INSPIRING GLOBAL CHANGE SINCE 1222

SCHOOL OF SCIENCE

QUANTUM SCIENCE AND ENGINEERING

The Master's Degree is designed to train experts in quantum sciences and technologies. Its goal is to provide the skills and tools required in quantum physics, advanced mathematics, precision electronics, and quantum information in order to tackle theoretical, experimental, computational, and technological challenges in the rapid development field of quantum technologies. This profile is particularly relevant given the advances in the understanding and manipulation of quantum systems and the innovations aimed at realizing potentially groundbreaking applications in various sectors (computing, sensing, communications, and their applications across different areas of knowledge and technology).

UNIVERSITÀ DI PADOVA

QUANTUM SCIENCE AND ENGINEERING

LEVEL Master

SCHOOL Science

DEPARTMENT Physics

DURATION 2 years (120 ECTS)

START DATE October

LOCATION Padua, Italy

PROGRAMME COORDINATOR
Marco F. Di Liberto

WEB
www.unipd.it/en/quantum-science-engineering

APPLY.UNIPD.IT

77th 2025
Physics and Astronomy
QS WORLD UNIVERSITY RANKINGS
BY SUBJECT

ENTRY REQUIREMENTS

- Bachelor's degree (or equivalent) with proven skills in Physics and Mathematics
- English language: B2 level (CEFR) or equivalent

PROGRAMME STRUCTURE

1st Year: Mandatory courses: Numerical Methods for Quantum Technologies, Quantum Optics and Lasers, Semiconductor Nanostructure. Elective courses: Quantum Information and Computing, Microelectronics and Convex Optimization, Quantum Communication Laboratory, Quantum Dynamics Measurement and Control, Digital Electronics for Space Quantum Communication, Fundamentals of Nanoscience, Structure of Matter, Introduction to Superconducting Qubits, Trapped Ions, Physics of Quantum Simulators, Machine Learning, Elective Courses on Advanced Topics. 2nd Year: *Elective courses*: Advanced Photonics, Fiber Optics and Waveguides, Nanophotonics and Metasurfaces, Programmable Hardware Devices, Nanofabrication, Optical Properties of Molecular Systems, Theory of Strongly Correlated Systems, Mathematical Physics for Quantum Science, Optics of Materials, Selected Topic in Quantum Science, Elective Courses on Advanced Topics; Internship. 1st Year/2nd Year: *Elective courses:* Quantum Cryptography and Security, Optoelectronics and Photovoltaic Devices, Nanoelectronics, Quantum Methods for ICT, Tensor Network Methods, Quantum Information with Atoms and Photons, Quantum Algorithms.

TUITION FEES AND SCHOLARSHIPS

Annual fees: up to €2.900 (3 instalments)
Scholarships and fee-waivers for international students available.
www.unipd.it/en/funding-and-fees

CAREER OPPORTUNITIES

Graduates work as professionals for companies that develop hardware and software for quantum computers and communications, or that employ quantum technologies to address practical problems. In addition, graduates work as professionals in high-tech industries and startups, research centres, consulting companies, public administrations.