

A 6-DAY SHORT TERM PROGRAMME ON
**PHOTONIC QUANTUM KEY DISTRIBUTION NETWORK
AND ITS REALIZATION**

25 JUNE - 30 JUNE 2025

UNDER
MALAVIYA MISSION TEACHER TRAINING PROGRAMME
organized by
INDIAN INSTITUTE OF TECHNOLOGY (ISM) DHANBAD

ABOUT THE COURSE:

THE THREAT TO TRADITIONAL ENCRYPTION METHODS POSED BY THE EMERGENCE OF QUANTUM COMPUTERS CAN BE ADDRESSED BY QUANTUM KEY DISTRIBUTION (QKD), WHICH USES THE PRINCIPLES OF QUANTUM MECHANICS TO SECURE COMMUNICATIONS. IN LONG-HAUL COMMUNICATION, QKD IS REALIZED USING OPTICAL QUANTUM BITS (QUBITS). HOWEVER, THE GENERATION OF OPTICAL QUBITS AND THEIR TRANSMISSION OVER COMMERCIAL OPTICAL FIBRES FACES TECHNICAL CHALLENGES DUE TO THEIR EARLY-STAGE DEVELOPMENT. THIS COURSE AIMS TO PROVIDE IN-DEPTH KNOWLEDGE OF PHOTONIC QKD, INCLUDING ITS PRINCIPLES, ARCHITECTURE, DEVICES, FABRICATION, AND IMPLEMENTATION CHALLENGES.

SALIENT FEATURES:

- **BASICS OF QUANTUM KEY DISTRIBUTION (QKD)**
- **DIFFERENT QKD PROTOCOLS**
- **NETWORK AND DEVICE ARCHITECTURE FOR PRACTICAL QKD SYSTEMS**
- **PHOTONIC INTEGRATED CIRCUITS (PICS) AND IMPLEMENTATION OF QKD COMPONENTS IN PHOTONIC INTEGRATED CIRCUITS**



ONLINE MODE

COORDINATOR:



Dr. Mrinal Sen
Associate Professor,
Department of ECE

CO-COORDINATOR:



Dr. Mukul K. Das
Professor,
Department of ECE

CONTACT NO: 9471191435, 9470194846, Email: mrinalsen@iitism.ac.in

MMTTC Coordinator: Prof. Mrinalini Pandey

RESOURCE PERSONS:

Eminent experts from premier institutes such as IIT/NIT/University/Industry/Research Institutes

WHO CAN APPLY:

Faculty members working in universities and colleges that are included under Section 2(f) of the UGC Act. The teachers of colleges that do not yet come within the purview of Section 2(f), but have been affiliated to a university for at least three years, will be permitted to participate in the courses.

PROCEDURES FOR APPLICATION:

1. Register at <https://mmc.ugc.ac.in/> using your ID
2. **LOGIN** as **PARTICIPANT** using credentials received over the registered Email Id
3. Click on “**Apply for Other Programmes**” on the the Dashboard
4. Click on **Apply for** and Select “**Short Term Programme/Faculty Development Programme**”
5. Click on **Centre & Programme Date** and Select “**Indian School of Mines (Jharkhand) (25/06/25 - 30/06/25)**”
6. Click on **Title** and Select the Programme title “**Photonic Quantum Key Distribution Network and its Realization**” that automatically comes from the dropdown option.
7. Fill in the other required details
8. Upload the NOC duly signed and approved by the **Head** of your **Institution** by clicking on the “**Choose File**” Button.
(Sample NOC is available on the website to download (or) click on the link https://mmc.ugc.ac.in/Uploads/MMTTP_Nomination%20Letter_Format.pdf to download the sample NOC)
(Please download the form & fill in the details, later get it duly signed by your Head of Institution, upload it and complete the registration process.)
9. Click on the **Submit** button.
10. The last date to register is 24/06/2025, but please register well in advance to avoid a last-minute rush and plan your travel accordingly.
11. The participants will get a confirmation Email after registration.

Application Deadline: 24 June, 2025