

Studies Plan

Data Science 2020-21

Master project

Courses			Master 1	Master 2	MP Autumn	MP Spring	Exam Session	Exam	Credit
Language	Code	Section	Teacher	Specialization	on p	l e p	l e p	l e p	
E	Engineering internship credited with Master project (master in Data science)								
	COM-596	SC	Profs divers		320h	320h	320h	320h	Sum Win
E	Master project in Data science								
	COM-598	SC	Profs divers				900h	900h	Sum Win
								Oral	30

Group 1

Courses			Master 1	Master 2	Exam Session	Exam	Credit	
Language	Code	Section	Teacher	Specialization	on p	l e p		
E	Advanced algorithms							
	CS-450	IN	Kapralov		4h 3h	Sum	Written	7
E	Applied data analysis							
	CS-401	SC	West	2h 2h		Win	Written	6
E	Foundations of Data Science							
	COM-406	IN	Urbanke	4h 2h		Win	Written	6
E	Information security and privacy							
	COM-402	IN	Hubaux Oechslin	3h 1h 2h		Win	Written	6
E	Machine learning							
	CS-433	IN	Flammarion Jaggi	4h 2h		Win	Written	7
E	Optimization for machine learning							
	CS-439	IN	Flammarion Jaggi		2h 2h 1h	Sum	Written	5
E	Statistics for data science							
	MATH-413	MA	Olhede	4h 2h		Win	Written	6
E	Systems for data science							
	CS-449	IN	Kernmarrec		2h 2h 2h	Sum	During the semester	6

Group 2 : Options

Courses			Master 1	Master 2	Exam Session	Exam	Credit	
Language	Code	Section	Teacher	Specialization	on p	l e p		
E	Advanced cryptography							
	COM-501	SC	Vaudenay		2h 2h	Sum	Written	4
E	Advanced probability and applications							
	COM-417	SC	Lévêque		3h 2h	Sum	Written	6
E	Advanced topics on privacy enhancing technologies							
	CS-523	IN	González Troncoso		3h 1h 2h	Sum	Written	7
E	Applied biostatistics							
	MATH-493	MA	Goldstein		2h 2h	Sum	During the semester	5
E	Artificial neural networks							
	CS-456	IN	Gerstner		2h 2h	Sum	Written	5
E	Automatic speech processing							
	EE-554	EL	Bouillard	2h 1h		Win	Written	3
E	Biological modeling of neural networks							
	BIO-465	IN	Gerstner		2h 2h	Sum	Written	4
E	Computational complexity							
	CS-524	IN		3h 1h		Win	During the semester	4
E	Computational linear algebra							
	MATH-453	MA	Kressner		2h 2h	Sum	Oral	5

E	Computational photography CS-413 SC		Süssstrunk	2h 2h			Sum	During the semester	5
E	Computer vision CS-442 IN		Fua	2h 1h			Sum	Written	4
E	Concurrent algorithms CS-453 SC		Guerraoui	3h	1h	1h	Win	Written	5
E	Cryptography and security COM-401 SC		Vaudenay	4h	2h		Win	Written	7
E	Data visualization COM-480 SC		Vuillon	2h 2h			Sum	During the semester	4
E	Deep learning EE-559 EL		Fleuret	2h 2h			Sum	Written	4
E	Digital education & learning analytics CS-411 IN		Dillenbourg Jermann	2h	2h		Win	Oral	4
E	Distributed algorithms CS-451 SC		Guerraoui	3h	2h	1h	Win	Written	6
E	Distributed information systems CS-423 SC		Aberer	2h	1h		Win	Written	4
E	Distributed intelligent systems ENG-466 SIE		Martinoli	2h 3h			Sum Win	Oral	5
E	Formal verification CS-550 IN		Kuncak	2h	2h	2h	Win	During the semester	6
E	Graph theory MATH-360 MA		Maffucci	2h	2h		Sum Win	Written	5
E	Image analysis and pattern recognition EE-451 EL		Thiran	2h 2h			Sum	During the semester	4
E	Information theory and coding COM-404 SC		Telatar	4h	2h		Win	Written	7
E	Intelligent agents CS-430 IN		Faltings	3h	3h		Win	During the semester	6
E	Interaction design CS-486 IN		Pu Faltings	2h 1h 1h			Sum	During the semester	4
E	Introduction to natural language processing CS-431 IN		Chappelier Rajman	2h	2h		Win	Written	4
E	Lab in data science COM-490 SC		Bouillet Delgado Borda Sarni Verscheure	4h			Sum	During the semester	4
E	Learning theory CS-526 IN		Macris Urbanke	2h 2h			Sum	Written	4
E	Linear models MATH-341 MA		Panaretos	2h	2h		Win	Written	5
E	Machine learning for behavioral data CS-421 IN		Käser Jacober	2h 2h			Sum	Written	4
E	Markov chains and algorithmic applications COM-516 SC		Lévêque Macris	2h	2h		Win	Written	4
E	Mathematical foundations of signal processing COM-514 SC		Bejar Haro Simeoni	3h	2h		Win	Written	6
E	Mathematics of data: from theory to computation EE-556 EL		Cevher	2h	2h		Win	Written	5
E	Networks out of control COM-512 SC			2h 1h			Sum	Written	4
E	Optional project in data science COM-508 SC		Profs divers	2h 2h			Sum Win	During the semester	8

E	Performance evaluation									
	COM-503	SC	Le Boudec		3h 1h 2h	Sum	Written	7		
E	Risk, rare events and extremes									
	MATH-447	MA	Davison	2h 2h		Win	Written	5		
E	Robust and nonparametric statistics									
	MATH-441	MA			2h 2h	Sum	Oral	5		
E	Software security									
	CS-412	IN	Payer		3h 2h 1h	Sum	During the semester	6		
E	Statistical mechanics and Gibbs measures									
	MATH-486	MA	Friedli		2h 2h	Sum	Oral	5		
E	Statistical theory									
	MATH-442	MA	Koch	2h 2h		Win	Written	5		
E	Student seminar: security protocols and applications									
	COM-506	SC	Oechsli Vaudenay		2h	Sum	Written	3		
E	Sublinear algorithms for big data analysis									
	CS-448	IN			3h	Sum	During the semester	4		
E	Technology ventures in IC									
	CS-410	IN			2h 2h	Sum	During the semester	4		
E	Time series									
	MATH-342	MA	Olhede		2h 2h	Sum	Written	5		
E	Topics in theoretical computer science									
	CS-455	IN	Kapralov	3h 1h		Sum Win	During the semester	4		
E	Virtual reality									
	CS-444	IN	Boulc		2h 1h	Sum	During the semester	4		

Block "Projects & SHS"

Courses			Master 1	Master 2	Exam Session	Exam	Credit	
Language	Code	Section	Teacher	Specialization	Comp	Interp		
E	Semester project in Data Science							
	COM-412	SC	Profs divers		2h		2h	
	HSS : Introduction to project							
		SHS					Win	
	HSS : Project							
		SHS					Sum	