ANRF

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COLLEGE OF TECHNOLOGY
AFFILIATED TO ANNA UNIVERSITY | AUTONOMOUS

EMPOWER DREAMS
ENGINEER REALITIES

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Five Days National Seminar
on
Quantum Computing and Machine Learning Solutions: Pathways to Sustainable Development

09.12.2024 to 13.12.2024

Sponsored by

Anusandhan National Research Foundation (ANRF)

Organised by

Department of Sponsored Research and Consultancy

KCG College of Technology, Chennai -97

A+ NAAC

NBA
NATIONAL BOARD
of ACCREDITATION
AERO | CSE | ECE | IT

nirf
Engineering Ranking 2024
Band 201-300

About KCG College of Technology

KCG College of Technology (A unit of Hindustan Group of Institutions) was established in 1998 to fulfill the vision of Founder-Chairman, Dr. KCG Verghese "To Make Every Man a Success and No Man a Failure". KCG College of Technology affiliated to Anna University, Chennai is an Autonomous Institutionand approved by AICTE, New Delhi. The college offers thirteen under-graduate and four post-graduate programmes. Six under-graduate programmes (Mech, ECE, CSE, IT, EEE & Aero) have Permanent Affiliation under Anna University. Five under-graduate programmes – Aeronautical Engineering, Computer Science and Engineering (CSE), Electronics and Communication Engineering (ECE), Information Technology (IT) and Mechanical Engineering – are accredited by the National Board of Accreditation (NBA). The college is accredited by NAAC with A+ Grade. Six departments – CSE, ECE, EEE, Mechanical Engineering, Chemistry and Physics – have been approved as research centres by Anna University to offer Ph.D. programmes. The campus of KCG College of Technology is beautifully landscaped in a lush green stretch of land spread over 38 acres at Karapakkam, which is about 10 km from Adyar on the Old Mahabalipuram Road, the IT corridor of Chennai.

About the Department of Sponsored Research and Consultancy

The Department of Sponsored Research and Consultancy is looking after the recognition of Departments and collaborative research with Industrial Units/ R&D centres. It is also providing a platform for the faculty members to interact with other experts in their area of specialization within India and abroad which provide an opportunity for others to understand the research quality of KCG College of Technology and also pave the way for scientific collaboration. The college has been accorded recognition as a Scientific and Industrial Research Organisation(SIRO) by the Department of Scientific & Industrial Research Organisation (DSIR), Ministry of Science & Technology. The Anna University Approved Nodal Research Center of KCG College of Technology was established with the aim of accelerating research, publications, consultancy and to get funded projects in various areas. There are 42 Anna University approved Research Supervisors in the Research Center. Funds have been received by the college from various funding agencies namely - All India Council for Technical Education (AICTE), Ministry of Micro, Small and Medium Enterprises (MSME), Department of Tamilnadu State Council for Science and Technology (TNSCST), National Institute of Wind Energy (NIWE), Department of Science and Technology (DST), Indian Council of Medical Research (ICMR), Combat Vehicles Research and Development Establishment (CVRDE), Defense Research and Development Laboratory (DRDL), India Space Research Organisation (ISRO) and from professional societies - IET, IEI, IEEE. Research collaborations with foreign universities is also being carried out. The H- Index of research publications in scopus is 35. The institute has a tremendous achievement of filing patents in the previous academic years. This event is conducted in association with the Department of Electronics and Communication. The Department of Electronics and Communication engineering was started in the year 2011 owing to the huge demand for quality Electronics engineers in this country. It is accredited by NBA in the revised norms since June 2017.

About Anusandhan National Research Foundation (ANRF)

Anusandhan National Research Foundation (ANRF) - established through an Act of Parliament: ANRF Act, 2023, to provide high-level strategic directions for research, innovation, and entrepreneurship in the fields of natural sciences, including mathematical sciences, engineering and technology, environmental and earth sciences, health and agriculture, and scientific and technological interfaces of humanities and social sciences.

ANRF has been established to promote research and development and foster a culture of research and innovation throughout India's Universities, Colleges, Research Institutions, and R&D laboratories. ANRF acts as an apex body to provide high-level strategic direction of scientific research in the country as per recommendations of the National Education Policy. ANRF forges collaborations among the industry, academia, and government departments and research institutions.

"ANRF strategies should align with the goals of Viksit Bharat 2047 and implementation should follow global best practices adopted by research and development agencies across the world" – ANRF Governing Board

Contents of the National Seminar

- Introduction to Quantum Computing and Artificial Intelligence
- Quantum Algorithm and its role in Sustainable Systems
- Quantum Programming and Simulations
- UN Sustainable Development Goals
- Quantum Architecture Model and Memories
- Quantum GAN s for Drug Discovery
- Basics of Quantum Operators & Universality
- Handson session on Quantum Machine learning
- Quantum Cryptography and Cybersecurity
- Quantum Computing for improving Sustainability
- Quantum Machine Learning and Climate Change
- Research scope in Quantum Hardware Research
- Quantum Computing for developing sustainable solutions for the future
- Hands on session using IBM Qiskit and Quantum Machine Learnin

Benefits of the National Seminar

1. Foster interdisciplinary expertise by bridging quantum computing concepts with AI and ML techniques.
2. Facilitate collaboration and networking among educators, researchers, industry, and practitioners interested in quantum computing.
3. Exploration of Research Opportunities in Quantum Computing & QML for sustainable development.
4. Development of Collaborative Projects and empowering educators to drive quantum machine learning advancements, enhancing institutional capabilities, engaging with industry, and contributing to the broader quantum community while preparing students for emerging quantum technologies and sustainability .

Outcomes of the National Seminar

• Discuss the Foundations, Mathematics, Algorithms, and Programming associated with Quantum Computing for Sustainable Solutions.
• Review and Discuss Groundbreaking Technologies in Quantum Artificial Intelligence for a Sustainable Future. considering the benefits, existing technologies used, and current challenges for sustainable solutions
• Participants will learn to construct and execute Quantum Circuits using Qiskit and Python on Quantum Simulators and actual Quantum Hardware.
• Explore Quantum Algorithms and Develop Participants' Proficiency in Quantum Programming for Sustainability.
• Build Engineering Applications and Sustainable Solutions using Quantum Computing and Quantum Artificial Intelligence.
• Review the key technological breakthroughs currently trailblazing Quantum Computing and investigate the potential of Quantum Machine learning and Quantum Algorithms..
• Empower faculty members from engineering, industry, and pharmacy to learn and apply Quantum Computing and Quantum Artificial Intelligence concepts for their research, build projects, and develop applications for modern and sustainable systems in a short period, subsequently disseminating the knowledge to students and research scholars. Ultimately it will contribute to Vikasit Bharath. Quantum computers assisting with sustainable development can just save the planet and play a major role achieving United Nations sustainability goals.

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SUSTAINABLE
DEVELOPMENT
G♦ALS

Instructions

- TA will be provided to outstation participants subjected to the availability.
- Participants should submit the registration form duly signed by the head.
- Free accomodation will be provided
- Kindly upload Registration Form in Google Link

https://forms.gle/d6oVdsb21PZkNewn9

The participants are requested to bring the signed
hard copy of the registration form while attending the FDP.

Scan to Register

Registration Fees	₹ 500/-
Last Date for Submission of filled in application	01st Dec 2024
Confirmation of participants via Email	04th Dec 2024

Target Audience

Interested Faculty members, Research Scholars, UG / PG students or Industry Professionals from the Recognized Institution/ Industries can attend the Seminar.

Name of the account : **KCG COLLEGE OF TECHNOLOGY**

Bank Name : **UNION BANK OF INDIA**

Branch Name : **SSI Guindy, Chennai- 32**

IFSC code : **UBIN0552631**

Account No. : **526301010020010**

Kindly mention participant's name and organization while making the payment.

Highlights

- NIRF-Band 201-300 in 2024
- KCG-IIC rated with 4 stars by the Ministry of Education Innovation Cell for 2023
- Received Engineering Education Excellence Award - Commendable performance by Institute of Engineers India (IEI) for 2023
- Received a fund of 45 lakhs from MSME for Idea Hackathon 2.0
- Ranked 7th among Top EngineeringColleges in Chennai by The Week Magazine 2023
- Ranked 10th among Top Engineering Colleges in Chennai by India Today 2023
- Ranked 35th among Top Engineering Institutes in India by Times Engineering Institute Ranking 2023
- Winner of National IP Award 2021 & 2022 Special Citation on IIC by Office of the Controller General of Patents,Designs & Trademarks
- Winner of AICTE-CII Best Industry Linked Institute in 3 categories - Electrical & Allied Engineering , Electronics & Allied Engineering, CSE & IT in 2021

Important Dates

Last FDP Date for Receipt of Application: 1st Dec 2024
Intimation of Acceptance: 04th Dec 2024
Inauguration of the Programme: 09:00AM on 9th Dec 2024
  Duration: 09th – 13th Dec 2024

Contact Us

For any clarifications, please contact:

Dr. Deepa Jose - Convener,

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Five Days National Seminar

Quantum Computing & Machine Learning Solutions: Pathways to Sustainable Development

Registration Form   09.12.2024 to 13.12.2024

1. Name   :..

2. Salutation - Dr/ Mr/ Ms   :..

3. Designation   :..

4. Institution with address   :..
                            ....
                            ....

6. E-mail ID   :..

7. Academic qualification   :..

With specialization   ....
                            ....

8. Accommodation Needed   : Yes / No

9. Categories   : Faculty / Student / Scholar

Signature

Mr. / Ms. / Dr..is an employee of our institution and he / she is sponsored to attend the SERB sponsored National Seminar on Quantum Computing & Machine Learning Solutions: Pathways to Sustainable Development.

Date: Signature of Sponsoring
Place: Authority with office Seal

Mail : **deepa.ece@kcgcollege.com**
Phone : **+91 98409 29084**