**Faculty Development Programme (FDP)**
on
**'Quantum Computing and Post-Quantum Cryptography'**
**(3rd – 9th February, 2025)**
Organized by: Department of Computer Science, University of Delhi
Venue: G-12, Maharishi Kanad Bhawan, University of Delhi, Delhi- 110007
(www.cs.du.ac.in)

**REVISED SCHEDULE:**

---

**Day 1: 3rd February (Inaugural Day)**

- **10:00 – 10:30 AM: Inaugural Session**
- **10:30 – 11:00 AM:** Tea Break
- **11:00 – 12:15 PM:** Lecture 1: ***Introduction to Quantum Computing* –** Prof. Anirban Pathak (JIIT Noida)
- **12:15 – 1:30 PM:** Lecture 2: ***Vector Space and Tensor Product* –** Dr. Surendra Kumar (Assistant Professor, Dept. of Mathematics, Delhi University)
- **1:30 – 2:30 PM:** Lunch Break
- **2:30 – 3:45 PM:** Lecture 3: ***Device Independence in Quantum Cryptographic Protocols* –** Dr. Arpita Maitra (Associate Professor, TCG CREST, Kolkata)
- **3:45 – 4:00 PM:** Tea Break
- **4:00 – 6:00 PM:** Lab Session: ***Installation and Setup of Qiskit***

---

**Day 2: 4th February**

- **9:30 – 10:45 AM:** Lecture 4: ***Basic Quantum Gates and Multi-Qubit Gates*** – Prof. Rajiv Chopra (Dronacharya College of Engineering, Gurugram)
- **10:45 – 12:00 PM:** Lecture 5: : ***Deutsch & Deutsch-Jozsa Algorithm*** – Dr. Om Pal (Associate professor, Dept. of Computer Science, University of Delhi)
- **12:00 – 12:15 PM:** Tea Break
- **12:15 – 1:30 PM:** Lecture 6: ***From Quantum Utility to Quantum Advantage*** – Dr. L. Venkata Subramaniam (IBM Quantum India leader)
- **1:30 – 2:30 PM:** Lunch Break
- **2:30 – 5:45 PM:** Lab Session: ***Implementing Basic Quantum Circuits in Qiskit*** (Tea Break: 3:45 – 4:00 PM)

---

**5th February:** No session (Off day): Due to General Election to the Legislative Assembly of NCT of Delhi

---

**Day 3: 6th February**

- **9:30 – 10:45 AM:** Lecture 10: ***Simon's Algorithm*** – Dr. Om Pal (Associate professor, Dept. of Computer Science, University of Delhi)
- **10:45 – 12:00 PM:** Lecture 11: ***Quantum Machine Learning Algorithms*** – Dr. Gurmohan (Scientist-E, C-DAC) & Dr. Tarun Kumar (Project engineer, C-DAC)
- **12:00 – 12:15 PM:** Tea Break
- **12:15 – 1:30 PM:** Lecture 12: ***Grover's Search Algorithm*** – Dr. Tarun Kumar (C-DAC)
- **1:30 – 2:30 PM:** Lunch Break
- **2:30 – 5:45 PM:** Industry Session:
    1. ***Quantum Acceleration on HPC Platforms*** – Shri Abhishek Tiwari (Joint Director, C-DAC)
    2. ***Privacy-Preserving Quantum Authentication*** – Dr. Pankaj Kumar (Assistant Professor,

CUHP Dharmashala)
(Tea Break: 3:45 – 4:00 PM)

---

**Day 4: 7th February**

- **9:30 – 10:45 AM:** Lecture 13: ***Quantum Teleportation for Secured Communication*** – Dr. Kumar Gautam (Founder QRACE & Egreen Quanta)
- **10:45 – 12:00 PM:** Lecture 14: ***Quantum Fourier Transform (QFT)*** – Dr. P. Venkata Subba Reddy (Associate Professor, NIT Warangal)
- **12:00 – 12:15 PM:** Tea Break
- **12:15 – 1:30 PM:** Lecture 15: ***Shor's Algorithm & Quantum Cryptanalysis*** – Dr. P. Venkata Subba Reddy (Associate Professor, NIT Warangal)
- **1:30 – 2:30 PM:** Lunch Break
- **2:30 – 5:45 PM:** Lab Session: ***Implementing Shor's Algorithm in Qiskit*** (Tea Break: 3:45 – 4:00 PM)

---

**Day 5: 8th February**

- **9:30 – 10:45 AM:** Lecture 7: ***Quantum Cryptanalysis of Symmetric Ciphers*** – Dr. Ravi Anand (Assistant Professor, IIIT Delhi)
- **10:45 – 12:00 PM:** Lecture 8: ***PQC Transition and Applications*** – Dr. N. Subramanian (Executive Director, SETS Chennai)
- **12:00 – 12:15 PM:** Tea Break
- **12:15 – 1:30 PM:** Lecture 9: ***Post-Quantum DNSSEC and Its Security Extensions*** – Prof. Mahavir Jhawar (Ashoka University)
- **1:30 – 2:30 PM:** Lunch Break
- **2:30 – 5:45 PM:** Lab Session: ***Quantum Attack Resistance Signatures*** (Tea Break: 3:45 – 4:00 PM)

---

**Day 6: 9th February (Assessment & Valedictory)**

- **9:30 – 11:30 AM:** Lecture 16: ***Pedagogy –*** Prof. Neelima Gupta (University of Delhi)
- **11:30 – 11:45 AM:** Tea Break
- **11:45 – 1:00 PM:** ***Assessment Session*** (MCQ-Based)
- **1:00 – 2:00 PM:** Lunch Break
- **2:00 PM Onwards:** ***Valedictory Session & Certificate Distribution***

---

*****