Studies Plan

Mathématiques 2024-25

Block 1

Lang.	Courses Code	Sect.	Teacher	Specialization	Exam Session	Exam	Credit
	HSS : Introduction to project	*SHS*			*Win*		*3*
	HSS : Project	*SHS*			*Sum*		*3*

Group 1

Lang.	Courses Code	Sect.	Teacher	Specialization	Master 1 C	E	L	T	P	I	Master 2 C	E	L	T	P	I	Exam Session	Exam	Credit
	Mathematics projects (master)																		
F	*MATH-498*	*MA*	*Profs divers*								10h					10h	*Sum Win*	*During the semester*	*10*

Group 2

Lang.	Courses Code	Sect.	Teacher	Specialization	Master 1 C	E	L	T	P	I	Master 2 C	E	L	T	P	I	Exam Session	Exam	Credit
	Abstract analysis on groups																		
E	*MATH-416*	*MA*	*Monod*								2h	2h					*Sum*	*Oral*	*5*
	Advanced analytic number theory																		
E	*MATH-521*	*MA*									2h	2h					*Sum*	*Oral*	*5*
	Algebraic geometry III - selected topics																		
E	*MATH-535*	*MA*	*Schlegel Mejia*								2h	2h					*Sum*	*Oral*	*5*
	Algebraic geometry II - schemes and sheaves																		
E	*MATH-510*	*MA*	*Filipazzi Mukhopadhyay*		4h	4h											*Win*	*Written*	*10*
	Applied biostatistics																		
E	*MATH-493*	*MA*	*Goldstein*								2h	2h					*Sum*	*During the semester*	*5*
	Applied statistics																		
E	*MATH-516*	*MA*	*Mhalla*								1h	3h					*Sum*	*During the semester*	*5*
	Biostatistics																		
E	*MATH-449*	*MA*	*Stensrud*								2h	2h					*Sum*	*Written*	*5*
	Calculus of variations																		
E	*MATH-437*	*MA*	*Michelat*								2h	2h					*Sum*	*Oral*	*5*
	Complex manifolds																		
E	*MATH-473*	*MA*									2h	2h					*Sum*	*Written*	*5*
	Computational linear algebra																		
E	*MATH-496*	*MA*									2h	2h					*Sum*	*Oral*	*5*
	Computational linear algebra																		
E	*MATH-453*	*MA*	*Kressner*								2h	2h					*Sum*	*Written*	*5*
	Differential geometry IV - general relativity																		
E	*MATH-530*	*MA*	*Moschidis*		2h	2h											*Win*	*Oral*	*5*
	Diophantine approximation																		
E	*MATH-540*	*MA*			2h	2h											*Win*	*Oral*	*5*
	Dispersive PDEs																		
E	*MATH-478*	*MA*	*Krieger*								2h	2h					*Sum*	*Oral*	*5*
	Distribution and interpolation spaces																		
E	*MATH-502*	*MA*	*Michelat*								2h	2h					*Sum*	*Oral*	*5*
	Empirical processes																		
E	*MATH-522*	*MA*	*Limnios*								2h	2h					*Sum*	*Written*	*5*
	Ergodic theory																		
E	*MATH-518*	*MA*	*Richter*		2h	2h											*Win*	*Oral*	*5*

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	Error control in scientific modelling								
E	*MATH-500*	*MA*	*Herbst*	2h 2h			*Win*	*Oral*	*5*
	Foundations of probabilistic proofs								
E	*CS-459*	*IN*	*Chiesa*	4h 1h			*Win*	*During the semester*	*6*
	Gaussian processes								
E	*MATH-426*	*MA*			2h 2h		*Sum*	*Oral*	*5*
	Gödel and recursivity								
E	*MATH-483*	*MA*	*Duparc*	2h 2h			*Win*	*Written*	*5*
	Harmonic analysis								
E	*MATH-405*	*MA*			2h 2h		*Sum*	*Oral*	*5*
	Homotopical algebra								
E	*MATH-436*	*MA*			2h 2h		*Sum*	*Oral*	*5*
	HPC for numerical methods and data analysis								
E	*MATH-505*	*MA*	*Grigori*	2h 2h			*Win*	*Oral*	*5*
	Integer optimisation								
E	*MATH-504*	*MA*			2h 2h		*Sum*	*Written*	*5*
	Introduction to dynamical systems								
E	*MATH-523*	*MA*	*Krieger*	2h 2h			*Win*	*Oral*	*5*
	Introduction to riemannian geometry								
F	*MATH-422*	*MA*			2h 2h		*Sum*	*Oral*	*5*
	Introduction to stochastic PDEs								
E	*MATH-485*	*MA*	*Hairer*		3h 2h		*Sum*	*Oral*	*5*
	Lattice models								
E	*MATH-434*	*MA*	*Hongler*	2h 2h			*Win*	*Written*	*5*
	Linear algebraic groups								
E	*MATH-479*	*MA*			2h 2h		*Sum*	*Oral*	*5*
	Martingales in financial mathematics								
E	*MATH-470*	*MA*	*Schmutz*		2h 2h		*Sum*	*Oral*	*5*
	Mathematical modelling of behavior								
E	*MATH-463*	*MA*	*Bierlaire*	2h 2h			*Win*	*Written*	*5*
	Metric embeddings								
E	*MATH-513*	*MA*		2h 2h			*Win*	*Written*	*5*
	Multivariate statistics								
E	*MATH-444*	*MA*	*Panaretos*		2h 2h		*Sum*	*Written*	*5*
	Nonlinear Schrödinger equations								
E	*MATH-514*	*MA*			2h 2h		*Sum*	*Oral*	*5*
	Nonparametric estimation and inference								
E	*MATH-524*	*MA*	*Chandak*		2h 2h		*Sum*	*Written*	*5*
	Number theory II.a - Modular forms								
E	*MATH-511*	*MA*	*Viazovska*		2h 2h		*Sum*	*Oral*	*5*
	Number theory II.b - selected topics								
E	*MATH-417*	*MA*	*Michel*		2h 2h		*Sum*	*Oral*	*5*
	Number theory II.c - Cryptography								
E	*MATH-489*	*MA*	*Jetchev*		2h 2h		*Sum*	*Written*	*5*
	Numerical integration of dynamical systems								
E	*MATH-452*	*MA*	*Blumenthal*		2h 2h		*Sum*	*Written*	*5*
	Numerical integration of stochastic differential equations								
E	*MATH-450*	*MA*	*Nobile*	2h 2h			*Win*	*Written*	*5*
	Numerical methods for conservation laws								
E	*MATH-459*	*MA*	*Licht*	2h 2h			*Win*	*Oral*	*5*
	Numerics for fluids, structures & electromagnetics								
E	*MATH-468*	*MA*		2h 2h			*Win*	*Oral*	*5*
	Optimal transport								
E	*MATH-476*	*MA*	*Fernandez-Real*	2h 2h			*Win*	*Oral*	*5*

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	Optimization on manifolds							
E	*MATH-512*	*MA*	*Boumal*		2h 2h	*Sum*	*During the semester*	*5*
	Probabilistic methods in combinatorics							
E	*MATH-467*	*MA*	*Janzer*		2h 2h	*Sum*	*Written*	*5*
	Randomized matrix computations							
E	*MATH-403*	*MA*	*Kressner*	2h 2h		*Win*	*Oral*	*5*
	Regression methods							
E	*MATH-408*	*MA*	*Davison*	2h 2h		*Win*	*Written*	*5*
	Representation theory of semisimple lie algebras							
E	*MATH-492*	*MA*			2h 2h	*Sum*	*Written*	*5*
	Riemann surfaces							
E	*MATH-410*	*MA*	*Mornev*	2h 2h		*Win*	*Written*	*5*
	Set theory							
E	*MATH-318*	*MA*	*Duparc*		2h 2h	*Sum*	*Written*	*5*
	Spectral theory							
E	*MATH-561*	*MA*	*Genoud*		2h 2h	*Sum*	*Oral*	*5*
	Statistical analysis of network data							
E	*MATH-448*	*MA*	*Olhede*	2h 2h		*Win*	*Written*	*5*
	Statistical computation and visualisation							
E	*MATH-517*	*MA*	*Mhalla*	2h 2h		*Win*	*During the semester*	*5*
	Statistical inference							
E	*MATH-562*	*MA*	*Davison*	2h 2h		*Win*	*Written*	*5*
	Statistical machine learning							
E	*MATH-412*	*MA*	*Obozinski Zemel*	2h 2h		*Win*	*Written*	*5*
	Statistical mechanics and Gibbs measures							
E	*MATH-486*	*MA*			2h 2h	*Sum*	*Oral*	*5*
	Statistical theory							
E	*MATH-442*	*MA*	*Zemel*		2h 2h	*Sum*	*Written*	*5*
	Statistics for genomic data analysis							
E	*MATH-474*	*MA*	*Goldstein*		2h 2h	*Sum*	*During the semester*	*5*
	Stochastic epidemic models							
E	*MATH-560*	*MA*		2h 2h		*Win*	*Written*	*5*
	Stochastic simulation							
E	*MATH-414*	*MA*	*Nobile*	2h 2h		*Win*	*Written*	*5*
	Student seminar in pure mathematics							
E	*MATH-563*	*MA*	*Wyss*	2h 2h		*Win*	*During the semester*	*5*
	Theory of stochastic calculus							
E	*MATH-431*	*MA*	*Duch*		2h 2h	*Sum*	*Written*	*5*
	Topics in arithmetic geometry							
E	*MATH-494*	*MA*			2h 2h	*Sum*	*Oral*	*5*
	Topics in high-dimensional probability							
E	*MATH-519*	*MA*	*Aru*	2h 2h		*Win*	*Oral*	*5*
	Topics in machine learning							
E	*MATH-520*	*MA*		2h 2h		*Win*	*During the semester*	*5*
	Topics in stochastic analysis							
E	*MATH-487*	*MA*	*Li*	3h 2h		*Win*	*Oral*	*6*
	Topology IV.a -Algebraic K-theory							
E	*MATH-488*	*MA*		2h 2h		*Win*	*Written*	*5*
	Topology IV.b - cohomology rings							
E	*MATH-506*	*MA*		2h 2h		*Win*	*Written*	*5*
	Topology IV.b - homotopy theory							
E	*MATH-497*	*MA*	*Scherer*		2h 2h	*Sum*	*Written*	*5*

Master project

Courses	***MP Autumn***	***MP Spring***	***Exam***	***Exam***	***Credit***

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	Master project in Mathematics																		
	MATH-599	*MA*	*Profs divers*								900h						900h	Sum Win	*Oral*	*30*

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