Vue cycle du programme des cours

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.

To complete their curriculum, students must earn or validate the 65 credits of the compulsory courses (including the master thesis), choose 30 credits from the professional focus and take 25 credits of optional courses.
Ideally, students enrolling in the master program should have acquired the skills and knowledge corresponding to the 40 credits in "Computer science" offered as part of the bachelor program in engineering.

Compulsory courses from the core curriculum (B1 : 40Cr, B2 : 25Cr)

		Bl	Or	Th	Pr	Au	Cr
INFO0085-1	*Compilers* (anglais) - Pascal FONTAINE - [75h Proj.] **Corequis :** INFO0940-1 - Operating systems INFO0012-2 - Computation structures 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**
INFO0940-1	*Operating systems* (anglais) - Laurent MATHY - [30h Proj.] **Corequis :** INFO9012-1 - Parallel Programming INFO0012-2 - Computation structures	B1	Q2	30	6	[+]	**5**
ELEN0060-2	*Information and coding theory* (anglais) - Louis WEHENKEL - [30h Proj.]	B1	Q2	30	15	[+]	**5**
GEST3162-1	*Principles of management* (anglais) - Michaël PARMENTIER, Willem STANDAERT - [25h Proj.]	B1	Q1	30	-	[+]	**5**
PROJ0010-1	*Software project engineering and management* (anglais) - Benoît DONNET, Bernard HAUZEUR, Guy LEDUC, Laurent MATHY - [280h Proj.] **Prérequis :** INFO0062-1 - Object-oriented programming **Corequis :** INFO0010-4 - Introduction to computer networking INFO0902-1 - Structures des données et algorithmes	B1	TA	20	-	[+]	**10**
ATFE0015-1	*Master thesis* (anglais) - COLLÉGIALITÉ, Laurent MATHY - [750h Proj.]	B2	TA	-	-	[+]	**25**

Optional courses from the core curriculum (B1 : 5Cr, B2 : 20Cr)

Choose remaining credits in the lists below : (B1 : 5Cr, B2 : 20Cr)

Optional courses outside the focus

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 of science in engineering, or unless the corresponding knowledge and skills have been acquired previously.

		Bl	Or	Th	Pr	Au	Cr
INFO0902-1	*Structures des données et algorithmes* - Pierre GEURTS - [40h Proj.]	B1	Q2	26	20	[+]	**5**
INFO0010-4	*Introduction to computer networking* (anglais) - Guy LEDUC - [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**
INFO0062-1	*Object-oriented programming* (anglais) - Bernard BOIGELOT - [20h Proj.]	B1	Q2	25	20	[+]	**5**

INFO9012-1	*Parallel Programming* (anglais) - Pascal FONTAINE	B1	Q2	25	25	-	**5**

Computer systems security

INFO0031-1	*Network Engineering* (anglais) - Benoît DONNET, Guy LEDUC - [12h Labo., 30h Proj.]	-	Q2	30	-	[+]	**5**
INFO0045-3	*Introduction to computer security* (anglais) - Benoît DONNET - [10h Labo., 30h Proj.] **Corequis :** INFO0010-4 - Introduction to computer networking INFO0012-2 - Computation structures INFO0902-1 - Structures des données et algorithmes	-	Q1	30	6	[+]	**5**
INFO0056-1	*Securing Networks* (anglais) - Guy LEDUC - [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, Guy LEDUC, 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 :** INFO0010-4 - Introduction to computer networking INFO0085-1 - Compilers INFO0940-1 - Operating systems	-	Q2	30	-	[+]	**5**
INFO8011-1	*Network infrastructures* (anglais) - Benoît DONNET, Guy LEDUC, 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**

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 - Suppl : Thomas HOYOUX - [50h Proj.]	-	Q1	30	10	[+]	**5**
INFO9015-1	*Logic for Computer Science* (anglais) - Pascal FONTAINE	-	Q1	24	20	-	**5**
INFO0948-2	*Introduction to intelligent robotics* (anglais) - Pierre SACRÉ - [80h Proj.]	-	Q2	30	4	[+]	**5**
INFO2049-1	*Web and Text Analytics* (anglais) - Ashwin ITTOO	-	Q1	30	-	-	**5**
GBIO0002-1	*Genetics and bioinformatics* (anglais) - Franck DEQUIEDT, Kristel VAN STEEN - [15h Proj.]	-	Q1	30	15	[+]	**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.] **Corequis :** INFO8010-1 - Deep learning	-	Q2	25	-	[+]	**5**

ELEN0062-1 - Introduction to machine learning

INFO8006-1	*Introduction to artificial intelligence* (anglais) - Gilles LOUPPE - [45h Proj.]	-	Q1	25	20	[+]	**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.]	-	Q2	17	-	[+]	**5**
INFO9030-1	*Explainable Artificial Intelligence* (anglais) - Vân Anh HUYNHTHU - [50h Proj.]	-	Q2	24	-	[+]	**5**

Other optional courses

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**
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**
INFO2051-1	*Object-oriented programming on mobile devices* (anglais) - Laurent MATHY - [90h Proj.]	-	Q1	15	10	[+]	**5**
INFO0060-1	*Introduction to computer systems verification* (anglais) - Bernard BOIGELOT, Pascal FONTAINE - [20h Proj.] **Corequis :** INFO0016-1 - Introduction to the theory of computation INFO9015-1 - Logic for Computer Science	-	Q2	20	20	[+]	**5**
INFO0027-2	*Programming techniques* (anglais) - *Algorithmics* - Laurent MATHY - [40h Proj.] - *Software patterns* - Laurent MATHY - [30h Proj.]	-	Q2 14 10	 14 10	 [+] [+]		**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.]	-	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**
MECA0524-1	*CAD & Geometric Algorithms* - Eric BÉCHET - [60h Proj.]	-	Q1	20	20	[+]	**5**
INFO0004-2	*Object-oriented programming projects* (anglais) - Laurent MATHY - [90h Proj.]	-	Q2	20	-	[+]	**5**
GBIO0031-1	*Learning from genomic data* (anglais) - Kristel VAN STEEN - [150h Proj.]	-	Q2	-	-	[+]	**5**
INFO0054-1	*Programmation fonctionnelle* - Christophe DEBRUYNE - [20h Proj.]	-	Q1	24	24	[+]	**5**
ELEN0449-1	*Computer Vision understanding* (anglais) - Anthony CIOPPA - [50h Proj.]	-	Q2	24	10	[+]	**5**

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

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.]	-	TA	-	-	[+]	**5**

Compulsory courses within the focus (B1 : 10Cr)

INFO8010-1	*Deep learning* (anglais) - Gilles LOUPPE - [60h Proj.]	B1	Q2	30	-	[+]	**5**
SYST0022-1	*Linear Systems Design* (anglais) - Guillaume DRION, Pierre SACRÉ - [15h Proj.]	B1	Q2	26	26	[+]	**5**

Optional courses within the focus (B1 : 5Cr, B2 : 15Cr)

Students choosing this focus shall select, in addition to 10 credits of compulsory courses, 45 credits of elective courses inside or outside the focus. However, for his/her whole master program (block 1 and block 2), a total of 20 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. (B1 : 5Cr, B2 : 15Cr)

ELEN0016-2	*Computer vision* (anglais) - Anthony CIOPPA, Adrien DELIÈGE, Marc VAN DROOGENBROECK - Suppl : Thomas HOYOUX - [50h Proj.]	-	Q1	30	10	[+]	**5**
INFO0948-2	*Introduction to intelligent robotics* (anglais) - Pierre SACRÉ - [80h Proj.]	-	Q2	30	4	[+]	**5**
INFO2049-1	*Web and Text Analytics* (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**
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**
INFO8006-1	*Introduction to artificial intelligence* (anglais) - Gilles LOUPPE - [45h Proj.]	-	Q1	25	20	[+]	**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**

Crédits supplémentaires Master en ingénieur civil en informatique (120 ECTS)

Compulsory courses (B0 : 48Cr)

Students that are admitted to the master of science in Computer Science and Engineering without having obtained a degree of bachelor in engineering must add to their programme the following list of courses, to be taken in the first year of the master.

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**
MATH0006-3	*Introduction to numerical analysis* (anglais) - Quentin LOUVEAUX	B0	Q1	20	20	-	**4**
INFO0054-1	*Programmation fonctionnelle* - Christophe DEBRUYNE - [20h Proj.]	B0	Q1	24	24	[+]	**5**
INFO0030-3	*Projet de programmation* - Benoît DONNET - [100h Proj.]	B0	Q2	20	-	[+]	**5**
ELEN0040-1	*Digital electronics* (anglais) - JeanMichel REDOUTÉ	B0	Q2	26	26	-	**5**
MATH0013-1	*Algèbre* - Eric DELHEZ	B0	Q1	26	26	-	**5**
MECA0003-2	*Mécanique rationnelle* - Eric DELHEZ	B0	Q1	20	30	-	**5**
LANG6011-1	*Remedial English for Computer Science* (anglais) - Adnan VESSEUR	B0	Q2	3	27	-	**3**
DROI0101-1	*Contrats relatifs à l'informatique* - Benoît KOHL	B0	Q2	30	-	-	**4**
GENV0002-1	*Energie et développement durable* - Pierre DEWALLEF, Damien ERNST, Motiar RAHAMAN, Sigrid REITER - [20h Proj.]	B0	Q2	26	8	[+]	**3**
MATH0504-1	*Mathématiques appliquées* - Benjamin DEWALS, Christophe GEUZAINE	B0	Q1	26	26	-	**5**

Crédits supplémentaires Master en ingénieur civil en informatique (120 ECTS)

Compulsory courses (B0 : 46Cr)

Students that are admitted to the master of science in Computer Science and Engineering without having obtained a degree of bachelor in engineering must add to their programme the following list of courses, to be taken in the first year of the master.

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	- -		**3**
MATH0006-3	*Introduction to numerical analysis* (anglais) - Quentin LOUVEAUX	B0	Q1	20	20	-	**4**
INFO0054-1	*Programmation fonctionnelle* - Christophe DEBRUYNE - [20h Proj.]	B0	Q1	24	24	[+]	**5**
INFO0030-3	*Projet de programmation* - Benoît DONNET - [100h Proj.]	B0	Q2	20	-	[+]	**5**
ELEN0040-1	*Digital electronics* (anglais) - JeanMichel REDOUTÉ	B0	Q2	26	26	-	**5**
MATH0013-1	*Algèbre* - Eric DELHEZ	B0	Q1	26	26	-	**5**
MECA0003-2	*Mécanique rationnelle* - Eric DELHEZ	B0	Q1	20	30	-	**4**
LANG6011-1	*Remedial English for Computer Science* (anglais) - Adnan VESSEUR	B0	Q2	3	27	-	**3**
DROI0724-1	*Droit et activités de l'ingénieur* - Roman AYDOGDU, Christine BIQUET, Vanessa FRANSSEN, Fabienne KÉFER, Pascale LECOCQ, Bernard VANBRABANT, Philippe VINCENT	B0	Q1	26	-	-	**2**
GENV0002-1	*Energie et développement durable* - Pierre DEWALLEF, Damien ERNST, Motiar RAHAMAN, Sigrid REITER - [20h Proj.]	B0	Q2	26	8	[+]	**3**
MATH0504-1	*Mathématiques appliquées* - Benjamin DEWALS, Christophe GEUZAINE	B0	Q1	26	26	-	**5**