Université Paris-Saclay

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M2 Quantum, Light, Materials and Nano Sciences IOGS

Master's degree

Specialisation Physique fondamentale et applications

Enrolment type

Formation initiale

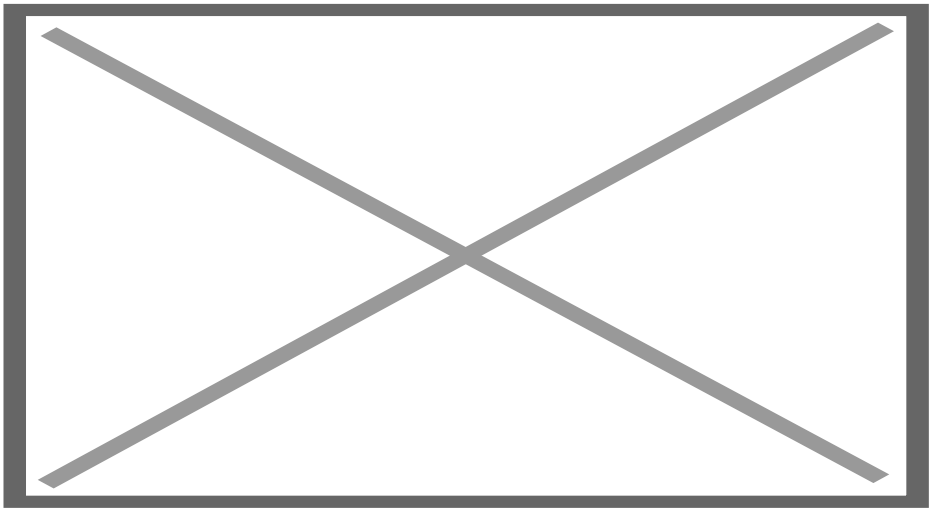
Language(s) of instruction

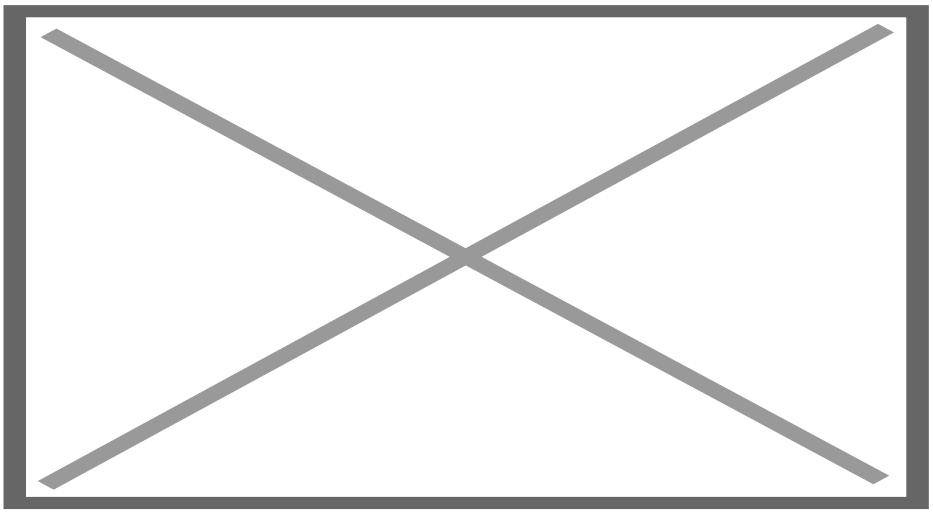
English

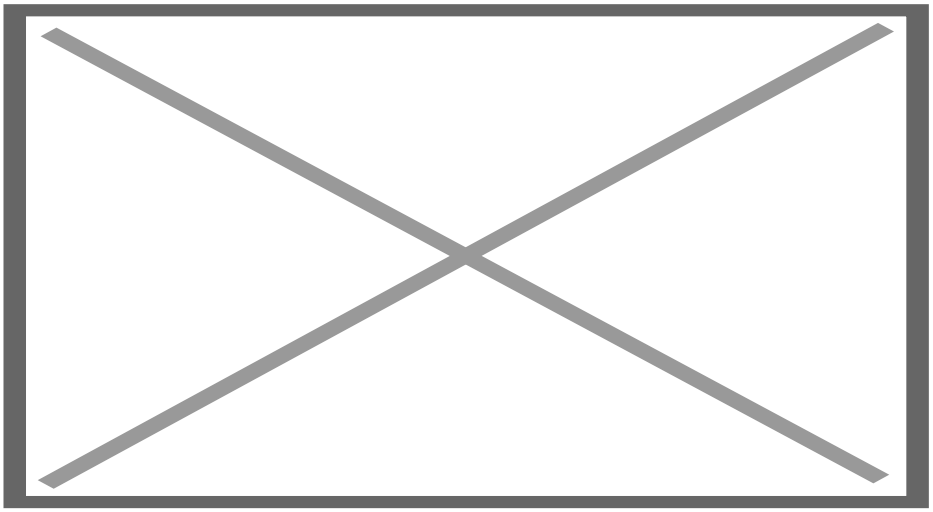
French

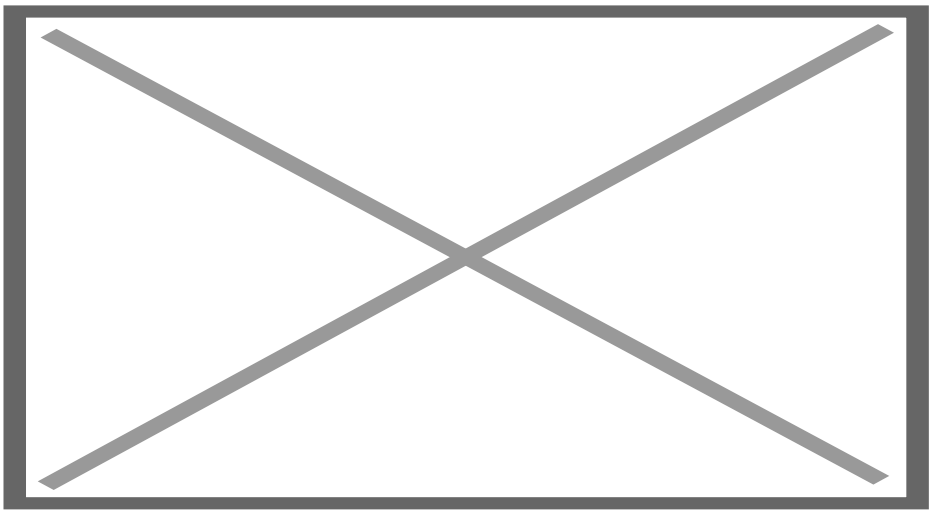
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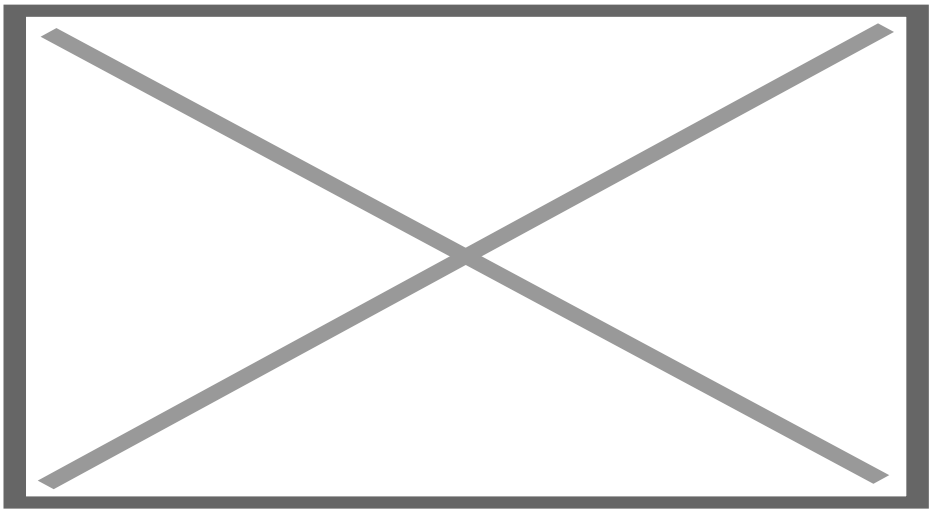
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Information

- Overview
- Application requirements
- Schedule

Présentation
Admission

Capacity

Available Places

80

Supporting documents

Compulsory supporting documents

Motivation letter.

All transcripts of the years / semesters validated since the high school diploma at the date of application.

Curriculum Vitae.

Additional supporting documents

VAP file (obligatory for all persons requesting a valuation of the assets to enter the diploma).

Supporting documents :
- Residence permit stating the country of residence of the first country
- Or receipt of request stating the country of first asylum
- Or document from the UNHCR granting refugee status
- Or receipt of refugee status request delivered in France
- Or residence permit stating the refugee status delivered in France
- Or document stating subsidiary protection in France or abroad
- Or document stating temporary protection in France or abroad.

Programme

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practica class
Introduction to quantum information: qubits, entanglement and decoherence Charger le détail	3	Semestre 1	30					
Light Matter interaction Charger le détail	3	Semestre 1	30					

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practica class
Introduction to second quantization: from quantum optics to condensed matter Charger le détail	3	Semestre 1	30					
Statistical physics: Fluctuations, Transport and Phase Transitions Charger le détail	3	Semestre 1	30					
Laser Physics Charger le détail	3	Semestre 1	30					
Non-linear electromagnetism Charger le détail	3	Semestre 1	30					
Quantum molecular physics Charger le détail	3	Semestre 1	30					
Optics Labwork Charger le détail	3	Semestre 1			27			
Projet industriel en R&D (pour les CFA) Charger le détail	3	Semestre 1						

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Technologie des Lasers Charger le détail	3	Semestre 1	24					

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	
Manipulation of Simple Quantum Systems	3	Semestre 1	30						
Charger le détail									
Fundamentals of Nanophotonics	3	Semestre 1	30						
Charger le détail									
Ultracold Atoms and Quantum Simulators	3	Semestre 1	30						
Charger le détail									
Waves in complex media	3	Semestre 1	30						
Charger le détail									
Optical excitations and quantum optics at the nanoscale	3	Semestre 1	30						
Charger le détail									
Optics Labwork 2	3	Semestre 1			27				
Charger le détail									
Recent Experiments in Quantum Information	3	Semestre 1	30						
Charger le détail									
Near Field Microscopy	3	Semestre 1	24						
Charger le détail									
Fonctions et intégration photonique	3	Semestre 1	24						
Charger le détail									

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Haute résolution angulaire: optique adaptative et interférométrie	3	Semestre 1	24					
Charger le détail								
Optique de l'extrême	3	Semestre 1	24					
Charger le détail								
Impulsions optiques ultra-brèves	3	Semestre 1	30					
Charger le détail								
Plasma Physics	3	Semestre 1	30					
Charger le détail								
Molecular structure and optical transition	3	Semestre 1	30					
Charger le détail								
Dynamique réactionnelle photo-induite	3	Semestre 1	30					
Charger le détail								
Ultracold Molecules and Rydberg atoms	3	Semestre 1	30					
Charger le détail								
Molecular Quantum Dynamics	3	Semestre 1	30					
Charger le détail								
Quantum communication	3	Semestre 1	30					
Charger le détail								

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Biophotonics	3	Semestre 1	24					
Charger le détail								
Quantum Sensing	3	Semestre 1	30					
Charger le détail								
Experimental Quantum Computing and Quantum Error Correction	3	Semestre 1	30					
Charger le détail								

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	distanc learni cours
Lab work	6	Semestre 1			60				
Charger le détail									

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Labwork CM								
Lab work	6	Semestre 1			60			
Charger le détail								
Core UE - CM - Choice of 6 UE among 9								
Light Matter Interaction	3	Semestre 1	30					
Charger le détail								
Integrated optics and Nanophotonics	3	Semestre 1	30					
Charger le détail								
Statistical physics: Fluctuations, Transport and Phase Transitions	3	Semestre 1	30					

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Charger le détail Introduction to second quantization: from quantum optics to condensed matter	3	Semestre 1	30					
Charger le détail Nanomagnetism & Spintronics	3	Semestre 1	30					
Charger le détail Solid states devices	3	Semestre 1	30					
Charger le détail Theoretical concepts of quantum and topological matter	3	Semestre 1	30					
Charger le détail Physical-chemistry of low dimensional materials	3	Semestre 1	30					
Charger le détail Microscopy and Spectroscopy	3	Semestre 1	30					
Charger le détail								

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class

| Fundamentals of Nanophotonics | 3 | Semestre 1 | 30 | | | | | |
| Charger le détail | | | | | | | | |

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Many-body interactions in condensed-matter physics	3	Semestre 1	30					
Charger le détail								
Recent Experiments in Quantum Information	3	Semestre 1	30					
Charger le détail								
Quantum Electronics	3	Semestre 1	30					
Charger le détail								
Nanoelectronics and molecular electronics	3	Semestre 1	30					
Charger le détail								
Mobile charges: from semiconductors to biology	3	Semestre 1	30					
Charger le détail								
Energy harvesting in nanostructures	3	Semestre 1	30					
Charger le détail								
Quantum Sensing	3	Semestre 1	30					
Charger le détail								
Quantum technologies: communication, computing and sensors	3	Semestre 1	30					
Charger le détail								
Optical excitations and quantum optics at the nanoscale	3	Semestre 1	30					

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Charger le détail								
Photovoltaics	3	Semestre 1	30					
Charger le détail								
Outstanding Compounds	3	Semestre 1	30					
Charger le détail								
Research Project	3	Semestre 1						
Charger le détail								
Quantum Computing	3	Semestre 1	30					
Charger le détail								
Numerical Simulations	3	Semestre 1	30					
Charger le détail								
Fundamentals of Micro and Nanofabrication	3	Semestre 1	30					
Charger le détail								

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	distanc learni cours
Lab works	6	Semestre 1			60				
Charger le détail									

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Labwork ND								
Lab works	6	Semestre 1			60			
Charger le détail								
Core UE - ND								
Solid states devices	3	Semestre 1	30					

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Charger le détail Fundamentals of Micro and Nanofabrication	3	Semestre 1	30					
Charger le détail Advanced micro and nanofabrication	3	Semestre 1	27		3			
Charger le détail Integrated optics and Nanophotonics	3	Semestre 1	30					
Charger le détail Physics of MEMS	3	Semestre 1	21		9			
Charger le détail Micro and nanodevice for biology and diagnostic	3	Semestre 1	30					
Charger le détail Applied magnetic materials for spintronics and information technologies	3	Semestre 1	30					
Charger le détail Nanoelectronics and molecular electronics	3	Semestre 1	30					
Charger le détail Microscopy and spectroscopy	3	Semestre 1	30					
Charger le détail								

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class

Circuit nanoarchitecture and deep learning	3	Semestre 1	18		12				
Charger le détail									
Nanomedicine and nanotoxicology	3	Semestre 1							
Charger le détail									
THz semiconductor components	3	Semestre 1	30						
Charger le détail									
Optoelectronics	3	Semestre 1	30						
Charger le détail									
Quantum technologies: communication, computing and sensors	3	Semestre 1	30						
Charger le détail									
Recent Experiments in Quantum Information	3	Semestre 1	30						
Charger le détail									
Technological project	3	Semestre 1							
Charger le détail									
Research project	3	Semestre 1							
Charger le détail									

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	distan learn cour
Research Internship	21	Semestre 2							
Charger le détail									

Teaching Location(s)

ORSAY
PALAISEAU

Contact

- **Rosa TUALLE-BROURI**
- **Pierre SENEOR**

http://www.universite-paris-saclay.fr/formation/master/physique-fondamentale-et-applications/m2-quantum-light-materials-and-nano-sciences-iogs