# ONLINE FACULTY DEVELOPMENT PROGRAM (FDP)
## ON
# Quantum Computing : Algorithms and Applications
### (15-07-2024 to 19-07-2024)
### Organized by
## Department of Computer Science and Engineering, NIT Warangal
### in association with
# CENTRE FOR TRAINING AND LEARNING, NIT Warangal
*(Established under the PMMMNMTT Scheme, Ministry of Education, Govt. of India)*

## Preamble:

The Centre for Training and Learning (CTL) has been established at NIT Warangal with grants from the Min. of Education, through its scheme *"Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT)".* Under this Scheme, a separate building has been built exclusively for the CTL activities, with the state-of-art training facilities that include a studio for production and uploading of video and e-lectures on various subjects of higher education, training halls to train the faculty in various theme areas of Science and Technology, humanities and social sciences, linguistics and communication skills, pedagogy and cognition evaluation, etc. among others. One of the important objectives of the Centre is to conduct training programmes for the aspiring, newly inducted and in-service faculty in science, engineering, social sciences disciplines in higher education. Other activities of the CTL include preparation of print and e-learning materials, offering on-line courses, curriculum design, carrying out research in educational technology and pedagogy and integrating with ICT into teaching-learning process. The CTL has special programmes of training for the marginalized and women-faculty.

## About FDP:

Quantum computing is becoming increasingly popular worldwide with several countries with flagship grants and several big private companies trying to make quantum computers. One of the reasons is the strategic importance related to cryptography since Shor`s quantum algorithm can break many of the existing cryptosystems. Quantum computing is also finding applications in diverse areas like finance, chemistry, Artificial Intelligence, simulation, communication, etc. This FDP offers the opportunity to become familiar with this increasingly popular and important growing technology.

## Major Course Contents:
- Introduction to Quantum Computing
- Qubits, Unitary Transformations and Measurements
- Tensor Products and Dirac Notation
- Superdense Coding
- Reversibility, Quantum Gates and Quantum Circuits
- Representation of Qubits on Bloch Sphere
- Deutsch-Jozsa Algorithm and Simon`s Algorithm
- Bernstein Vazirani Algorithm
- Quantum Fourier Transform
- Grover`s Search Algorithm
- Shor`s Algorithm
- Foundation of Quantum Computational Advantage
- Quantum Algorithms for Quantum Image Processing
- Practical Limitations on Quantum Internet
- Post Quantum Cryptography

## Faculty conducting this programme:

The programme will be conducted by the faculty members from NIT Warangal and Academicians in the concerned field from IITs/NITs/IIITs have been invited to deliver lectures in the programme.

## Registration Fee Particulars:

| Faculty | Rs.1000/- |
|---|---|
| Students / Research Scholars | Rs. 500/- |
| Industry Participants | Rs. 2000/- |

Participants need to pay the registration fees online using the following details

| Online Transfer Details |
|---|
| Account Name: **HEAD, CTL NITW** |
| Account No: **40376545007** |
| IFSC: **SBIN0020149** |
| Bank and Branch: **SBI, NIT(REC) Warangal** |

## How to apply:

Participants are required to fill the online registration form by clicking on the following link:

https://forms.gle/e4govBHGZNRT1irPA

## Selection Criteria:

**Selection will be done based on first-come-first-serve to a maximum number of ~~50 (fifty)~~ 100.** The list of selected participants will be intimated through e-mail. In case the candidate is not selected, the registration amount will be refunded. Candidates will be issued certificates on successful completion of the course.

## Important dates:

| Last date (Online Application) | ~~June 22, 2024~~ **July 13, 2024** |
|---|---|
| Selection List by E- mail | July 01, 2024 (Round 1) July 14, 2024 (Round 2) |

## About NIT Warangal:

National Institute of Technology Warangal, formerly known as Regional Engineering College was established in 1959. Over the years it has developed into a premier institute of higher learning and is ranked among the top technical education institutions in India. There are 14 Departments offering eight undergraduate and 31 post-graduate programs besides doctoral programs. About 5000 students across the country and about 500 international students' study on the campus. It is a fully residential campus sprawling over 250 acres with excellent infrastructure in the form of state-of-the-art library, seminar halls, guest houses and research laboratories.

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## Department of Computer Science and Engineering
## National Institute of Technology Warangal

1. Name :

2. Designation :

3. Institution :

4. Email :

5. Mobile No :

6. Payment Details
   Reference No:

   Amount:

   Bank :

   Date:

7. Address for Correspondence:

8. Educational Qualification:

9. Subjects taught so far:

10. No. of refresher courses/workshops attended:

11. Experience (in years):

12. Teaching: Research: Industry:

### Declaration
The information provided is true to the best of my knowledge. If selected, I agree to abide by the rules and regulations of the FDP and shall attend the course for the entire duration. I also undertake the responsibility to inform the coordinator in case, I am unable to attend the course.

**Date:**
**Place:**            **Signature of the Applicant**

It is requested to all the delegates, after completion of application form, all the payment details, screenshot of the payment and scanned application form must be uploaded in the following online registration link. The sponsorship certificate is not mandatory. For further details related to the FDP you may contact the coordinators.

**Registration Link:**
**https://forms.gle/e4govBHGZNRT1irPA**

For more details about CTL of NIT Warangal, please visit:
https://nitw.ac.in/tlc

**For more enquiries please contact:**
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and

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**Email: ctl_hod@nitw.ac.in**

## Coordinators

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