PANIMALAR ENGINEERING COLLEGE

An Autonomous Institution

Affiliated to Anna University, Chennai
(JAISAKTHI EDUCATIONAL TRUST)

AICTE ATAL SPONSORED

FACULTY DEVELOPMENT PROGRAM

On

" Quantum Computing – Research Perspective in Communication & Healthcare Industry "

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Dr.P.Chinnadurai, M.A., M.Phil, Ph.D.,
Secretary & Correspondent,
Panimalar Group of Institutions

Dr. C. Sakthi Kumar M.E, Ph.D.,
Director,
Panimalar Group of Institutions

Mrs.C.Vijayarajeswari,
Director,
Panimalar Group of Institutions

Dr.Saranya Sree Sakthi Kumar B.E., M.B.A., Ph.D.,
Director,
Panimalar Group of Institutions

About the College

Panimalar Engineering College, a Christian Minority Institution of Higher Education governed by JAISAKTHI Educational Trust aims at imparting quality engineering education for the aspiring youth. The College is accredited by the National Board of Accreditation (NBA) in New Delhi, approved by the All India Council for Technical Education (AICTE), and recognized by the University Grants Commission (UGC) with 12(B) & 2(f) status. The Trust established Panimalar Engineering College in 2000, aligning with the government of Tamilnadu's policy to prioritize meeting the demand for skilled engineers for various industrial and development projects within Tamilnadu and across India.

B.E. - Computer Science & Engineering
B.E - Electronics & Communication Engineering
B.E - Electrical & Electronics Engineering
B.E - Mechanical Engineering
B.Tech. - Information Technology
B.Tech - Computer Science & Business Systems
B.Tech - Artificial Intelligence & Data Science
B.Tech - Artificial Intelligence & Machine Learning
M.E. - Computer Science and Engineering
M.E. - Communication System
Ph.D.- Computer Science and Engineering
Ph.D.- Electronics and Communication Engineering
M.B.A. - Master of Business Administration

The college maintains high standard of education by providing a wide array of world class of academic facilities, employing highly qualified and experienced faculty members and creating an ambience conducive of quality education.

About the Department

The Computer Science and Engineering Department offers both Undergraduate and Postgraduate programs & the Department is recognized Centre by Anna University to offer Ph.D. programmes. It provides an excellent ambiance for students to learn and acquire the necessary skills required by the IT Industry & Research. Technological Innovation is so rapid in this field that continuous education is essential to enhance the skill set of students keeping in pace with the current trends. The Department has experienced faculty members who are fully committed to Teaching and Research.

The students have access to well equipped, State- of-the-art Laboratories. A wide range of activities undertaken in the Department allow the students to gain contemporary knowledge of the basic problems in the IT industry. The advance curriculum requires the students to take up a broad spectrum of courses with special emphasis on desired areas of specialization. The Department maintains an excellent interaction with IT industry and organizes regular Guest Lectures by experts, Industrial visits, Internships etc., for Industry -

Objective of the FDP

To provide a conceptual comprehension of how the Technology of Quantum Computing can be applied in various fields. This FDP gives a Practical Introduction to Quantum Computing Fundamentals. Participants will gain an understanding of Qubits and gating operations, construct Quantum Circuits, and study Quantum Algorithms. Participants will also learn how to construct and execute Quantum Circuits using Qiskit and Python on Quantum Simulators and actual Quantum Hardware

About the FDP

This Faculty Development Programme aims to increase the level of knowledge of those involved in teaching, research, industry, and education by bringing them together. Both Quantum Computing (QC) and Quantum Information Science (QIS) have made significant progress in recent years.

Content of the FDP

- Introduction to Quantum Computing
- Quantum Algorithm and its Applications
- Quantum Architecture Model
- Basics of Quantum Operators & Universality Drug Design
- Quantum Cloud, Quantum Cryptography for Secure Cloud
- Role of Quantum Computing in Communication - BB84
- Hands on session using IBM Qiskit
- Quantum Computing in Revolution of AI
- Working with IBM's Qiskit for constructing reversible circuits
- Focus area of Quantum Computing in Health Care Industry
- Quantum Computing for Health Care Analytics
- Role of Quantum Computing in Health Sectors

Eligibility

The faculty members of AICTE approved Institutions, Universities, Research Scholars, participants from Government, Industry and professionals from R&D labs. Number of participants is limited to 50. There is no course fee and preference will be given to new participants. Selection of the participants will be based on the first come first serve basis.

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REGISTRATION

Registration is mandatory for all the participants of the FDP. The participants are requested to
register in the following ATAL link / QR code

https://atalacademy.aicte-india.org/signup

11th December – 16th December, 2023

COORDINATORS

DR. G. SENTHILKUMAR
PROFESSOR / CSE

DR. L. JABASHEELA
PROFESSOR & HEAD / CSE

Venue

Lab Block1 : Computer Centre2
Department of CSE

Important Dates

Last Date for Submission of Application: 30.11.2023

Intimation of Selection : 01.12.2023

Confirmation by Participants : 04.12.2023

Contact Details of Coordinator

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Panimalar Engineering College, Chennai 600 123
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CHIEF PATRON

Dr. P. Chinnadurai, M.A., M.Phil., Ph.D.,
Secretary & Correspondent,
Panimalar Group of Institutions, Chennai.

PATRON

Tmt. C. Vijaya Rajeswari,
Dr. C. Sakthi Kumar, M.E., Ph.D.,
Dr. Saranyasree Sakthikumar, B.E., M.B.A., Ph.D.,
Directors, Panimalar Group of Institutions, Chennai.

CHAIR

CO-CHAIR

Dr. K. Mani. M.E., Ph.D.,
Principal

Dr. Kavitha Subramani
Professor / CSE

Dr. V. Subedha
Professor / CSE

ORGANIZING COMMITTEE

Dr. K. Sangeetha / Assoc., Professor / CSE

Mrs. P. Deepa / Assoc., Professor / CSE

Mr. A. Karthikeyan / Asst., Professor / CSE

Mrs. C. Jackulin / Asst .,Professor / CSE

Mr. M. Mahendran / Asst Professor / CSE

RESOURCE PERSONS

Dr P MALLIGA, Professor, NITTTR, Chennai

Dr. R. SANKARANARAYANAN, Assoc., Prof., NIT, Trichy

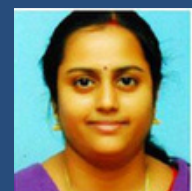**Dr. S. BALAKRISHNAN, HOD of Physics, VIT, Vellore**

Ms. V A PRABHA, Joint Director, CDAC, Chennai

Dr S. MANJULA GANDHI, Assoc., Prof., CIT, Coimbatore

Dr. M. GAYATHRI, Assoc., Prof., SRMIST, Chennai

Dr. S. NICKOLAS, Professor, NIT, TRICHY

Dr. M. VENKATESAN, HOD/CSE, NIT, Puducherry

Dr. A. V. REDDY Professor, NIT, Trichy

Dr.V.SHANMUGANEETHI Professor & Head, NITTTR, Chennai

PANIMALAR ENGINEERING COLLEGE, CHENNAI
Department of Computer Science and Engineering
AICTE Training and Learning (ATAL) Academy Sponsored FDP
on
"Quantum Computing – Research Perspective in Communication & Healthcare Industry"
(11th December to 16th December 2023)

Session-wise time-table

Day / Session Time	11.12.2023 (Monday)	12.12.2023 (Tuesday)	13.12.2023 (Wednesday)	14.12.2023 (Thursday)	15.12.2023 (Friday)	16.12.2023 (Saturday)
9:00 am - 9:30 am	Inauguration					
9:30 am - 12:00 Noon	Introduction to Quantum Computing. Quantum Algorithm and its Applications. Dr P MALLIGA, Professor, NITTTR, Chennai	Quantum Cloud, Quantum Cryptography for Secure Cloud Computing Dr. G.SENHILKUMAR, Professor, PEC, Chennai	Quantum Computing in the Revolution of AI. Its impact in Communication Industry. Dr.V.SHANMUGANEETHI, Prof & Head, NITTTR	Experimental Quantum Key Distribution Systems Dr. R. SANKARANARAYANAN, NIT Trichy	Industrial Visit Quantum Computing, Qkrishi Lab, SRMIST, Chennai. (or) CQuICC - Centre for Quantum Information, Communication and Computing, IIT, Madras	Role of Quantum Computing in Health Sectors Drug Design, Analysing DNA Dr. M. VENKATESAN, HOD/CSE, NIT, Puducherry
12:00 Noon - 1:00 pm	Article discussion 1 Dr P MALLIGA, Professor, NITTTR, Chennai	Article discussion 2 Dr.NATARAJAN VENKATACHALAM Scientist at Society For Electronic Transactions and Security (SETS),Chennai	Article discussion 3 Dr.V.SHANMUGANEETHI, Prof & Head, NITTTR	Article discussion 4 Dr. R. SANKARANARAYANAN, NIT Trichy		Health Applications – Sensors, Wearable Devices Dr. M. VENKATESAN, HOD/CSE, NIT, Puducherry
1:00 pm- 2:00 pm	Lunch					
2:00 pm - 4:30 pm	Quantum Architecture Model.Basics of Quantum Operators & Universality Dr. S. BALAKRISHNAN, HOD of Physics, VIT,Vellore.	Role of Quantum Computing in Communication Industry . BBS4 protocol Dr.GAYATHRI.M, Assoc. Prof. SRMIST	Working with IBM's Qiskit for constructing reversible circuits. Dr S. MANJULA GANDHI, CIT, Coimbatore	Focus area of Quantum Computing in Health Care Industry Dr. D. Karunkuzhali, Professor, IT,PEC	Quantum Computing for Health Care Analytics Dr. S. NICKOLAS Prof, NIT, TRICHY	MCQ, Feedbacks and Interactions
4:30 pm - 5:30 pm	Practical sessions/Labs Dr. S. BALAKRISHNAN, HOD of Physics,VIT, Vellore	Practical sessions/Labs Handson session using IBM Qiskit Dr. GAYATHRI.M, Assoc. Prof. SRMIST	Practical sessions/Labs Dr. S. MANJULA GANDHI, CIT, Coimbatore	Practical sessions/Labs Ms. V A PRABHA, Joint Director, CDAC, Chennai	Practical sessions/Labs Dr. A. V. REDDY Professor, NIT, Trichy	Valedictory Session

Target Participants: This FDP will be beneficial for PG students, Research scholars, faculty members and industry personnel's.