

## Studies Plan

### Mineur : Science et ingénierie quantiques 2023-24

Minor : Quantum science and engineering

	Courses			Exam Session	Exam	Credit
Language	Code	Section	Teacher			
E	<b>Atomistic and quantum simulations of materials</b>					
	MSE-468	MX	Marzari	Sum	During the semester	4
E	<b>Classical and quantum photonic transducers</b>					
	MICRO-410	MT	Benea-Chelms	Sum	Oral	3
E	<b>Computational complexity</b>					
	CS-524	IN	Sokolov	Win	During the semester	6
E	<b>Computational methods in molecular quantum mechanics</b>					
	CH-452	CGC	Bonella	Win	Oral	4
E	<b>Computational quantum physics</b>					
	PHYS-463	PH	Carleo	Sum	Oral	4
E	<b>Cryptography and security</b>					
	COM-401	SC	Vaudenay	Win	Written	8
E	<b>Deep learning</b>					
	EE-559	EL	Cavallaro	Sum	During the semester	4
E	<b>Foundations of Data Science</b>					
	COM-406	IN	Gastpar Urbanke	Win	Written	8
E	<b>Fundamentals of integrated photonic components</b>					
	MICRO-471	MT	Benea-Chelms	Win	Oral	4
E	<b>Fundamentals of solid-state materials</b>					
	MSE-423	MX	Marzari	Win	Written	4
E	<b>Information theory and coding</b>					
	COM-404	SC	Telatar	Win	Written	8
E	<b>Interacting quantum matter</b>					
	PHYS-502	PH		Win	Oral	4
E	<b>Introduction to electronic structure methods</b>					
	CH-353	CGC	Röthlisberger	Win	During the semester	4
E	<b>Introduction to quantum computation</b>					
	CS-308	IN	Lévêque Urbanke	Sum	Written	5
E	<b>Introduction to quantum information processing</b>					
	COM-309	SC	Macris	Win	Written	5
E	<b>Introduction to quantum science and technology</b>					
	QUANT-400	SIQ	Charbon Holmes Ionescu Macris Scarlino	Win	Written	5
E	<b>Lab in nanoelectronics</b>					
	EE-490(i)	EL	Kis	Win	During the semester	4
E	<b>Metrology</b>					
	MICRO-428	MT	Bruschini Charbon Fantner	Sum	Written	3
E	<b>Molecular dynamics and Monte-Carlo simulation</b>					
	CH-351	CGC	Röthlisberger	Sum	During the semester	2
E	<b>Molecular quantum dynamics</b>					
	CH-453	CGC	Vanicek	Sum	Oral	3
E	<b>Nanoelectronics</b>					
	EE-535	EL	Ionescu	Win	Written	2

E	<b>Nanotechnology</b> MICRO-530	MT	Boero Brugger	Sum	Oral	3
E	<b>Nonlinear optics for quantum technologies</b>			Win	Oral	4
	PHYS-470	PH				
E	<b>Optional project in quantum science and engineering</b>			Win	During the semester	6
	ENG-403	MTE	Profs divers			
E	<b>Photonic systems and technology</b>			Sum	Written	4
	EE-440	EL	Brès			
E	<b>Physics of photonic semiconductor devices</b>			Sum	Oral	4
	PHYS-434	PH	Grandjean			
E	<b>Quantum and nanocomputing</b>			Win	Written	6
	MICRO-435	MT	Charbon Graziano			
E	<b>Quantum Computing</b>			Win	Oral	4
	PHYS-641	EDPY	Savona			
E	<b>Quantum electrodynamics and quantum optics</b>			Win	Written	6
	PHYS-453	PH	Kippenberg			
E	<b>Quantum optics and quantum information</b>			Sum	Written	6
	PHYS-454	PH	Brantut			
E	<b>Quantum physics I</b>			Win	Written	5
	PHYS-313	PH	Savona			
E	<b>Quantum transport in mesoscopic systems</b>			Sum	Oral	4
	PHYS-462	PH	Banerjee			
E	<b>Semiconductor devices I</b>			Win	During the semester	4
	EE-557	EL	Matioli			
E	<b>Semiconductor devices II</b>			Sum	Written	4
	EE-567	EL	Ionescu Kis			
E	<b>Semiconductor physics and light-matter interaction</b>			Win	Written	4
	PHYS-433	PH	Butté			
E	<b>Solid state systems for quantum information</b>			Sum	Oral	4
	PHYS-464	PH	Scarlino			
E	<b>Statistical mechanics</b>			Sum	Oral	4
	MSE-421	MX	Cerioti			