



Curriculum *Experimental Nano-physics and Quantum Technologies*

Year	Name of the course	Hours	ECTS	SSD	Term	Notes	✓	
B - Distinctive courses (Corsi caratterizzanti)				42				
<i>Mandatory courses</i>								
	Laboratory of nanostructures	60	6	FIS/01	I II			
	Magnetism, spintronics and quantum technologies	48	6	FIS/01	I			
	Laboratory of electron microscopy and holography	48	6	FIS/01	I			
	Synchrotron radiation: basics and applications	48	6	FIS/01	I			
<i>Choose three courses among</i>								
	Physics of semiconductors	48	6	FIS/03	II		<input type="checkbox"/>	
	Solid state physics	48	6	FIS/03	I		<input type="checkbox"/>	
	Nanoscience and quantum materials	48	6	FIS/03	II		<input type="checkbox"/>	
	Laboratory of quantum simulation of materials	60	6	FIS/03	I II		<input type="checkbox"/>	
	Elementary particles	48	6	FIS/04	I		<input type="checkbox"/>	
	Quantum physics of matter	48	6	FIS/03	I		<input type="checkbox"/>	
C - Related courses (Corsi affini)				18				
<i>Choose three courses among</i>								
	Advanced spectroscopic and imaging methods	48	6	FIS/01	II		<input type="checkbox"/>	
	Nano-mechanics	48	6	FIS/01	I		<input type="checkbox"/>	
	Statistical mechanics and phase transitions	48	6	FIS/02	II		<input type="checkbox"/>	
	Laser and photonics	48	6	FIS/01	II		<input type="checkbox"/>	
	Theoretical astroparticle physics	48	6	FIS/02	II		<input type="checkbox"/>	
	Physics education: theoretical and experimental methods	36	6	FIS/08	II		<input type="checkbox"/>	
	Numerical algorithms for signal and image processing	36	6	MAT/08	II	M.Sc in Mathematics - IT	<input type="checkbox"/>	
	High Performance Computing for physical sciences	48	6	FIS/03	II		<input type="checkbox"/>	
	Machine learning for scientific applications	48	6	FIS/03	I		<input type="checkbox"/>	
Second year	B - Distinctive courses (Corsi caratterizzanti)				6			
	<i>Choose one course among</i>							
		Advanced quantum mechanics	48	6	FIS/02	I		<input type="checkbox"/>
		Quantum information processing	48	6	FIS/02	I		<input type="checkbox"/>
	D - Free choice courses (Corsi a scelta libera)				12			
	<i>Choose at least 12 ECTSs among all of the above courses, or any other course offered at UNIMORE</i>							
	E - Thesis project and dissertation				36			
	F - Professional preparation (Corsi professionalizzanti)				6			
	<i>Choose 6 ECTSs among</i>							
		Good practices in research		3		I		<input type="checkbox"/>
	Physics and society		3		I		<input type="checkbox"/>	
	Science-based innovation		6			Attendance of CBI/SUGAR Unimore projects (see https://clab.unimore.it/)	<input type="checkbox"/>	
	High-performance-computing in sciences		3			Attendance of CINECA HPC courses (see https://eventi.cineca.it/en/hpc/catalogue)	<input type="checkbox"/>	