

(057-CSE-01-02) CSE (Quantum Computing)

Significance of the Program:

The significance of Quantum Computing programs in Computer Science and Engineering (CSE) is profound and diverse. Quantum Computing offers revolutionary capabilities to solve complex problems by leveraging the principles of quantum mechanics. Applied to various domains, including cryptography, optimization, and simulation, Quantum Computing empowers computer scientists and engineers with unprecedented computational potential. Quantum algorithms excel in addressing computationally intractable tasks for classical computers, making this course instrumental in pushing the boundaries of problem-solving.

Career Options / Opportunities:

- Quantum Software Developer
- Quantum Algorithm Researcher
- Quantum Cryptographer
- Quantum Computing Hardware Engineer
- Quantum Data Scientist

Program Objectives:

- Apply foundational principles of Mathematics, Quantum Mechanics, Science, and Engineering to design and develop innovative solutions for real-life problems using state-of-the-art quantum computing tools.
- Cultivate comprehensive practical skills in Computer Science and Engineering, focusing on Quantum Computing for advanced learning and research in interdisciplinary areas.
- Foster professional development through effective communication, teamwork, and entrepreneurial skills while staying abreast of current trends through lifelong learning with a commitment to ethical values.
- Apply design thinking to foster innovation in providing solutions leveraging quantum computing.

Outcomes of the Program:

- Demonstrate a deep understanding, analysis, and application of knowledge in human cognition, Quantum Computing, and data engineering to address real-world challenges.
- Develop computational knowledge and project development skills using innovative tools and techniques specific to Quantum Computing.

Major Course Outlines :

- Mathematics for Quantum Computing
- Quantum Programming & Algorithms
- Quantum Network & Security
- Quantum Information Theory
- Quantum Machine Learning
- Quantum Cryptography
- Quantum Simulation