

Certified Quantum Computing Specialist

OEM: Arcitura • Duration: 3 Days (24 hrs) • Code: ARC-QC

COURSE MODULES & TOPICS

Module 1: Fundamental Quantum Computing

- A Comparison of Quantum Computers and Classical Computers
- Quantum Computing Business and Technology Drivers
- Quantum Computing Benefits
- Common Risks and Challenges of Using Quantum Computing
- Business Problem Addressed by Quantum Computing
- Understanding Quantum Computing
- Fundamental Terms and Concepts
- Simplified Quantum Mechanics: Concepts and Principles
- Quantum Computer Components
- The Quantum Computing Process: Step-by-Step
- Common Quantum Computing Best Practices

Module 2: Advanced Quantum Computing

- More About Superposition, Entanglement & Quantum Gates
- Quantum Walks, Ancilla Qubits, Quantum Tunneling
- Quantum Entropy and Entropy Control
- Quantum Computing Techniques
- Fault-Tolerant Quantum Computation (FTQC)
- Post-Quantum Cryptography (PQC)
- Grover's Algorithm, Shor's Algorithm
- Quantum Computational Models, and Model Implementation Steps
- Fundamental Gate-Based Quantum Computing
- Quantum Annealing
- Quantum Adiabatic Optimization (QAO)
- Clustered State Computing
- Measurement-Based Quantum Computing (MBQC)

Module 3: Quantum Computing Lab

- Reading Exercise 3.1 Case Study Background: FIN
- Lab Exercise 3.2: Inadequate Classical Computing Infrastructure

- Lab Exercise 3.3: New Computational Challenge and Decoherence Concerns
- Lab Exercise 3.4: Runtime Error Conditions
- Reading Exercise 3.5 Case Study Background: HQT
- Lab Exercise 3.6: Computational Optimization Deficiencies
- Lab Exercise 3.7: Gate-Based Computing Limitations
- Lab Exercise 3.8: Funding Cuts and Infrastructure Concerns
- Reading Exercise 3.9 Case Study Background: The Tax Office
- Lab Exercise 3.10: Cyber-Attack
- Lab Exercise 3.11: Data Vulnerability Testing
- is authored by a dedicated courseware development team
- has a self-test, accreditation exam and professional certification
- is available via two different eLearning platforms
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- are authored to be consistent in quality, structure and style
- share a common vocabulary and symbol notation
- are authored in collaboration with subject matter experts
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