MALAVIYA MISSION TEACHER TRAINING PROGRAMME

शिक्षा मंत्रालय
MINISTRY OF EDUCATION

NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL

An Institute of National Importance

MALAVIYA MISSION TEACHER TRAINING CENTRE

Established under the Scheme of MMTTP, University Grants Commission (UGC), Ministry of Education, Government of India

12-Day (Hybrid) Refresher Course on

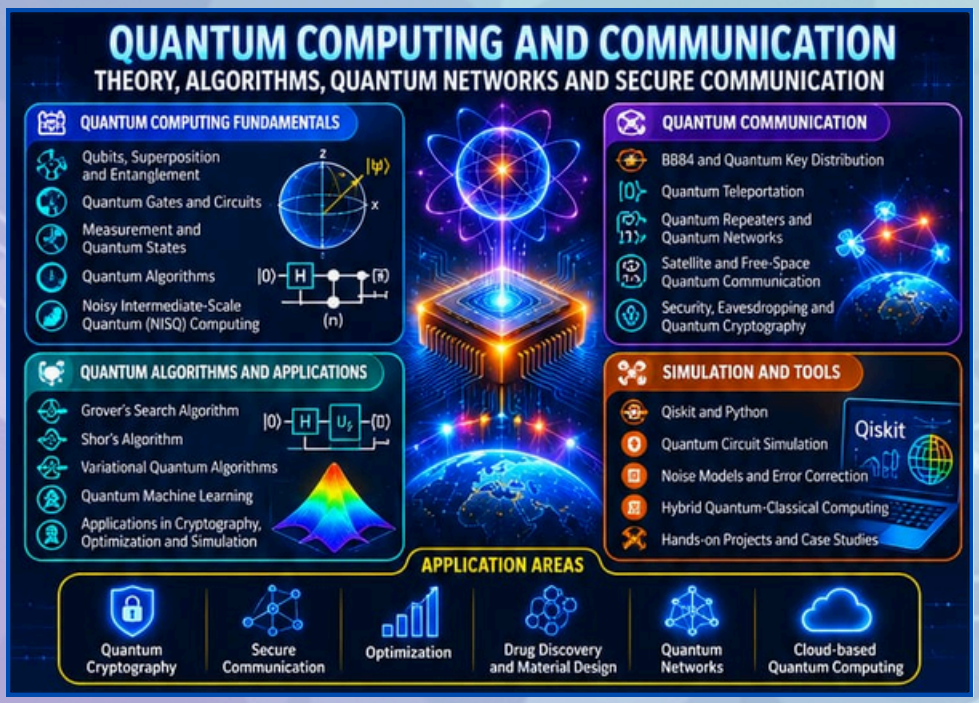
(28 Dec'26 - 2 Jan'27 is Online and 4 Jan'27 - 9 Jan'27 is Residential)

Quantum Computing and Communication: Hands-on Learning

28 Dec 2026 - 9 Jan 2027

Course Description:

This refresher course on "Quantum Computing and Communication" aims to provide participants with a comprehensive understanding of the fundamental principles, algorithms, and evolving technologies in quantum computing and secure quantum communication. The course will begin with the basics of quantum mechanics and qubits, and progressively cover quantum algorithms, quantum circuits, quantum error correction, and simulation tools. The second week will focus on quantum communication concepts such as quantum key distribution (QKD), entanglement, quantum networks, and real-world applications. Through lectures and hands-on sessions, participants will gain exposure to current research trends and future directions in quantum technologies.



Scan the QR code to Register

Last date for Registration: 20-12-2026

NO REGISTRATION FEE

Course Content

- Quantum Fundamentals: Qubits, superposition, entanglement, measurement, and basic quantum mechanics.
- Quantum Gates and Circuits: Quantum gates, circuit design, and hands-on circuit construction.
- Hands-on Qiskit: Setting up Qiskit, building and visualizing quantum circuits, running simulations, and interpreting measurement results.
- Quantum Algorithms: Implementation of basic quantum algorithms, including Deutsch–Jozsa and Grover's search, using Qiskit.
- Quantum Noise and Error Correction: Simulation of noise, decoherence, and basic quantum error-correction techniques using Qiskit.
- Quantum Communication: Implementation of Bell states, quantum teleportation, and superdense coding using Qiskit.
- Quantum Key Distribution: Principles and simulation of BB84 and entanglement-based QKD protocols.
- QKD Performance Analysis: Effects of noise, optical loss, and eavesdropping on quantum bit error rates and key generation.
- Quantum Networks: Entanglement distribution, entanglement swapping, and quantum repeaters.
- Hands-on Projects: Design and simulation of quantum computing and communication tasks using Qiskit.
- Applications and Future Directions: Practical applications, current research trends, and emerging opportunities in quantum technologies.

Resource Persons for this Program

Faculty members from IITs, IISc, TIFR, and NITs will be invited to deliver lectures in the program.

Course Duration

There will be 12-days (72 hours) of engagement including live sessions, Hands-on sessions, assignments, etc.

Certification Criteria

The participants must maintain 80% of Attendance. Candidates will be issued certificates on successful completion of the course.

Who can Apply ?

Faculty members in Central, State, Deemed to be Universities, Private Universities, Institutions of National Importance, Colleges and other HEIs; Contractual, Ad-hoc, Guest faculty Teachers and Research Scholars (Ph.D. level) in HEIs etc. are eligible.

Selection Criteria

Selection will be done based on first-come first-served to a maximum number of 50 Faculty/industry participants. PhD scholars are allowed to participate. The list of selected participants will be intimated through e-mail. There is **No Registration Fee** to attend this program.

Note: This Program shall be considered for regularization/ Career Advancement Scheme (CAS). As per UGC guidelines, attending the Courses under MMTTP, UGC will be treated as on duty/duty leave.

About MMTTC of NIT Warangal

The Malaviya Mission Teacher Training Centre (MMTTC) was established at NIT Warangal in the year 2015 under the scheme "Malaviya Mission on Teacher Training Programme (MMTTP)" sponsored by the University Grants Commission (UGC), Ministry of Education, Government of India. Since its inception, the Centre has successfully organized various programs in the form of NEP Orientation programs, Short-term programs, Refresher Courses, FDP programs and one-month duration Faculty Induction Program (FIP) for Higher Education Faculty in various theme areas of Science and Technology, Humanities and Social Sciences from which more than 8000 participants have benefitted. Other activities of the MMTTC include offering online courses, curriculum design, carrying out research in educational technology and pedagogy and integrating ICT into the Teaching-Learning process. The MMTTC NIT Warangal has been conducting various programs, online and offline following MMTTP Guidelines and UGC Regulations.

How to Apply ?

Interested participants are required to register by using the Google Form provided below, on or before the last date. There is **NO REGISTRATION FEE.** It is mandatory to submit the **Nomination Form** from your organization to consider your application.

Registration link: https://mmc.ugc.ac.in/registration/Index

or through Google Form: https://forms.gle/Abu88brm4cCidgFx8

Accommodation

Accommodation can be provided at the Institute Visitor's Block for a maximum of 20 participants from the programme, on a first-come, first-served basis. Over and above this, accommodation will be provided at the Institute Outreach Centre (NITW). For further details, please contact **0870-2462686.**

Program Coordinators

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Important Dates:

Last Date of Registration: 20 December 2026

Intimation of Selection: 22 December 2026

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NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL

Prof. M. Sailaja Kumari
Coordinator, UGC-MMTTC &
Head, Centre for Teaching and Learning
NIT Warangal

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