UNIMORE Università degli Studi di Modena e Reggio Emilia — Dipartimento di Scienze Fisiche, Informatiche e Matematiche

M.Sc. in Physics – Full list of courses by curriculum, A.Y. 2025/2026

Curriculum *Theoretical and Computational Physics*

Year	Name of the course	Hours	ECTS	SSD	Term	Notes	✓
First year	***B - Distinctive courses (Corsi caratterizzanti)***		***36***				
	Mandatory courses						
	Advanced quantum mechanics	48	6	FIS/02	I		
	Quantum field theory	48	6	FIS/02	I		
	Statistical mechanics and phase transitions	48	6	FIS/03	II		
	Fundamentals of condensed matter physics	48	6	FIS/03	I		
	Choose two courses among						
	Advanced condensed matter theory	48	6	FIS/03	II		☐
	Laboratory of quantum simulation of materials	60	6	FIS/03	I II		☐
	Theoretical astroparticle physics	48	6	FIS/04	II		☐
	Elementary particles	48	6	FIS/04	I		☐
	C - Related courses (Corsi affini)		***24***				
	Choose four courses among						
	Advanced quantum field theory	48	6	FIS/02	II		☐
	Nanoscience & quantum materials	48	6	FIS/03	II		
	Relativity	48	6	FIS/02	I		☐
	Astrophysics	48	6	FIS/05	II		☐
	Quantum many-body theory	36	6	FIS/03	II		☐
	Quantum information processing	48	6	FIS/02	I		☐
	Physics of semiconductors	48	6	FIS/03	II		☐
	Theory and simulation of excitations in materials	48	6	FIS/03	II		☐
	Chemical physics of biomolecules	36	6	FIS/07	I		☐
	Physics education: theoretical and experimental methods	48	6	FIS/08	II		☐
	Laboratory of machine learning and advanced computing for physics	60	6	FIS/03	I II		
Second year	***B - Distinctive courses (Corsi caratterizzanti)***		***6***				
	Choose one course among						
	Magnetism, spintronics and quantum technologies	48	6	FIS/01	I		☐
	Synchrotron radiation: basics and applications	48	6	FIS/01	I		☐
	D - Free choice courses (Corsi a scelta libera)		***12***				
	Choose at least 12 ECTSs among all courses (of any curriculum), or any other course offered at UNIMORE						
	E - Thesis project and dissertation		***36***				
	F - Professional preparation (Corsi professionalizzanti)		***6***				
	Choose 6 ECTSs among						
	Good practices in research		3		I		☐
	Physics and society		3		I		☐
	Science-based innovation		6			*Attendance of CBI/SUGAR Unimore projects (see https://clab.unimore.it/)*	☐
	High-performance-computing in sciences		3			*Attendance of CINECA HPC courses (see https://eventi.cineca.it/en/hpc/catalogue)*	☐