الجمهورية الجزائرية الديمقراطية الشعبية
وزارة التعليم العالي والبحث العلمي
جامعة فرحات عباس - سطيف 1

Sétif 1 Univ - Ferhat ABBAS

Thematic Network of Quantum Computing

Sétif 1 - Boumerdes - Constantine 2 - Bejaia - Tebessa - Bordj

Faculty of Sciences

Master's degree in QUANTUM COMPUTING

THE FUTURE IS NEAR!

THIS MASTER'S PROGRAM OFFERS COMPREHENSIVE TRAINING IN QUANTUM COMPUTING, ENABLING STUDENTS TO UNDERSTAND FUNDAMENTAL CONCEPTS SUCH AS SUPERPOSITION, ENTANGLEMENT, QUANTUM GATES, ALGORITHMS, AND ERROR CORRECTION.

Scan the QR code

PRESENTATION AND OBJECTIVE OF THE SPECIALITY

ACCESS CONDITIONS

ORGANIZAION OF STUDIES AND OFFICIAL DURATION OF THE PROGRAM

CAREER PROSPECTS/PROFESSIONS

Coordinator of the programme : Dr Safia Djemame Zazoua

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Master's degree in QUANTUM COMPUTING

Presentation and objectives of the Speciality:

This Master's program offers comprehensive training in Quantum Computing, enabling students to understand fundamental concepts .

1 - Develop a deep understanding of quantum theory
2 - Gain proficiency in quantum programming to translate classicval problems into quantum algorithms and optimize them
3- By Exploring quantum hardware and technologies, students will gain hands-on experience with various technologies, including superconducting qubits.
4 - Investigate quantum applications and use cases
Prepare for careers in quantum computing including software engineering, algorithm design, information theory, and consulting methods.

Access conditions:

All Licence degree in Computer Science.

Career prospects/professions:

- Research and Development scientist (R&D scientist)
- Quantum software engineer
- Quantum hardware engineer
- Quantum security specialist (cryptography, cyber-security)
- Development of new medicines.
- Impact on energy and environment
- Meteorology
- Logistics.....

Organization of studies and official duration of the program:

Semester 1

Subject 1: Quantum Mechanics
Subject 2: Advanced Linear Algebra
Subject 3: Algorithms and Parallel Architectures
Subject 4: Advanced Algorithms and Complexity
Subject 5: Artificial Intelligence
Subject 6: Advanced Networking
Subject 7: Nano electronics
Subject 8: English

Semester 2

Subject 1: Quantum Computing and Algorithms
Subject 2: Programming language for quantum computing
Subject 3: Building Quantum Computer
Subject 4: Cryptology
Subject 5: Advanced Probabilities
Subject 6: Unix System Administration
Subject 7: Spintronics
Subject 8: English

Semester 3

Subject 1: Quantum Cryptography
Subject 2: Quantum Error Correction
Subject 3: Machine Learning
Subject 4: Simulation and Optimization
Subject 5: Applied Quantum Computing
Subject 6: Formal Methods for Quantum Computing
Subject 7: Entrepreneurship
Subject 8: Research Methodology

Semester 4

Project / Stage

Coordinator of the programme : Dr Safia Djemame Zazoua
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