Cycle view of the study programme

		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* (english language) - Gilles LOUPPE - [55h Proj.]	B1	Q1	25	10	[+]	**5**
PROJ0021-1	*Data science project* (english language) - Christophe DEBRUYNE, Pierre GEURTS, Gilles LOUPPE - [120h Proj.]	B1	Q2	5	-	[+]	**5**
DROI1357-1	*European law, (big) data and artificial intelligence applications seminar* (english language) - - Suppl : Ljupcho GROZDANOVSKI	B2	Q1	24	-	-	**5**
GEST3162-1	*Principles of management* (english language) - François PICHAULT, Willem STANDAERT - [25h Proj.]	B2	Q1	30	-	[+]	**5**
ATFE9009-1	*Master thesis* (english language) - 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 : 50Cr, B2 : 25Cr)

Single focus (B1 : 30Cr)

Professional focus in data science (B1 : 30Cr)

ELEN0062-1	*Introduction to machine learning* (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	B1	Q1	30	5	[+]	**5**
INFO8010-1	*Deep learning* (english language) - Gilles LOUPPE - [55h Proj.]	B1	Q2	25	10	[+]	**5**
INFO9014-1	*Knowledge representation and reasoning* (english language) - Christophe DEBRUYNE	B1	Q2	24	20	-	**5**
INFO9016-1	*Advanced Databases* (english language) - Christophe DEBRUYNE	B1	Q2	24	20	-	**5**
MATH0461-2	*Introduction to numerical optimization* (english language) - Quentin LOUVEAUX - [25h Proj.]	B1	Q1	30	20	[+]	**5**
MATH2021-1	*High-dimensional statistics* (english language) - 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* (english language) - Marc VAN DROOGENBROECK - [50h Proj.]	-	Q1	30	10	[+]	**5**
ELEN0060-2	*Information and coding theory* (english language) - Louis WEHENKEL - [30h Proj.]	-	Q2	30	15	[+]	**5**
INFO0016-1	*Introduction to the theory of computation* (english language) - Quentin LOUVEAUX	-	Q1	26	26	-	**5**
INFO0027-2	*Programming techniques* (english language) - *Algorithmics* - Laurent MATHY - [40h Proj.] - *Software patterns* - Laurent MATHY - [30h Proj.]	-	Q2 14 10	 14 10	 [+] [+]		**5**
INFO0054-1	*Functional programming* - Christophe DEBRUYNE - [15h Proj.]	-	Q1	28	24	[+]	**5**
INFO0939-1	*High performance scientific computing* (english language) - Christophe GEUZAINE - Suppl : David COLIGNON - [20h Proj.]	-	Q1	30	15	[+]	**5**
INFO0948-2	*Introduction to intelligent robotics* (english language) - Pierre SACRÉ - [80h Proj.]	-	Q2	30	4	[+]	**5**
INFO2049-1	*Web and Text Analytics* (english language) - Ashwin ITTOO	-	Q1	30	-	-	**5**
INFO8003-1	*Optimal decision making for complex problems* (english language) -	-	Q2	25	10	[+]	**5**

	Damien ERNST - [45h Proj.]						
INFO8004-1	*Advanced Machine learning* (english language) - Pierre GEURTS, Gilles LOUPPE, Louis WEHENKEL - [45h Proj.]	-	Q2	25	-	[+]	**5**
INFO9012-1	*Parallel Programming* (english language) - Pascal FONTAINE	-	Q2	25	25	-	**5**
INFO9015-1	*Logic for Computer Science* (english language) - Pascal FONTAINE	-	Q1	24	20	-	**5**
INGE0012-1	(pas organisé en 2022-2023) *Scientific research in engineering and its impact on innovation* (english language)	-	Q2	26	26	-	**5**
MATH0462-1	*Discrete optimization* (english language) - Quentin LOUVEAUX - [25h Proj.]	-	Q2	30	20	[+]	**5**
MATH2022-1	*Monte Carlo methods in statistics* (english language) - *General course* - Arnout VAN MESSEM - [10h Proj.] - *Project complement* - Arnout VAN MESSEM - [30h Proj.]	-	Q2 24 -	 12 -	 [+] [+]		**5**
MQGE0002-3	*Computational Optimization* (english language) - Yves CRAMA	-	Q2	30	-	-	**5**
PROJ0017-1	*Personal student project in Data Science* (english language) - Gilles LOUPPE - [150h Proj.]	-	TA	-	-	[+]	**5**
BIOL0021-1	*Biology of the systems* - Patrick MEYER - [10h Mon. WS] **Corequisite :** OCEA0089-1 - Introduction to marine ecosystems modelling	-	Q1	10	-	[+]	**2**
OCEA0089-1	*Introduction to marine ecosystems modelling* (english language) - Marilaure GRÉGOIRE **Corequisite :** BIOL0021-1 - Biologie des systèmes	-	Q1	15	15	-	**3**
GEOG0057-1	*Spatial analysis* - François JONARD	-	Q2	30	30	-	**5**
GEOG0059-1	*Infrastructures of spatial data* - Roland BILLEN	-	Q1	30	30	-	**5**
GEST0832-4	*Financial Markets* - Georges HÜBNER **Corequisite :** FINA0063-1 - Advanced Statistical Methods in Finance	-	Q1	40	15	-	**5**
FINA0063-1	*Advanced Statistical Methods in Finance* (english language) - Julien HAMBUCKERS	-	Q1	30	-	-	**5**
GEST3032-1	*eBusiness and eCommerce* (english language) - Ashwin ITTOO	-	Q1	30	-	-	**5**
GBIO0002-1	*Genetics and bioinformatics* (english language) - Franck DEQUIEDT, Kristel VAN STEEN - [15h Proj.]	-	Q1	30	15	[+]	**5**
GBIO0009-1	*Topics in bioinformatics* (english language) - Kristel VAN STEEN - [35h Proj.]	-	Q1	25	15	[+]	**5**
GBIO0030-1	*Computational approaches to statistical generics* (english language) - 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

Notice : the course units ASTG9008-1 and ASTG9009-1 are mutually exclusive

ASTG9008-1	*Internship (coupled with Master thesis)* (english language) - Pierre GEURTS - [80d FW]	B2	TA	-	-	[+]	**5**
ASTG9009-1	*Internship (independent of Master thesis)* - Pierre GEURTS - [40d FW]	B2	TA	-	-	[+]	**10**

Additional credits Master in Data Science Engineering (120 ECTS)

Students who are admitted to this master without having acquired equivalent courses must add them to the programme of their first year.

MATH0002-4	*Mathematical analysis 1* - Eric DELHEZ	B0	Q1	22	22	-	**4**
MATH0013-1	*Algebra* - Eric DELHEZ	B0	Q1	26	26	-	**5**
MATH0062-1	*Elements of probability calculus* - Pierre SACRÉ - [25h Proj.]	B0	Q2	15	10	[+]	**3**
MATH0487-2	*Elements of statistics* - Pierre SACRÉ - [25h Proj.]	B0	Q1	15	10	[+]	**3**
MATH0488-1	*Elements of stochastic processes* - Maarten ARNST, Vincent DENOËL, Pierre GEURTS - [30h Proj.]	B0	Q2	10	10	[+]	**2**
INFO2009-2	*Introduction to computer science* - Bernard BOIGELOT	B0	Q1	24	14	-	**4**
MATH0006-3	*Introduction to numerical analysis* (english language) - Quentin LOUVEAUX	B0	Q1	20	20	-	**4**
MECA0003-2	*Rational Mechanics* - Eric DELHEZ	B0	Q1	20	30	-	**4**
SYST0002-2	*Introduction to signals and systems* - Guillaume DRION - [15h Proj.]	B0	Q1	26	26	[+]	**5**

2. Additional courses in computer science :

INFO0902-1	*Data structures and algorithms* - Pierre GEURTS - [40h Proj.]	B0	Q2	26	20	[+]	**5**
INFO0009-2	*Database (general organisation)* - Christophe DEBRUYNE - [25h Proj.]	B0	Q2	26	26	[+]	**5**
INFO8006-1	*Introduction to artificial intelligence* (english language) - Gilles LOUPPE - [45h Proj.]	B0	Q1	25	20	[+]	**5**