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 : 10Cr, B2 : 35Cr)

DATS0001-1	*Foundations of data science* (anglais) - Gilles LOUPPE - [55h Proj.]	B1	Q1	25	10	[+]	**5**
PROJ0021-1	*Data science project* (anglais) - Christophe DEBRUYNE, Pierre GEURTS, Gilles LOUPPE - [120h Proj.]	B1	Q2	5	-	[+]	**5**
DROI1357-1	*European law, (big) data and artificial intelligence applications seminar* (anglais) - - Suppl : Ljupcho GROZDANOVSKI	B2	Q1	24	-	-	**5**
GEST3162-1	*Principles of management* (anglais) - François PICHAULT, Willem STANDAERT - [25h Proj.]	B2	Q1	30	-	[+]	**5**
ATFE9009-1	*Master thesis* (anglais) - Pierre GEURTS - [750h Proj.]	B2	TA	-	-	[+]	**25**

[...] Students who have already acquired the skills and knowledge of GEST3162 (or equivalent) will replace it by a course of their choice of 5 ECTS

Elective courses (B1 : 40Cr, B2 : 25Cr)

Single focus (B1 : 30Cr)

Professional focus in data science (B1 : 30Cr)

ELEN0062-1	*Introduction to machine learning* (anglais) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	B1	Q1	30	5	[+]	**5**
INFO8010-1	*Deep learning* (anglais) - Gilles LOUPPE - [55h Proj.]	B1	Q2	25	10	[+]	**5**
INFO9014-1	*Knowledge representation and reasoning* (anglais) - Christophe DEBRUYNE	B1	Q2	24	20	-	**5**
INFO9016-1	*Advanced Databases* (anglais) - Christophe DEBRUYNE	B1	Q2	24	20	-	**5**
MATH0461-2	*Introduction to numerical optimization* (anglais) - Quentin LOUVEAUX - [25h Proj.]	B1	Q1	30	20	[+]	**5**
MATH2021-1	*High-dimensional statistics* (anglais) - Gentiane HAESBROECK - [30h Proj.]	B1	Q1	30	15	[+]	**5**

In agreement with the Jury, choose a total of 20 credits for Block 1 and 25 credits for Block 2 in the following list, among those that have not already been credited before. (B1 : 20Cr, B2 : 25Cr)

ELEN0016-2	*Computer vision* (anglais) - Marc VAN DROOGENBROECK - [50h Proj.]	-	Q1	30	10	[+]	**5**
ELEN0060-2	*Information and coding theory* (anglais) - Louis WEHENKEL - [30h Proj.]	-	Q2	30	15	[+]	**5**
INFO0016-1	*Introduction to the theory of computation* (anglais) - Quentin LOUVEAUX	-	Q1	26	26	-	**5**
INFO0027-2	*Programming techniques* (anglais) - *Algorithmics* - Laurent MATHY - [40h Proj.] - *Software patterns* - Laurent MATHY - [30h Proj.]	-	Q2 14 10	 14 10	 [+] [+]		**5**
INFO0054-1	*Programmation fonctionnelle* - Christophe DEBRUYNE - [15h Proj.]	-	Q1	28	24	[+]	**5**
INFO0939-1	*High performance scientific computing* (anglais) - Christophe GEUZAINE - Suppl : David COLIGNON - [20h Proj.]	-	Q1	30	15	[+]	**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**
INFO8003-1	*Optimal decision making for complex problems* (anglais) - Damien ERNST - [45h Proj.]	-	Q2	25	10	[+]	**5**

INFO8004-1	*Advanced Machine learning* (anglais) - Pierre GEURTS, Gilles LOUPPE, Louis WEHENKEL - [45h Proj.]	-	Q2	25	-	[+]	**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**
INGE0012-1	(pas organisé en 2022-2023) *Scientific research in engineering and its impact on innovation* (anglais)	-	Q2	26	26	-	**5**
MATH0462-1	*Discrete optimization* (anglais) - Quentin LOUVEAUX - [25h Proj.]	-	Q2	30	20	[+]	**5**
MATH2022-1	*Monte Carlo methods in statistics* (anglais) - *General course* - Arnout VAN MESSEM - [10h Proj.] - *Project complement* - Arnout VAN MESSEM - [30h Proj.]	-	Q2 24 -	 12 -	 [+] [+]		**5**
MQGE0002-3	*Computational Optimization* (anglais) - Yves CRAMA	-	Q2	30	-	-	**5**
PROJ0017-1	*Personal student project in Data Science* (anglais) - Gilles LOUPPE - [150h Proj.]	-	TA	-	-	[+]	**5**
BIOL0021-1	*Biologie des systèmes* - Patrick MEYER - [10h TD] **Corequis :** OCEA0089-1 - Introduction to marine ecosystems modelling	-	Q1	10	-	[+]	**2**
OCEA0089-1	*Introduction to marine ecosystems modelling* (anglais) - Marilaure GRÉGOIRE **Corequis :** BIOL0021-1 - Biologie des systèmes	-	Q1	15	15	-	**3**
GEOG0057-1	*Analyse spatiale* - François JONARD	-	Q2	30	30	-	**5**
GEOG0059-1	*Infrastructures de données spatiales* - Roland BILLEN	-	Q1	30	30	-	**5**
GEST0832-4	*Marchés financiers* - Georges HÜBNER **Corequis :** FINA0063-1 - Advanced Statistical Methods in Finance	-	Q1	40	15	-	**5**
FINA0063-1	*Advanced Statistical Methods in Finance* (anglais) - Julien HAMBUCKERS	-	Q1	30	-	-	**5**
GEST3032-1	*eBusiness and eCommerce* (anglais) - Ashwin ITTOO	-	Q1	30	-	-	**5**
GBIO0002-1	*Genetics and bioinformatics* (anglais) - Franck DEQUIEDT, Kristel VAN STEEN - [15h Proj.]	-	Q1	30	15	[+]	**5**
GBIO0009-1	*Topics in bioinformatics* (anglais) - Kristel VAN STEEN - [35h Proj.]	-	Q1	25	15	[+]	**5**
GBIO0030-1	*Computational approaches to statistical genetics* (anglais) - Kristel VAN STEEN - [35h Proj.]	-	Q2	25	15	[+]	**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.

Optional company internships

Remarque : the course units ASTG9008-1 et ASTG9009-1 are mutually exclusive.

ASTG9008-1	*Internship (coupled with Master thesis)* (anglais) - Pierre GEURTS - [80j T. t.]	B2	TA	-	-	[+]	**5**
ASTG9009-1	*Internship (independent of Master thesis)* - Pierre GEURTS - [40j T. t.]	B2	TA	-	-	[+]	**10**

Crédits supplémentaires Master en science des données (120 ECTS)

Optional courses (B0 : 56Cr)

Students who are admitted to this master without having acquired equivalent courses must add them to the programme of their first year. (B0 : 56Cr)

MATH2007-1	*Mathématiques générales I* - 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* - Céline ESSER - [5h Proj.]	B0	Q1	15	15	[+]	**3**
MATH0487-2	*Eléments de statistiques* - Pierre SACRÉ - [25h Proj.]	B0	Q1	15	10	[+]	**3**
MATH1222-3	*Introduction aux processus stochastiques* - Amir ABOUBACAR, Pierre GEURTS - [10h TD]	B0	Q2	20	10	[+]	**5**
INFO0946-1	*Introduction à la programmation* - Benoît DONNET - [10h Labo.]	B0	Q1	30	30	[+]	**5**
INFO0009-2	*Bases de données (organisation générale)* - Christophe DEBRUYNE - [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**
INFO0062-1	*Object-oriented programming* (anglais) - Bernard BOIGELOT - [20h Proj.]	B0	Q2	25	20	[+]	**5**
MATH2019-1	*Mathématiques pour l'informatique 1* - Emilie CHARLIER	B0	Q1	26	26	-	**5**
MATH2020-1	*Mathématiques pour l'informatique 2* - Emilie CHARLIER	B0	Q1	26	26	-	**5**
INFO8006-1	*Introduction to artificial intelligence* (anglais) - Gilles LOUPPE - [45h Proj.]	B0	Q1	25	20	[+]	**5**

Students must have a level B2 in English