



SORBONNE
UNIVERSITY
ABU DHABI

Bachelor in **PHYSICS**

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Overview

The Bachelor in Physics is a degree awarded by Sorbonne University in Paris and delivered by world-class academics in Sorbonne University Abu Dhabi. A specialization certificate in Quantum Technologies will also be awarded to students by Sorbonne University in Paris upon programme completion.

It is a three-year international undergraduate programme taught in English. Its goal is to provide a robust background in Physics, with emphasis in the expertise required in Quantum Technologies, preparing graduates for the ground-breaking and global challenges of these emerging fields.

Quantum Computers, Quantum Simulation, Quantum Information, and Quantum Sensing, along with their associated protocols, are all based on an entirely novel hardware. These rapidly evolving technologies will shape the future of science, industry, and everyday life. Based on intrinsic properties of Quantum Mechanics, such as superposition, entanglement and unclonability, these systems are expected to address the most complex of problems which cannot be dealt with conventional computers. Quantum Simulation will pave the way to extremely efficient modeling of many-body problems faced in Science (quantum, atomic and molecular systems), Finance (banking and investment models), Medicine (drug design, development of medical instruments), Environment (climate change and weather forecast), and many other sectors. Furthermore, Quantum

Information processes lead to profoundly fast processing, storage, and transmission of information while offering completely secure protocols due to Quantum Cryptography.

The ultimate goal of this programme is to provide its graduates with a thorough literacy in Physics and especially in Quantum Mechanics and Quantum Information. This expertise establishes an invaluable arsenal towards the deep understanding of the phenomena behind these emerging Quantum Technologies. The hands-on experience, independent projects, and a solid grasp of programming, prepare them to enter the workforce right after graduation, while also being equipped with a solid scientific background, allowing them to pursue graduate studies at prestigious universities worldwide.

Students will follow a programme carefully designed in close collaboration with the Sorbonne University Quantum Information Center (QICS) in Paris, which involves the study of a wide range of fundamental Physics, with special emphasis in Quantum Mechanics, Mathematics, Data Science and Computer Science courses. The programme further covers studies on Information Theory, and Quantum Information, molding our students into becoming future leaders in the various fields of Quantum Technologies.

Graduates of the Programme will earn a Bachelor degree in Physics from Sorbonne Université (France) as well as a Certificate in Quantum Technologies from the same institution.

The curriculum follows the European ECTS system.

programme

→ First Year

- Mechanics-Physics I
- Geometric Optics
- Mechanics-Physics II
- Introduction to Electronics
- Mathematics I and II
- Computer Science
- Active Science
- Chemistry
- Introduction into the World of Work I
- Languages

→ Second Year

- Thermodynamics
- Modern Physics
- Experimental Physics I
- Waves
- Electromagnetism
- Special Relativity and Advanced Mechanics
- Numerical Physics
- Experimental Physics II
- Mathematics for Physics I, II and III
- Languages

→ Third Year

- Quantum Physics I
- Optics and Electromagnetism
- Experimental Physics III
- Spectroscopy
- Quantum Physics II
- Thermostatistics
- Experimental and Numerical Physics
- Astrophysics
- Quantum Information
- Mathematics for Physics IV
- Introduction to the World of Work II
- Internship
- Languages



Career prospects

The Bachelor in Physics provides graduates with an extensive arsenal of skills today, to lead the rapidly changing workforce of tomorrow: Physics, Mathematics, Data Science, Computer Science and Quantum Technologies.

Example of career paths followed by our graduates :

Cybersecurity Engineer, Associate Software Engineer, Radiation Quality Assurance Technologist, Business Strategy and Development Executive, Data & Insights Manager, Financial Analyst, Data Analyst, Project Management Officer, Product Manager, Quality Assurance Officer, Associate Researcher, Research Assistant, Science Communicator, Event Management Officer, Public Relations Officer, Cognitive Trainer.

Research/Academia: students can pursue Master's and PhD degrees in eminent educational institutions around the world (i.e., as per our graduates, Sorbonne Université, University of Cambridge, Imperial College London, University College London, King's College London, Texas A&M University, University of Amsterdam etc.) in fields related to Physics or double majors, like Engineering, Astrophysics, Material Science, Data Science, AI, Medical Physics, Computer Science, Cybersecurity, Quantum Technologies, i.e Quantum Information, Quantum Computing, Quantum Simulation, Quantum Sensing and Quantum Cryptography.

For more information, please visit the "Career Prospects" links on the Physics Bachelor page.





Admission requirements

The following are minimal criteria to apply for direct entry to the programme :

- French baccalaureate: minimum average of 12 out of 20.
 - Ministry of Education curriculum:
 - General stream/Art stream: minimum average of 80%.
 - Advanced stream/Elite stream/Science stream: minimum average of 75%.
 - Other high school systems: high school certificate equivalent to the UAE Ministry of Education high school with minimum average of 80% or equivalent
 - Languages requirements
 - Ministry of Education curriculum: Minimum score of 80% in English subject in High school
 - For curriculums studied in English Language: No English requirement needed
 - For other curriculums: Valid academic IELTS certificate with minimum overall band of 5.5 with a validity of 2 years or TOEFL score of 530, IBT TOEFL certificate with minimum score of 71, CBT TOEFL of 197 with a validity of 2 years or equivalent (can be applicable for national curriculum)
 - Mathematics competencies
 - For French baccalaureate applicants: A minimum score of 12 out of 20 in the specialty "Mathematique Spéciales" and/or the specialty "Mathematiques expertes" or Passing SUAD Admission test for L1 or SAT Mathematics with score at or above 750
- Other High school systems:
Minimum score of 80% in Mathematics subject in other High school systems, and having one of the below conditions:
SUAD Admission test for L1 or SAT Mathematics with score at or above 750

- Competencies in one other Science subject (Physics, Chemistry, Biology – including SVT) Subject studied in school with minimum 12 out of 20 in Grade 10, 11 or 12 (for holders of French Baccalaureate) or with a minimum score of 80% in Grade 10, 11 or 12, for holders of other HS Diplomas,
- Other Countries Education's Systems
Conditions apply on other foreign curriculums according to the admission's policy set by Sorbonne University Abu Dhabi. Please contact the Student Recruitment office by email: admissions@sorbonne.ae for more details.
- Sorbonne University Abu Dhabi is committed to considering applications from all students regardless of their country of origin, income, gender, religion or physical condition.

Tuition Fees

(Including admin. fees - over 3 years)
AED 215,100 (approximately US\$ 58,615)
 Scholarship options*:

- Emirati citizens receive the H.H. Sheikh Mohamed bin Zayed Al Nahyan scholarship grant covering tuition fees for the programme and a foundation year (if any).
- For non-Emirati students, academic excellence scholarships are offered, covering up to 75% of the tuition fee.

Visit our website for more information.
**Conditions apply*

Why Sorbonne University Abu Dhabi ?

In today's fast-paced and globalised economies, knowledge and languages both serve an important role in creating progressive and vibrant societies. The French education system is known for its high level of rigorous critical thinking and debating skills, which play a significant role in developing future pioneers and leaders.

Sorbonne Abu Dhabi is a globally recognised education institution that serves as a bridge between civilisations by offering a multicultural environment, which promotes and develops a strong culture of tolerance, curiosity, harmony and cultural awareness for today's modern economy. Students have access to internationally acclaimed faculty, world-class facilities and internationally certified degrees, which places them firmly on the right path in preparation for a successful career.

This degree is officially accredited by the UAE Commission for Academic Accreditation (www.caa.ae).





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