



SCIENCES, TECHNOLOGIES, SANTÉ (STS)

Master Physique fondamentale et applications



Composante
UFR Sciences
et Techniques

Parcours proposés

- > Physics, photonics and nanotechnology
- > Quantum technologies and engineering erasmus mundus master

Présentation

Formation avec accès santé : Non

Capacité d'accueil globale : 45 étudiants



Programme

Physics, photonics and nanotechnology

Master 1

Semestre 1

	Nature	CMI	CM	TD	TP	TER	ECTS
UE1 - Solid-state physics and soft matter	UE						
Quantum solid-state physics	Matière		26h	14h			4
Soft matter PPN	Matière		14h	2h	4h		2
UE2 - Quantum physics	UE						
Quantum physics PPN	Matière		24h	10h			3
Quantum optics PPN	Matière		10h	6h			1,5
Atomic & molecular physics PPN	Matière		12h	8h			1,5
UE3 - Signal processing	UE						
Signal analysis PPN	Matière		12h	20h			4
Data acquisition PPN	Matière		4h	14h			2
UE4 - Minor	UE		20h	20h			4
UE5 - Numerical methods for physics PPN	UE		10h	8h	12h		4
UE6 - Transverse skills	UE						
French or English PPN	Matière			20h			2
Soft skills PPN	Matière			15h			1
Industry seminars PPN	Matière		10h	10h			1

Semestre 2

	Nature	CMI	CM	TD	TP	TER	ECTS
UE7 - Guided optics and laser technologies	UE						
Guided optics PPN	Matière		16h	8h	4h		3
Laser technologies PPN	Matière		12h				1
UE8 - Nonlinear optics	UE						
Fundamentals of nonlinear optics PPN	Matière		14h	8h			2
Materials for nonlinear optics PPN	Matière		12h	6h			2
UE9 - Opto-electronics and optical communications PPN	UE		22h	8h	10h		4
UE11 - Micro-Nano fabrication & clean room PPN	UE		10h	10h	10h		4
UE12 - Lasers	UE						



Fundamentals of lasers PPN	Matière	20h	10h				3
Gaussian optics PPN	Matière	14h	6h				2
UE13 - Laboratory projects PPN	UE			45h			9

Master 2

Semestre 3

	Nature	CMI	CM	TD	TP	TER	ECTS
UE obligatoires	UE						
UE1 - Quantum Technologies	UE		24h	20h			5
UE2 - Ultrafast Optics	UE		28h	12h			5
UE3 - Advanced Fiber Photonics	UE		48h	4h			5
UE4 - Nanophysics, Nanophotonics	UE		34h	18h	8h		5
UE10 - Practicals 1 : Fiber Optics	UE		2h		35h		2
UE11 - Practicals 2 : Quantum Technologies	UE		2h		35h		2
UE parcours : choisir un parcours parmi 2	UE						
UE pour formation initiale uniquement	UE						
UE5 - Nanobiosciences	UE		20h		20h		3
UE7 - Atomic & Molecular Dynamics	UE		22h				3
UE pour formation continue uniquement	UE						
UE9 - Professional Setting	UE				70h		6

Semestre 4

	Nature	CMI	CM	TD	TP	TER	ECTS
UE6 - Advanced Microscopies	UE		30h				2
UE8 - Research Project	UE				60h		3
UE12 - Practicals 3 : Nanophotonics	UE		2h		35h		2
UE13 - Practicals 4 : Ultrafast lasers	UE		2h		35h		2
UE14 - English/French	UE			20h			1
UE15 - Internship/Alternance	UE						20

Quantum technologies and engineering erasmus mundus master

Master 1

Semestre 1

	Nature	CMI	CM	TD	TP	TER	ECTS
--	--------	-----	----	----	----	-----	------



UE1 - Solid-state physics and soft matter	UE						
Solid-state physics	Matière	26h	14h				3
soft matter	Matière	14h	2h	4h			2
UE2 - Quantum Physics	UE						
Quantum Physics	Matière	24h	10h				3
Quantum Optics	Matière	10h	6h				1,5
Atomic & molecular physics	Matière	12h	8h				1,5
UE3 - Signal Processing	UE						
Signal analysis	Matière	12h	20h				2,5
Data Acquisition	Matière	4h	14h				1,5
UE4 - Quantum Technologies	UE						
Quantum Engineering and information	Matière	14h	16h	16h			3,5
Quantum Control	Matière	10h	4h				1,5
UE5 - Numerical methods for physics	UE	10h	8h	12h			4
UE6 - Transverse Skills	UE						
French or English	Matière		20h				1,5
Soft skills	Matière		15h				1,5
Industry seminar	Matière	10h	10h				1,5
Winter School	Matière						1,5

Semestre 2

	Nature	CMI	CM	TD	TP	TER	ECTS
UE7 - Guided optics and laser technologies	UE						
Guided optics	Matière		16h	8h	4h		3
Laser applications	Matière		12h				1
UE8 - Nonlinear optics	UE						
Fundamentals of nonlinear optics	Matière		14h	8h			2
Materials for nonlinear optics	Matière		12h	6h			2
UE9 - Opto-electronics & Optical communications	UE		22h	8h	10h		4
UE10 - Nano-optics	UE						
Nano-photonics	Matière		18h	6h			2,5
Nanophysics & Nanoplasmonics	Matière		14h	2h			1,5
UE11 - Micro Nano fabrication & clean room	UE		10h	10h	10h		3
UE12 - Lasers	UE						
Fundamentals of lasers	Matière		20h	10h			3
Gaussian optics	Matière		14h	6h			2
UE13 - Research Internship	UE			45h			6

Master 2



Semestre 4

	Nature	CMI	CM	TD	TP	TER	ECTS
UE14 - Internship	UE						30