

Quantum Computing Fundamentals (IBM Qiskit) Training

COURSE CONTENT

GET IN TOUCH



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About Multisoft

Train yourself with the best and develop valuable in-demand skills with Multisoft Systems. A leading certification training provider, Multisoft collaborates with top technologies to bring world-class one-on-one and certification trainings. With the goal to empower professionals and business across the globe, we offer more than 1500 training courses, which are delivered by Multisoft's global subject matter experts. We offer tailored corporate training; project Based Training, comprehensive learning solution with lifetime e-learning access, after training support and globally recognized training certificates.

About Course

Quantum Computing Fundamentals (IBM Qiskit) training by Multisoft Systems offers a deep dive into the revolutionary world of quantum computation. Designed for developers, data scientists, and researchers, this course introduces the key principles of quantum mechanics that form the foundation of quantum computing — including superposition, entanglement, and quantum gates.

Module 1: Introduction to Quantum Computing

- ✓ Understand the basics of quantum computing and its distinction from classical computing
- ✓ Learn key concepts: qubits, superposition, entanglement, measurement, and quantum gates
- ✓ Explore real-world applications and the relevance of quantum computing

Module 2: Environment Setup with Qiskit

- ✓ Install and configure Anaconda and Qiskit for quantum programming
- ✓ Work with Jupyter Notebook and navigate Qiskit documentation
- ✓ Connect to IBM Quantum Lab for practical experimentation

Module 3: Working with Qubits and Quantum States

- ✓ Create and initialize qubits for computation
- ✓ Represent quantum states using vectors, matrices, and the Bloch sphere
- ✓ Understand manipulation of quantum states for algorithm implementation

Module 4: Quantum Gates and Circuit Building

- ✓ Implement basic quantum gates like Pauli X, Y, Z, Hadamard, and more
- ✓ Combine gates to design and visualize quantum circuits
- ✓ Test and debug quantum circuits using Qiskit simulators

Module 5: Algorithms and Advanced Concepts

- ✓ Introduction to quantum algorithms like Deutsch-Jozsa
- ✓ Explore Quantum Key Distribution (QKD) and quantum teleportation
- ✓ Run and validate circuits on IBM quantum simulators and real hardware