Vue cycle du programme des cours

		Bl	Or	Th	Pr	Au	Cr

If one or several of the mandatory courses have already been credited when entering the Master of Data science program, they can be replaced by a corresponding amount of credits chosen among the elective courses.

Compulsory courses (B1 : 20Cr, B2 : 40Cr)

Computer Science, Applied Mathematics and Data Science fundamentals :

INFO0016-1	*Introduction to the theory of computation* (anglais) - Pierre WOLPER	B1	Q1	26	26	-	**5**
MATH0461-2	*Introduction to numerical optimization* (anglais) - Quentin LOUVEAUX - [25h Proj.]	B1	Q1	30	20	[+]	**5**
INFO8006-1	*Introduction to artificial intelligence* (anglais) - Gilles LOUPPE - [45h Proj.]	B1	Q1	25	10	[+]	**5**
ELEN0062-1	*Introduction to machine learning* (anglais) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	B1	Q1	30	5	[+]	**5**

Management and legal issues

GEST3162-1	*Principles of management* (anglais) - Michael GHILISSEN, François PICHAULT	B2	Q1	25	25	-	**5**
DROI8031-2	*Introduction to the law of robots, Law of artificial intelligence, robots and data-driven Algorithmic Applications* (anglais) - Nicolas PETIT	B2	Q1	20	-	-	**5**

Remarque : students who have already acquired the skills and knowledge of GEST3162 (or equivalent) will replace it by GEST3032 (see options below).

Master thesis

ATFE9009-1	*Master thesis and internship* (anglais) - Pierre GEURTS	B2	TA	-	-	-	**30**

Elective courses (B1 : 40Cr, B2 : 20Cr)

Single focus (B1 : 30Cr)

Professional focus in data science (B1 : 30Cr)

MATH2021-1	*High-dimensional data analysis* (anglais) - Gentiane HAESBROECK - [10h Labo., 15h Proj.]	B1	Q1	15	-	[+]	**3**
INFO8002-1	*Large-scale data systems* (anglais) - Gilles LOUPPE - [45h Proj.]	B1	Q1	25	10	[+]	**5**
PROJ0016-1	*Big data project* (anglais) - Bertrand CORNÉLUSSE, Pierre GEURTS, Gilles LOUPPE - [180h Proj.]	B1	TA	10	-	[+]	**7**
ELEN0060-2	*Information and coding theory* (anglais) - Louis WEHENKEL - [30h Proj.]	B1	Q2	30	15	[+]	**5**
INFO8005-1	*Semantic Data* (anglais) - JeanLouis BINOT - [45h Proj.]	B1	Q2	25	10	[+]	**5**
INFO8010-1	*Deep learning* (anglais) - Gilles LOUPPE - [45h Proj.]	B1	Q2	30	5	[+]	**5**

Choose 10 credits in the following list : (B1 : 10Cr)

INFO8003-1	*Optimal decision making for complex problems* (anglais) - Damien ERNST - [45h Proj.]	B1	Q2	25	10	[+]	**5**
INFO8004-1	*Advanced Machine learning* (anglais) - Pierre GEURTS, Gilles LOUPPE, Louis WEHENKEL - [45h Proj.]	B1	Q2	30	5	[+]	**5**
INFO2049-1	*Web and Text Analytics* (anglais) - Ashwin ITTOO	B1	Q1	30	-	-	**5**
ELEN0016-2	*Computer vision* (anglais) - Marc VAN DROOGENBROECK - [50h Proj.]	-	Q1	30	10	[+]	**5**
INFO0948-2	*Introduction to intelligent robotics* (anglais) - Pierre SACRÉ - [80h Proj.]	B1	Q2	30	4	[+]	**5**
PROJ0017-1	*Personal student project in Data Science* (anglais) - Pierre GEURTS,	B1	TA	-	-	[+]	**5**

	Gilles LOUPPE - [150h Proj.]						
INFO0051-1	*Logic* (anglais) - Pascal GRIBOMONT - [10h Proj.]	B1	Q1	25	25	[+]	**5**
INFO0049-1	*Knowledge representation* (anglais) - Pascal GRIBOMONT - [50h Proj.]	B1	Q2	28	24	[+]	**5**
INFO0027-2	*Programming techniques* (anglais) - Laurent MATHY - [70h Proj.]	B1	Q2	24	24	[+]	**5**
INFO0010-4	*Introduction to computer networking* (anglais) - *Partim A* - Guy LEDUC - [8h Labo., 40h Proj.] - *Partim B* - Guy LEDUC - [4h Labo.]	B1	Q2 30 5	 2 -	 [+] [+]		**5**
INFO0940-1	*Operating systems* (anglais) - Laurent MATHY - [30h Proj.]	B1	Q2	30	6	[+]	**5**
INFO0045-3	*Introduction to computer security* (anglais) - Benoît DONNET - [8h Labo., 30h Proj.]	B1	Q1	30	10	[+]	**5**
INFO8011-1	(pas organisé en 2018-2019) *Network infrastructures* - Benoît DONNET, Guy LEDUC, Laurent MATHY - [12h Labo., 30h Proj.] (années impaires)	B1	Q2	30	-	[+]	**5**

Choose 20 credits in the following topics, among those that have not already been credited in Block 1 or before entering this Master programme : (B2 : 20Cr)

Elective courses in Data Science and Artificial Intelligence

INFO8004-1	*Advanced Machine learning* (anglais) - Pierre GEURTS, Gilles LOUPPE, Louis WEHENKEL - [45h Proj.]	B2	Q2	30	5	[+]	**5**
INFO2049-1	*Web and Text Analytics* (anglais) - Ashwin ITTOO	B2	Q1	30	-	-	**5**
MATH2022-1	*Large sample analysis : theory and practice* (anglais) - *General course* - N..., Yvik SWAN - [10h Proj.] - *Project complement* - N..., Yvik SWAN - [30h Proj.]	B2	Q2 24 -	 12 -	 [+] [+]		**5**
INFO8003-1	*Optimal decision making for complex problems* (anglais) - Damien ERNST - [45h Proj.]	B2	Q2	25	10	[+]	**5**
ELEN0016-2	*Computer vision* (anglais) - Marc VAN DROOGENBROECK - [50h Proj.]	B2	Q1	30	10	[+]	**5**
INFO0948-2	*Introduction to intelligent robotics* (anglais) - Pierre SACRÉ - [80h Proj.]	B2	Q2	30	4	[+]	**5**
INFO0049-1	*Knowledge representation* (anglais) - Pascal GRIBOMONT - [50h Proj.]	B2	Q2	28	24	[+]	**5**
GEST5006-1	*SAS Certification applied analytics* (anglais) - Michael SCHYNS - [25h TD]	B2	Q2	15	-	[+]	**5**

Elective courses in Computer Science and Applied Mathematics

INFO0027-2	*Programming techniques* (anglais) - Laurent MATHY - [70h Proj.]	B2	Q2	24	24	[+]	**5**
INFO0939-1	*High performance scientific computing* (anglais) - Christophe GEUZAINE - [20h Proj.]	B2	Q1	30	15	[+]	**5**
INFO0010-4	*Introduction to computer networking* (anglais) - *Partim A* - Guy LEDUC - [8h Labo., 40h Proj.] - *Partim B* - Guy LEDUC - [4h Labo.]	B2	Q2 30 5	 2 -	 [+] [+]		**5**
INFO0940-1	*Operating systems* (anglais) - Laurent MATHY - [30h Proj.]	B2	Q2	30	6	[+]	**5**
INFO0045-3	*Introduction to computer security* (anglais) - Benoît DONNET - [8h Labo., 30h Proj.]	B2	Q1	30	10	[+]	**5**
INFO8011-1	(pas organisé en 2018-2019) *Network infrastructures* - Benoît DONNET, Guy LEDUC, Laurent MATHY - [12h Labo., 30h Proj.] (années impaires)	B2	Q2	30	-	[+]	**5**
MATH0462-1	*Discrete optimization* (anglais) - Quentin LOUVEAUX - [25h Proj.]	B2	Q1	30	20	[+]	**5**
MQGE0002-3	*Computational Optimization* (anglais) - Yves CRAMA	B2	Q2	30	-	-	**5**

INFO0051-1	*Logic* (anglais) - Pascal GRIBOMONT - [10h Proj.]	B2	Q1	25	25	[+]	**5**

Elective courses in bioinformatics

GBIO0002-1	*Genetics and bioinformatics* (anglais) - Franck DEQUIEDT, Kristel VAN STEEN - [15h Proj.]	B2	Q1	30	15	[+]	**5**
GBIO0009-1	*Topics in bioinformatics* (anglais) - Kristel VAN STEEN - [35h Proj.]	B2	Q1	25	15	[+]	**5**
GBIO0030-1	*Computational approaches to statistical genetics* (anglais) - Kristel VAN STEEN - [35h Proj.]	B2	Q2	25	15	[+]	**5**

Elective courses in management

GEST3032-1	*eBusiness and eCommerce* (anglais) - Ashwin ITTOO	B2	Q1	30	-	-	**5**

Miscellaneous

INGE0012-1	*Scientific research in engineering and its impact on innovation* (anglais) - Rodolphe SEPULCHRE	B2	Q2	26	26	-	**5**

[...] With the agreement of the President of the Jury, students may also choose up to 15 credits in the application area of their Master thesis in other programmes of the university

[...] With the agreement of the President of the Jury, students may also choose 5 credits in any other programme of the university.

Crédits supplémentaires Master en sciences des données (120 ECTS)

Optional courses (B0 : 60Cr)

The following courses are prerequisites for some courses of this master programme. Therefore, students who are admitted to this master without having acquired equivalent courses must add them to the programme of their first year. (B0 : 60Cr)

MATH2007-1	*Mathématique* - Françoise BASTIN	B0	Q1	30	40	-	**6**
MATH0499-1	*Théorie des graphes* - Michel RIGO	B0	Q1	25	20	-	**4**
MATH0495-1	*Eléments du calcul des probabilités* - Pascal GRIBOMONT - [5h Proj.]	B0	Q1	15	15	[+]	**3**
MATH0487-2	*Eléments de statistiques* - Louis WEHENKEL - [25h Proj.]	B0	Q1	15	10	[+]	**3**
MATH1222-3	*Introduction aux processus stochastiques* - Céline ESSER, Pierre GEURTS - [10h TD]	B0	Q2	20	10	[+]	**5**
INFO0946-1	*Introduction à la programmation* - Benoît DONNET - [10h Labo.]	B0	Q1	30	20	[+]	**5**
INFO2050-1	*Programmation avancée* - Pierre GEURTS - [40h Proj.]	B0	Q1	25	20	[+]	**5**
INFO0009-2	*Bases de données (organisation générale)* - Pierre WOLPER - Suppl : Samuel HIARD - [25h Proj.]	B0	Q2	26	26	[+]	**5**
MATH0500-1	*Introduction à l'algorithmique numérique* - Quentin LOUVEAUX - [6h Labo., 45h Proj.]	B0	Q1	24	14	[+]	**5**
INFO0054-1	*Programmation fonctionnelle* - Pascal GRIBOMONT - [15h Proj.]	B0	Q2	28	24	[+]	**5**
INFO0062-1	*Object-oriented programming* (anglais) - Bernard BOIGELOT - [20h Proj.]	B0	Q2	25	20	[+]	**5**
MATH2019-1	*Mathématiques pour l'informatique 1* - Emilie CHARLIER, N...	B0	Q2	26	26	-	**5**
MATH2020-1	*Mathématiques pour l'informatique 2* - Emilie CHARLIER, N...	B0	Q1	26	26	-	**5**

Students must have a level B2 in English