

## Plan d'études

### Mineur : Science et ingénierie quantiques 2024-25

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Cours		Session	Examen	Crédits	
Lang.	Code	Sect.	Enseignants	Examen	
E	MSE-468	MX	Pizzi	Eté	Pendant le 4 semestre
<b>Atomistic and quantum simulations of materials</b>					
E	MICRO-410	MT		Eté	Oral 3
<b>Classical and quantum photonic transducers</b>					
E	CS-524	IN	Göös	Hiv	Pendant le 6 semestre
<b>Computational complexity</b>					
E	CH-452	CGC	Bonella	Hiv	Oral 4
<b>Computational methods in molecular quantum mechanics</b>					
E	PHYS-463	PH	Carleo	Eté	Oral 4
<b>Computational quantum physics</b>					
E	COM-401	SC	Vaudenay	Hiv	Ecrit 8
<b>Cryptography and security</b>					
E	EE-559	EL	Cavallaro	Eté	Pendant le 4 semestre
<b>Deep learning</b>					
E	COM-406	IN	Gastpar Urbanke	Hiv	Ecrit 8
<b>Foundations of Data Science</b>					
E	MICRO-471	MT		Hiv	Oral 4
<b>Fundamentals of integrated photonic components</b>					
E	MSE-423	MX	Marzari	Hiv	Ecrit 4
<b>Fundamentals of solid-state materials</b>					
E	COM-404	SC	Telatar	Hiv	Ecrit 8
<b>Information theory and coding</b>					
E	PHYS-502	PH		Hiv	Oral 4
<b>Interacting quantum matter</b>					
E	CH-353	CGC	Röthlisberger	Hiv	Pendant le 4 semestre
<b>Introduction to electronic structure methods</b>					
E	CS-308	IN	Lévêque Urbanke	Eté	Ecrit 5
<b>Introduction to quantum computation</b>					
E	COM-309	SC	Macris	Hiv	Ecrit 5
<b>Introduction to quantum information processing</b>					
E	QUANT-400	SIQ	Carleo Charbon Ionescu Macris Scarlino	Hiv	Ecrit 5
<b>Introduction to quantum science and technology</b>					
E	EE-490(i)	EL	Kis	Hiv	Pendant le 4 semestre
<b>Lab in nanoelectronics</b>					
E	MICRO-428	MT	Bruschini Charbon Fantner	Eté	Ecrit 3
<b>Metrology</b>					

<b>Molecular dynamics and Monte-Carlo simulation</b>						
E	CH-351	CGC	Röthlisberger	Eté	Pendant le 2 semestre	
<b>Molecular quantum dynamics</b>						
E	CH-453	CGC	Vanicek	Eté	Oral	3
<b>Nanoelectronics</b>						
E	EE-535	EL	Ionescu	Hiv	Ecrit	2
<b>Nanotechnology</b>						
E	MICRO-530	MT	Boero Brugger	Eté	Oral	3
<b>Nonlinear optics for quantum technologies</b>						
E	PHYS-470	PH	Galland	Eté	Ecrit	4
<b>Optional project in quantum science and engineering</b>						
E	QUANT-403	SIQ	Profs divers	Eté Hiv	Pendant le 6 semestre	
<b>Photonic systems and technology</b>						
E	EE-440	EL	Brès	Eté	Ecrit	4
<b>Physics of photonic semiconductor devices</b>						
E	PHYS-434	PH	Butté	Eté	Ecrit	4
<b>Quantum and nanocomputing</b>						
E	MICRO-435	MT		Hiv	Ecrit	6
<b>Quantum computing</b>						
E	PHYS-541	PH	Savona	Hiv	Oral	6
<b>Quantum electrodynamics and quantum optics</b>						
E	PHYS-453	PH	Kippenberg	Hiv	Ecrit	6
<b>Quantum information theory</b>						
E	PHYS-550	PH	Holmes	Eté	Ecrit	4
<b>Quantum mechanics for non-physicists</b>						
E	PHYS-344	PH	Manucharyan	Hiv	Oral	5
<b>Quantum optics and quantum information</b>						
E	PHYS-454	PH	Brantut	Eté	Ecrit	6
<b>Quantum transport in mesoscopic systems</b>						
E	PHYS-462	PH	Banerjee	Eté	Oral	4
<b>Semiconductor devices I</b>						
E	EE-557	EL	Matioli	Hiv	Pendant le 4 semestre	
<b>Semiconductor devices II</b>						
E	EE-567	EL	Ionescu Kis	Eté	Pendant le 4 semestre	
<b>Semiconductor physics and light-matter interaction</b>						
E	PHYS-433	PH	Butté	Hiv	Ecrit	4
<b>Solid state systems for quantum information</b>						
E	PHYS-464	PH	Scarlino	Eté	Oral	4
<b>Statistical mechanics</b>						
E	MSE-421	MX	Cerioti	Eté	Oral	4