	25	-	**3**

Crédits supplémentaires Master en sciences informatiques (destinés aux bacheliers Hautes Ecoles en sciences informatiques) (120 ECTS)

The following courses must be taken in addition to the programme of the "Master 60 for bachelors in computer science". Among these courses, those belonging to the "bloc 0" are prerequisites of the "Master 60" programme and must necessarily be taken during the first year of the master.

Compulsory courses (B0 : 60Cr)

MATH0006-3	*Introduction to numerical analysis* (anglais) - Quentin LOUVEAUX	B0	Q1	20	20	-	**5**
INFO0902-1	*Structures des données et algorithmes* - Pierre GEURTS - [40h Proj.]	B0	Q2	26	20	[+]	**5**
INFO9012-1	*Parallel Programming* (anglais) - Pascal FONTAINE	B0	Q2	25	25	-	**5**
INFO0010-4	*Introduction to computer networking* (anglais) - [12h Labo., 40h Proj.]	B0	Q1	32	2	[+]	**5**
INFO0012-2	*Computation structures* (anglais) - Pascal FONTAINE, Laurent MATHY - [40h Proj.]	B0	Q1	26	26	[+]	**5**
INFO0940-1	*Operating systems* (anglais) - Laurent MATHY - [30h Proj.]	B0	Q2	30	6	[+]	**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 *- Partim 2 : Théorie des probabilités* - Laurent LOOSVELDT	B0	Q1 6 20	 6 20	 - -		**5**
INFO8006-1	*Introduction to artificial intelligence* (anglais) - Gilles LOUPPE - [45h Proj.]	B0	Q1	25	20	[+]	**5**

[...] Students who pass the entrance test may replace LANG6011-1 with the advanced course LANG0988-1 "Advanced for ICT studies"