

Studies Plan

Mineur : Science et ing. computationnelles 2025-26

Minor : Computational Science and Engineering

Courses				Exam Session	Exam	Credit
Lang.	Code	Sect.	Teacher			
Advanced multiprocessor architecture						
E	CS-471	IN	Falsafi Lotfi Kamran	Win	During the semester	8
Advanced numerical analysis II						
E	MATH-351	MA	Picasso	Win	Written	5
Algorithms I						
E	CS-250	IN	Svensson	Sum	Written	8
Algorithms II						
E	CS-450	IN	Kapralov	Win	Written	8
Applied data analysis						
E	CS-401	SC	Brbic	Win	Written	8
Atomistic and quantum simulations of materials						
E	MSE-468	MX	Pizzi	Sum	During the semester	4
Computational linear algebra						
E	MATH-453	MA	Kressner	Sum	Written	5
Computational methods in molecular quantum mechanics						
E	CH-452	CGC	Bonella	Win	Oral	4
Computational neurosciences: neuronal dynamics						
E	NX-465	NX	Gerstner	Sum	Written	5
Computer simulation of physical systems I						
E	PHYS-403	PH	Pasquarello	Win	Oral	4
CSE project I						
	MATH-591	MA	Profs divers	Sum Win	During the semester	8
CSE project II						
	MATH-592	MA	Profs divers	Sum Win	During the semester	8
Deep learning						
E	EE-559	EL	Cavallaro	Sum	During the semester	4
Deep learning in biomedicine						
E	CS-502	IN		Sum	During the semester	6
Deep reinforcement learning						
E	CS-456	IN		Sum	Written	6
Distributed intelligent systems						
E	ENG-466	SIE	Martinoli	Win	Oral	5
Dynamical system theory for engineers						
E	COM-502	SC		Sum	Written	6
Environmental transport phenomena						
E	ENG-420	SIE	Crouzy Porté-Agel	Win	Written	5
Error control in scientific modelling						
E	MATH-500	MA	Herbst	Win	Oral	5
Foundations of Data Science						
E	COM-406	IN	Gastpar	Win	Written	8
Geometric computing						
E	CS-457	IN		Win	Written	8

HPC for numerical methods and data analysis						
E	MATH-505	MA		Win	Oral	5
Hydrodynamics						
E	ME-444	GM	Gallaire	Sum	Written	5
Image processing I						
E	MICRO-511	MT	Unser Van De Ville	Win	Written	3
Image processing II						
E	MICRO-512	MT	Sage Unser Van De Ville	Sum	Written	3
Information security and privacy						
E	COM-402	IN	Payer	Win	Written	8
Instability						
E	ME-466	GM	Gallaire	Win	Written	3
Introduction to electronic structure methods						
E	CH-353	CGC	Röthlisberger	Win	During the semester	4
Kinetic and non-equilibrium conservation laws						
E	MATH-532	MA	Gorji	Sum	Oral	5
Machine learning						
E	CS-433	IN	West	Win	Written	8
Mathematical modelling of behavior						
E	MATH-463	MA	Bierlaire	Win	Written	5
Mathematics of data: from theory to computation						
E	EE-556	EL	Cevher	Win	Written	6
Molecular dynamics and Monte-Carlo simulation						
E	CH-351	CGC	Röthlisberger	Sum	During the semester	2
Molecular quantum dynamics						
E	CH-453	CGC	Vanicek	Sum	Oral	3
Numerical analysis and computational mathematics						
E	MATH-456	MA	Grigori	Win	Written	4
Numerical approximation of PDEs						
E	MATH-451	MA	Antolin Sanchez Buffa	Sum	Written	5
Numerical flow simulation						
E	ME-474	GM	Boujo	Win	During the semester	5
Numerical integration of dynamical systems						
E	MATH-452	MA	Blumenthal	Sum	Written	5
Numerical integration of stochastic differential equations						
E	MATH-450	MA	Nobile	Sum	Written	5
Numerics for fluids, structures & electromagnetics						
E	MATH-468	MA		Win	Oral	5
Optimization for machine learning						
E	CS-439	IN	Flammarion Jaggi	Sum	Written	8
Parallel and high-performance computing						
E	MATH-454	MA	Antolin Sanchez	Sum	Oral	4
Principles and applications of systems biology						
E	ChE-411	CGC	Hatzimanikatis	Win	During the semester	3
Programming concepts in						

scientific computing						
E	MATH-458	MA	Anciaux	Win	During the	4 semester
Randomized matrix computations						
E	MATH-403	MA		Win	Oral	5
Stochastic simulation						
E	MATH-414	MA	Nobile	Win	Written	5
Structural biology						
E	BIO-315	SV	Antanasijevic Dal Peraro	Sum	During the	4 semester
Systems for data management and data science						
E	CS-460	IN	Ailamaki Kermarrec	Sum	Written	8
Turbulence						
E	ME-467	GM	Schneider	Sum	Oral	5
Understanding advanced molecular simulation						
E	CH-420	CGC	Smit	Sum	During the	4 semester