

Studies Plan

Data Science 2024-25

Block "Projects & SHS"

Courses				Master 1					Master 2					Exam Session	Exam	Credit			
Lang.	Code	Sect.	Teacher	Specialization	En	L	T	P	I	C	E	L	T	P	I				
Semester research project in Data Science																			
E	COM-412	SC	Profs divers							2h						2h	Sum Win	During the semester	12
HSS : Introduction to project SHS																			
																	Win		3
HSS : Project SHS																			
																	Sum		3

Group 1

Courses				Master 1					Master 2					Exam Session	Exam	Credit			
Lang.	Code	Sect.	Teacher	Specialization	En	L	T	P	I	C	E	L	T	P	I				
Algorithms II																			
E	CS-450	IN	Kapralov Svensson			4h	3h										Win	Written	8
Applied data analysis																			
E	CS-401	SC	Brbic			2h			2h								Win	Written	8
Foundations of Data Science																			
E	COM-406	IN	Gastpar Urbanke			4h	2h										Win	Written	8
Information security and privacy																			
E	COM-402	IN	Payer			3h	1h		2h								Win	Written	8
Machine learning																			
E	CS-433	IN	Flammarion Jaggi			4h	2h		2h								Win	Written	8
Modern natural language processing																			
E	CS-552	IN	Bosselut							3h	1h		2h			Sum	During the semester	8	
Optimization for machine learning																			
E	CS-439	IN	Flammarion							2h	2h	1h				Sum	Written	8	
Statistics for data science																			
E	MATH-413	MA	Chandak Limnios							4h	2h					Sum	Written	8	
Systems for data management and data science																			
E	CS-460	IN	Ailamaki Kermarrec							2h	2h	2h				Sum	Written	8	

Group 2 : Options

Courses				Master 1					Master 2					Exam Session	Exam	Credit		
Lang.	Code	Sect.	Teacher	Specialization	En	L	T	P	I	C	E	L	T	P	I			
Advanced compiler construction																		
E	CS-420	IN	Schinz							2h			2h			Sum	During the semester	6
Advanced cryptography																		
E	COM-501	SC	Vaudenay							2h	2h					Sum	Written	6
Advanced probability and applications																		
E	COM-417	SC	Shkel			4h	2h									Win	Written	8
Advanced topics on privacy enhancing technologies																		
E	CS-523	IN	Stadler Troncoso							3h	1h		2h			Sum	Written	8

AI product management											
E	CS-500	IN	Kaboli Zamir	2h	2h	3h		Win	During the semester	6	
Applied biostatistics											
E	MATH-493	MA	Goldstein			2h	2h	Sum	During the semester	5	
Automatic speech processing											
E	EE-554	EL	Magimai Doss	2h	2h			Win	Written	4	
Basics of mobile robotics											
E	MICRO-452	MT	Mondada	1h		1h	2h	Win	Written	4	
Causal inference											
E	MGT-416	MTE	Kiyavash			2h	1h	Sum	During the semester	4	
Causal thinking											
E	MATH-352	MA	Stensrud	2h	2h			Win	Written	5	
Computational complexity											
E	CS-524	IN	Göös	2h	2h			Win	During the semester	6	
Computational linear algebra											
E	MATH-453	MA	Kressner			2h	2h	Sum	Written	5	
Computational neurosciences: neuronal dynamics											
E	NX-465	NX	Gerstner			2h	2h	Sum	Written	5	
Computational photography											
E	CS-413	SC	Süsstrunk			2h		2h	Sum	During the semester	6
Computers and music											
E	COM-418	SC				2h	1h	Sum	Oral	6	
Computer vision											
E	CS-442	IN	Fua			2h	1h	Sum	Written	6	
Concurrent computing											
E	CS-453	SC	Guerraoui	2h	1h	2h		Win	Written	6	
Cryptography and security											
E	COM-401	SC	Vaudenay	4h	2h			Win	Written	8	
Data visualization											
E	COM-480	SC	Vuillon			2h		2h	Sum	During the semester	6
Deep learning											
E	EE-559	EL	Cavallaro			2h	2h	Sum	During the semester	4	
Deep learning in biomedicine											
E	CS-502	IN				2h	1h	2h	Sum	During the semester	6
Deep reinforcement learning											
E	CS-456	IN				2h	1h	1h	Sum	Written	6
Digital education											
E	CS-411	IN	Dillenbourg Jermann			2h		2h	Sum	Written	6
Distributed algorithms											
E	CS-451	SC	Guerraoui	2h	1h	3h		Win	Written	8	
Distributed information systems											
E	CS-423	SC	Aberer	2h	1h		1h	Win	Written	6	
Distributed intelligent systems											
E	ENG-466	SIE	Martinoli	2h	2h	1h		Win	Oral	5	
Ethics and law of AI											
E	DH-415	DH	Rochel	2h		2h		Win	During the semester	4	
Formal verification											
E	CS-550	IN	Kuncak	2h	2h	2h		Win	During the semester	6	
Geometric computing											
E	CS-457	IN	Pauly	3h	1h	1h		Win	Written	6	
Graph theory											
E	MATH-360	MA	Vérité	2h	2h			Win	Written	5	
Image analysis and pattern recognition											
E	EE-451	EL	Bozorgtabar Thiran			2h		2h	Sum	During the semester	4

	Information theory and coding						
E	COM-404	SC	Telatar	4h 2h		Win	Written 8
	Intelligent agents						
E	CS-430	IN	Faltings	3h 3h		Win	During the 6 semester
	Interaction design						
E	CS-486	IN	Pu		2h 1h 1h	Sum	During the 6 semester
	Interactive theorem proving						
E	CS-428	IN	Barrière Pit-Claudiel		2h 1h 2h	Sum	During the 6 semester
	Introduction to natural language processing						
E	CS-431	IN	Bosselut Chappelier Rajman	2h 2h		Win	Written 6
	Large-scale data science for real-world data						
E	COM-490	SC	Bouillet Delgado Sarni Verscheure		4h	Sum	During the 6 semester
	Learning in neural networks						
E	CS-479	IN	Gerstner		2h 1h 1h	Sum	Oral 6
	Learning theory						
E	CS-526	IN	Macris		2h 2h	Sum	Written 6
	Linear models						
E	MATH-341	MA	Panaretos	2h 2h		Win	Written 5
	Machine learning for behavioral data						
E	CS-421	IN	Käser		2h 2h	Sum	Written 6
	Markov chains and algorithmic applications						
E	COM-516	SC		2h 1h 1h		Win	Written 6
	Mathematics of data: from theory to computation						
E	EE-556	EL	Cevher	3h	3h	Win	Written 6
	Network machine learning						
E	EE-452	EL	Frossard Thanou		2h 2h	Sum	During the 4 semester
	Networks out of control						
E	COM-512	SC			2h 1h	Sum	Written 6
	Optional research project in Data Science						
E	COM-508	SC	Profs divers		2h	2h Sum Win	During the 8 semester
	Project management and risk analysis						
F	MGT-427	MTE	Wieser	2h	1h	Win	During the 4 semester
	Software security						
E	CS-412	IN	Payer		3h 2h 1h	Sum	Written 8
	Statistical mechanics and Gibbs measures						
E	MATH-486	MA			2h 2h	Sum	Oral 5
	Statistical physics of computation						
E	PHYS-512	PH	Erba	2h 2h		Win	Written 4
	Statistical theory						
E	MATH-442	MA	Zemel		2h 2h	Sum	Written 5
	Student seminar: security protocols and applications						
E	COM-506	SC	Vaudenay		2h	Sum	During the 3 semester
	Sublinear algorithms for big data analysis						
E	CS-448	IN	Kapralov		2h 1h	Sum	During the 6 semester
	Time series						
E	MATH-342	MA	Olhede		2h 2h	Sum	Written 5
	Topics in theoretical computer science						
E	CS-455	IN		3h 1h		Win	During the 6 semester

