



Two Weeks Certification Program

# Quantum Computing

Sept 27 – Oct 8, 2021  
(Monday to Friday)



E & ICT Academy IIT Guwahati  
<https://eict.iitg.ac.in>

Resource Persons from  
IBM India

An intensive two-week online certification programme is being organized jointly by MNIT Jaipur, IIT Guwahati, PDPM IITDM Jabalpur and NIT Patna for the **Faculty Members** of **Engineering** and **Technological Institutions**. It is also open to Industry Personnel and **Doctoral Students** of Indian organizations.

National Mission on Quantum Technologies & Applications (NM-QTA) with budget of Rs 8000 Crore for 5 years will be implemented by the DST. Quantum Science will be a major technology disruption that will change entire paradigm of computation, communication, and encryption. Applications will receive boost in aero-space engineering, numerical weather prediction, simulations, securing communications, financial transactions, cyber security, advanced manufacturing, health, agriculture, education, etc. The focus is on creation of high skilled jobs, human resource development, start-ups & entrepreneurship.

This workshop will cover fundamentals of **Quantum Computing** and introduces Quantum **Cryptography** and Quantum **Machine Learning**. Domain experts from **IBM Labs India / IBM Partners** will handle **all the sessions** will be handled, who would be conducting online lab and training sessions.

## Experts / Speakers-

**Nivedita Dey**  
Director and Research Coordinator  
QRDLab, University of Calcutta

**Rajesh K Jeyapaul,**  
IBM Quantum Ambassador  
Engineering Lead, AIOps@ IBM Labs India

## Course Content:

Qubits, Bloch Sphere, Vector Algebra, bra-ket notations  
Superposition, Entanglement, Teleportation, No Cloning theorem,  
IBM Qiskit, UI Tools and OpenQASM ( Open Quantum Assembly Language)  
Quantum Gates – Pauli & Hadamard, Multi Qubit gates, Deutsch's Algorithm  
Quantum Programming Languages, Platforms and Frameworks  
Quantum Search, Quantum subroutines, Grover's Algorithm  
Quantum Fourier Transforms, Discrete logarithms, Shor's Algorithm, BB 84  
Quantum Cryptography & Key Distribution  
Quantum Machine Learning, Opportunities, Applications

## Registration:

Registration is open to faculty, industry persons, doctoral, postgraduate and graduate students. Participants will be admitted on first-come first-served basis. Register online at - <https://forms.gle/ontj3dXwoxPyC6rB8>

## Course and Certification Fee:

**Academic (Student / Faculty): ₹ 500/- Industry / Others: ₹ 1,000/-**

- (A) Fee once paid will not be refunded back; it may be adjusted in future courses upon prior request.
- (B) The fee covers online participation in the programme, comprehensive tutorials, practice notes & certification charges.
- (C) The organizers should receive the registration amount through online payment gateway provided at the registration portal.
- (D) For application form visit: <http://eict.iitg.ac.in/UpcomingSummerCourses21.html>

## Online Payment Details :-

**Bank Name: State Bank of India**  
**Account Name: IIT Guwahati R and D E and ICT Academy**  
**Account No.: 36071160089**  
**IFSC Code: SBIN0014262**  
**Bank Name: State Bank of India**  
**Bank Address: IIT Guwahati, GHY-39**

## Joint Principal Coordinator

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**Ministry of Electronics and  
Information Technology  
Government of India**