

Studies Plan

Data Science 2023-24

Block "Projects & SHS"

Courses			Master 1		Master 2		Exam Session	Exam	Credit
Language	Code	Section	Teacher	Specialization	on p	I	e	p	
E	Semester research project in Data Science				2h	2h	Sum	During the semester	12
	COM-412	SC	Profs divers				Win		3
	HSS : Introduction to project								
		SHS					Win		3
	HSS : Project								
		SHS					Sum		3

Group 1

Courses			Master 1		Master 2		Exam Session	Exam	Credit
Language	Code	Section	Teacher	Specialization	on p	I	e	p	
E	Algorithms II				4h 3h		Win	Written	8
	CS-450	IN	Svensson						
E	Applied data analysis				2h 2h		Win	Written	8
	CS-401	SC	West						
E	Foundations of Data Science				4h 2h		Win	Written	8
	COM-406	IN	Gastpar Urbanke						
E	Information security and privacy				3h 1h 2h		Win	Written	8
	COM-402	IN	Payer						
E	Machine learning				4h 2h		Win	Written	8
	CS-433	IN	Flammarion Jaggi						
E	Modern natural language processing					3h 2h 1h	Sum	During the semester	8
	CS-552	IN	Bosselut						
E	Optimization for machine learning					2h 2h 1h	Sum	Written	8
	CS-439	IN	Flammarion Jaggi						
E	Statistics for data science					4h 2h	Sum	Written	8
	MATH-413	MA	Rubin						
E	Systems for data management and data science					2h 2h 2h	Sum	Written	8
	CS-460	IN	Ailamaki Kermarrec						

Group 2 : Options

Courses			Master 1		Master 2		Exam Session	Exam	Credit
Language	Code	Section	Teacher	Specialization	on p	I	e	p	
E	Advanced compiler construction					2h 2h	Sum	During the semester	6
	CS-420	IN	Schinz						
E	Advanced cryptography					2h 2h	Sum	Written	6
	COM-501	SC	Vaudenay						
E	Advanced probability and applications					4h 2h	Sum	Written	8
	COM-417	SC	Shkel						
E	Advanced topics on privacy enhancing technologies					3h 1h 2h	Sum	Written	8
	CS-523	IN	Chiesa Troncoso						
E	AI product management				2h 2h 3h		Win	During the semester	6
	CS-500	IN	Kaboli Zamir						
E	Applied biostatistics					2h 2h	Sum	During the semester	5
	MATH-493	MA	Goldstein						
E	Artificial neural networks/reinforcement learning					2h 2h	Sum	Written	6
	CS-456	IN	Gerstner						

E	Automatic speech processing EE-554 EL		Magimai Doss	2h	1h		Win	Written	3	
E	Basics of mobile robotics MICRO-452 MT		Mondada	2h	2h		Win	Written	4	
E	Causal inference MGT-416 MTE				2h	1h	Sum	During the semester	4	
E	Causal thinking MATH-352 MA		Stensrud	2h	2h		Win	Written	5	
E	Computational complexity CS-524 IN		Sokolov	2h	2h		Win	During the semester	6	
E	Computational linear algebra MATH-453 MA		Kressner		2h	2h	Sum	Written	5	
E	Computational neurosciences: neuronal dynamics NX-465 NX		Gerstner		2h	2h	Sum	Written	5	
E	Computational photography CS-413 SC		Süsstrunk		2h	2h	Sum	During the semester	6	
E	Computers and music COM-418 SC				2h	1h	Sum	During the semester	6	
E	Computer vision CS-442 IN		Fua		2h	1h	Sum	Written	6	
E	Concurrent computing CS-453 SC		Guerraoui	2h	1h	2h	Win	Written	6	
E	Cryptography and security COM-401 SC		Vaudenay	4h	2h		Win	Written	8	
E	Data visualization COM-480 SC		Vuillon		2h	2h	Sum	During the semester	6	
E	Deep learning EE-559 EL		Cavallaro		2h	2h	Sum	During the semester	4	
E	Deep learning in biomedicine CS-502 IN		Brbic	2h	2h	1h	Win	During the semester	6	
E	Digital education CS-411 IN		Dillenbourg Jermann	2h		2h	Win	Written	6	
E	Distributed algorithms CS-451 SC		Guerraoui	2h	1h	3h	Win	Written	8	
E	Distributed information systems CS-423 SC		Aberer	2h	1h		Win	Written	6	
E	Distributed intelligent systems ENG-466 SIE				2h	3h	Sum	Oral	5	
E	Ethics and law of AI DH-415 DH		Rochel	2h		1h	Win	Written	4	
E	Formal verification CS-550 IN		Kuncak	2h	2h	2h	Win	During the semester	6	
E	Geometric computing CS-457 IN		Pauly	3h		2h	Win	Written	6	
E	Graph theory MATH-360 MA		Pinchasi	2h	2h		Win	Written	5	
E	Image analysis and pattern recognition EE-451 EL		Bozorgtabar Thiran		2h	2h	Sum	During the semester	4	
E	Information theory and coding COM-404 SC		Telatar	4h	2h		Win	Written	8	
E	Intelligent agents CS-430 IN		Faltings	3h	3h		Win	During the semester	6	
E	Interaction design CS-486 IN		Pu		2h	1h	1h	Sum	During the semester	6
E	Introduction to natural language processing CS-431 IN		Bosselut Chappelier Rajman	2h	2h		Win	Written	6	

E	Large-scale data science for real-world data								
	COM-490	SC	Bouillet Delgado Sarni Verscheure	4h	Sum		During the semester	6	
E	Learning theory								
	CS-526	IN	Macris	2h 2h	Sum		Written	6	
E	Linear models								
	MATH-341	MA	Masák	2h 2h	Win		Written	5	
E	Machine learning for behavioral data								
	CS-421	IN		2h 2h	Sum		Written	6	
E	Markov chains and algorithmic applications								
	COM-516	SC	Lévêque Macris	2h 1h 1h	Win		Written	6	
E	Mathematical foundations of signal processing								
	COM-514	SC		3h 2h	Win		Written	6	
E	Mathematics of data: from theory to computation								
	EE-556	EL	Cevher	3h 3h	Win		Written	6	
E	Networks out of control								
	COM-512	SC	Grossglauser Thiran	2h 1h	Sum		Written	6	
E	Optional research project in Data Science								
	COM-508	SC	Profs divers	2h 2h	Sum Win		During the semester	8	
F	Project management and risk analysis								
	MGT-427	MTE	Wieser	2h 1h	Win		During the semester	4	
E	Risk, rare events and extremes								
	MATH-447	MA		2h 2h	Sum		Written	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 physics of computation								
	PHYS-512	PH	Krzakala Zdeborová	2h 2h	Win		Written	4	
E	Statistical theory								
	MATH-442	MA		2h 2h	Win		Written	5	
E	Student seminar: security protocols and applications								
	COM-506	SC	Vaudenay	2h	Sum		During the semester	3	
E	Sublinear algorithms for big data analysis								
	CS-448	IN		2h 1h	Win		During the semester	6	
E	The GC maker project								
	CS-458	IN		6h	Sum		During the semester	6	
E	Time series								
	MATH-342	MA	Olhede	2h 2h	Sum		Written	5	
E	Topics in theoretical computer science								
	CS-455	IN		3h 1h	Win		During the semester	6	
E	Virtual reality								
	CS-444	IN	Bouluc	2h 1h	Sum		During the semester	6	
E	Visual intelligence : machines and minds								
	CS-503	IN	Zamir	2h 2h	Sum		During the semester	6	

#### Master project

Courses			Master 1	Master 2	MP Autumn	MP Spring	Exam Session	Exam	Credit	
Language	Code	Section	TeacherSpecialization	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	Term paper	0
E	Master project in Data science									
	COM-598	SC	Profs divers			900h	900h	Sum Win	Oral	30