



**NEHRU GROUP  
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# 1<sup>st</sup> International Conference on SCIENCE, ENGINEERING AND TECHNOLOGY

**(MULTI TRACK - VIRTUAL MODE)**

15<sup>th</sup> and 16<sup>th</sup> April 2022

**Website:** <http://surl.li/axdbl>

Track 1: Technology Innovation in Information Technology

Track 2 : Electric Power and Automation

Track 3: Advances in Thermal, Fluids and Structures

Track 4 : Advancements in Physical Science

Jointly organized by :

**Nehru Group of Institutions,  
Tamil Nadu & Kerala**

2022  
ICSET



## **NEHRU INSTITUTE OF ENGINEERING AND TECHNOLOGY**

Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai, Accredited by NAAC,  
Recognized by UGC with Section 2(f) and 12(B), NBA Accredited UG Courses : AERO, CSE, MECH

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## IMPORTANT DATES

Last date for full length paper submission: 22 February 2022  
Start date of conference Registration: 25 February 2022  
Last date for submission of camera ready paper: 15 March 2022  
Registration End date: 10 April 2022

## REGISTRATION

To participate in the conference, the author needs to register online and submit the paper using the link <http://shorturl.at/guLV3>. It is required that atleast one author of all accepted papers have to register for the conference to ensure that the paper is included in the proceeding. Only registered authors are allowed to present and publish their papers.

### Category

### Registration Fee

## INDIAN DELEGATES

Industry/ R & D	INR 8500
Academia & Research Scholars	INR 8000
Students	INR 7000

## FOREIGN DELEGATES

Industry/ R & D	USD 300
Academia & Research Scholars	USD 250
Students	USD 200

For detailed paper format instructions, visit :  
<http://surl.li/axdbl>

## PUBLICATION



Authors can submit abstracts and full manuscript of the proposed work relevant to the theme (s) of the conference before the deadline. Manuscript should contain the main objective(s) of the work, materials, methodology and results and discussions adopted. All the contributing authors are to be mentioned with their current affiliation below the title of the manuscript. Corresponding author's E-mail address and Mobile number have to be included while submitting the paper. All the papers that are registered and presented at the conference will be published in Springer Conference Proceedings Series (Scopus indexed).

## JOURNAL PUBLICATION

All manuscripts submitted will be peer-reviewed and accepted papers will be published in Scopus / WoS journals with the author's concern based on recommendation from technical committee. The Journal Publication processing fee is as per the norms of the publishers.

## CONFERENCE COMMITTEE

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## ABOUT NEHRU GROUP OF INSTITUTIONS

Nehru Group of Institutions (NGI) was established in 1968 at Kuniamuthur, Coimbatore, Tamil Nadu. As a centre of educational excellence to nurture, guide and ignite the spirit of the young minds. Late P. K. Das, the founder-chairman gave up his lucrative job in the Air Force and chose to pursue his dream of building a centre of educational excellence. Over the past 5 decades, NGI witnessed and shared the hardships and glories of the nation. Our motto of "Moulding True Citizens" has inspired the multitude of generations. NGI is committed to cultivate global citizens who will thrive in today's world and become tomorrow's leaders. NGI incorporates about 22 institutions in and around Tamil Nadu and Kerala, offers various fields of study such as Aeronautics, Engineering, Science, Economics, Management, Art, Medicine, Philosophy, Law, Literature, and Architecture. NGI was recognized by UGC, AICTE, MCI, BCI, DGCA, COA, PCI, INC, KNMC, DME, NAAC & NBA.

## ABOUT NEHRU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Nehru Institute of Engineering and Technology is a self-financing Engineering College, Approved by AICTE, New Delhi and Affiliated to Anna University Chennai, and Accredited by NAAC & NBA. NIET is established in the year 2006, under the able leadership of our Founder Chairman, Shri. P. K. Das, is now entering into its fifteenth successful year by marching ahead towards achieving the Vision and Mission of the Founder Chairman under the guidance of the most respected Managing Trustee Adv. Dr.P.Krishna Das, and the most beloved CEO and Secretary Dr.P.Krishna Kumar. In its fifteenth year of establishment, NIET has evolved into a multidisciplinary, research-focused and student centric Institution offering 11 academic programs, 8 Undergraduate level and 3 at Postgraduate level. NIET has adopted academic reforms to become internationally recognized for the quality of its teaching and learning process, research, and student enrichment. It is aimed at inculcating scientific integrity and human values to expand the boundaries of technologies, creativity and human knowledge, generating new insights and improving the quality of life by which an individual is moulded into a true citizen.

## OBJECTIVE OF ICSET 2022

The aim of the conference is a platform for knowledge dissemination and understanding in-recent advancement in science, engineering and technology. ICSET 2022, is structured in a way that the recent research outcome is discussed in 4 various themes and it is aimed to bring experts from research, academia, and industry in a single platform for the benefits of participants. Further, it is also aimed at faculty members, research engineers/scientists, full-time and part-time research scholars, who are actively involved in the research. The sessions are organized in such a way that participants of the conference will get a better insight into the recent proceedings in the area of science, engineering and technology. Moreover, it is planned to publish the peer reviewed and selected papers of conference as proceedings with Scopus / Web of Science.

## ICSET 2022 THEME

ICSET 2022 seeks original contributions in the following track areas, plus others that are not explicitly listed but are closely related:

### Track 1: Technology Innovation in Information Technology

Sensing and Sensor Networks, Low Power Design and VLSI Physical Design, MEMS and Nano-electronic Devices, Communication Theory and Information Theory, Wireless / Mobile Communications & Technologies, Digital Signal Processing Algorithms, Digital Filter Design & Implementation, Adaptive Signal Processing, Audio, Speech and Language Processing, Medical Signal Processing & Medical Imaging, Computational Intelligence, Human Computer Interaction, Computer Animation, Artificial Intelligence, Distributed and Parallel Processing, Automated Software Engineering, Computer Graphics and Multimedia, Computer Modeling, Machine Learning, Internet of Things.

### Track 2 : Electric Power and Automation

Modern Power Control and Power Converters, Smart grids, Micro Grid and Sustainable Energy, Optimization Techniques, Fuel Cells and Renewable Energy Systems, Industrial Drives and Robotics, FACTS & HVDC, Electric Vehicle, Intelligent Control Systems, Micro and Nano Engineering, Artificial Intelligence and Machine learning Studies, Energy Savings for Vehicular Technology, Future Challenges and Directions in Sustainable Energy, Insulating and Cable Engineering, Human-Machine Interface, Sensors, Actuators and Networks, Mechatronics Systems, Industrial Networks and Automation, MEMS and NEMS.

### Track 3: Advances in Thermal, Fluids & Structures

Fluid dynamics / Aerodynamics, Propulsion systems, Combustion, Computational Fluid Dynamics, Finite Element Analysis, Rotor dynamics, Optimization of Systems, CAD/CAM/CAE/CIM, Rapid Prototyping, Composites and micro mechanics, Wear, Tribology and NDT, Repair technology in composites, Vibration, Noise analysis and Machine design.

### Track 4 :Advancements in Physical Science

Crystal growth techniques, Low-dimensional and 2D materials, Multifunctional nano materials, Sensors, actuators and NEMS / MEMS, Nano magnetism and spintronics, Nano technology for energy harnessing, transport and storage, Nano structured solar cells and thermo-electrics, Polymer nano composites, Green chemistry and Biochemistry, Topology and Digital Topology, Stochastic Process, Differential equation & Difference equation, Fuzzy analysis, Game Theory, Number Theory.

## FOR QUERIES: Organisers, ICSET 2022 :

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## TRACK 1: TECHNOLOGY INNOVATION IN INFORMATION TECHNOLOGY

### ABOUT TECHNOLOGY INNOVATION IN INFORMATION TECHNOLOGY

Technology Innovation in Information Technology (TIIT-2022) is a two day technical event that provides a platform for leading researchers, academicians and industry experts to come together and exchange knowledge and views on global challenges in Electronics and Computer Science Engineering. This international conference is being jointly organized by the department of Electronics and Communication Engineering and Computer Science and Engineering, NIET in association with Computer Society of India (C.S.I) – Coimbatore branch. It is being planned to organize this event once in every year and TIIT 2022 is the first series which is being scheduled for 15th and 16th April 2022. The authors of all accepted papers will be invited to present their work during the conference and subsequently the papers will be published in a Scopus / Web of Science Indexed Proceedings.

### ABOUT ELECTRONICS AND COMMUNICATION ENGINEERING DEPARTMENT

The Department of Electronics and Communication Engineering is committed in providing the state-of-art technical education to the tomorrow's technocrats through dedicated quality teaching. The department was started in the year 2006 with a student intake of 60 and current intake is 90 students. The department is offering a postgraduate course in Communication Systems. The department has excellent infrastructure facilities with highly qualified and devoted faculty members having specialization in the areas of Mobile Communication, Wireless Networks, Signal Processing, Image Processing, VLSI & Embedded Systems. The department is having Centre of Excellence in Embedded System Powered by Texas Instruments and Internet of Things Lab powered by Intel.

### ABOUT COMPUTER SCIENCE AND ENGINEERING DEPARTMENT

The Department of Computer Science and Engineering was established in the year 2006. The Department of Computer Science and Engineering is a Center of Excellence in Computer Science and Engineering through Education and Research. The department has dedicated team of eminent faculty members and laboratories with Centre of Excellence - Intel Intelligent Systems Laboratory – Internet of Things and CISCO Incubator Laboratory. It is being recognized as the Nodal Resource Centre for the State of Tamil Nadu for the Spoken Tutorial by NMEICT, MHRD, Govt. of India. The department has obtained with the permanent Affiliation of Anna University, Chennai.

### CONFERENCE THEME

Sensing and Sensor Networks, Low Power Design and VLSI Physical Design, MEMS and Nano-electronic Devices, Communication Theory and Information Theory, Wireless / Mobile Communications & Technologies, Digital Signal Processing Algorithms, Digital Filter Design & Implementation, Adaptive Signal Processing, Audio, Speech and Language Processing, Medical Signal Processing & Medical Imaging, Computational Intelligence, Human Computer Interaction, Computer Animation, Artificial Intelligence, Distributed and Parallel Processing, Automated Software Engineering, Computer Graphics and Multimedia, Computer Modeling, Machine Learning, Internet of Things.

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## TRACK 2: ELECTRIC POWER AND AUTOMATION

### ABOUT ELECTRIC POWER AND AUTOMATION

Electric Power and Automation (EPA-2022) is a two-day technical event that aims to bring together academics and industrial experts in the field of Research & Practice to a common forum. It also provides a premier interdisciplinary platform for researchers, practitioners and educators to present and discuss the most recent innovations and emerging trends as well as practical challenges encountered and solutions adopted in the fields of electrical, electronics and mechatronics engineering. Eminent experts have been invited as keynote speakers to deliver the latest information in their respective expertise areas.

### ABOUT THE ELECTRICAL AND ELECTRONICS ENGINEERING DEPARTMENT

The Department of Electrical and Electronics Engineering was brought in the NIET Campus during the academic year 2008-2009. The department offers an undergraduate programme in Electrical and Electronics Engineering. The department has highly qualified, dedicated & efficient teaching staff and committed administrative staff in all disciplines. Laboratories such as Power Electronics and drives Lab, Control and Instrumentation Lab, Power system simulation Lab, Electrical Machines Lab, Electric Circuits lab and P.K. Das Energy Park are well equipped and designed in such a way so as to provide an industrial environment to the students. The Department has organized many Workshops, seminars, guest lectures, symposiums and industrial visits. Department of Electrical & Electronics Engineering has signed also MoU with IAEMP.

### ABOUT THE MECHATRONICS ENGINEERING DEPARTMENT

B.E. Mechatronics Engineering was introduced in the academic year 2011-2012 in direct response to the industrial demand for engineers with multi-disciplinary skills. The field of Mechatronics Engineering encompasses Robotics and Automation, Hydraulics and Pneumatics, Automotive Electronics, Sensors and Instrumentation and real time Embedded Systems which are fast growing technologies that would enable the development of automation. The Mechatronics Engineering program differs very significantly from the Mechanical Engineering program which allows engineers to design products with built-in intelligence. The department has well established laboratories and modernized infrastructure which bridges the gap between industry and academics. To make industry ready engineers of future, the department has a right blend of faculty members having expertise in inter disciplinary field of engineering.

### CONFERENCE THEME

Modern Power Control and Power Converters, Smart grids, Micro Grid and Sustainable Energy, Optimization Techniques, Fuel Cells and Renewable Energy Systems, Industrial Drives and Robotics, FACTS & HVDC, Electric Vehicle, Intelligent Control Systems, Micro and Nano Engineering, Artificial Intelligence and Machine learning Studies, Energy Savings for Vehicular Technology, Future Challenges and Directions in Sustainable Energy, Insulating and Cable Engineering, Human-Machine Interface, Sensors, Actuators and Networks, Mechatronics Systems, Industrial Networks and Automation, MEMS and NEMS.

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## TRACK 3: ADVANCES IN THERMAL, FLUIDS AND STRUCTURES

### ABOUT ADVANCES IN THERMAL, FLUIDS AND STRUCTURES

Advances in Thermal, Fluids and Structures (ATFS-2022) is a two day technical event that provides a platform for leading researchers, academicians and industry experts to come together and exchange knowledge and views on global challenges in thermal engineering, fluid dynamics and structural engineering. This international conference is being jointly organized by the department of Aeronautical Engineering and Mechanical Engineering, NIET. It is being planned to organize this event once in every year and ATFS 2022 is the first series which is being scheduled for 15th and 16th April 2022. The authors of all accepted papers will be invited to present their work during the conference and all the accepted papers will be published in as proceedings, indexed in Scopus - Conference Proceedings Citation Index - Science (CPCI-S). **International Journal of FME and International Journal of Vehicle Structures have given consent to publish the peer-reviewed papers of the ATFS 2022 conference.**

### ABOUT AERONAUTICAL ENGINEERING DEPARTMENT

The Department of Aeronautical Engineering at Nehru Institute of Engineering and Technology started in the year 2006 with an intake of 60 and progressing with an intake of 120 from the year 2007, affiliated to Anna University, Chennai and accredited by National Board of Accreditation (NBA), New Delhi. The department offers Under-Graduate course and Post-Graduate course. Since its establishment, department prepares technocrats to be competitive and best in class to join in the global industry.

### ABOUT MECHANICAL ENGINEERING DEPARTMENT

The Department of Mechanical Engineering was established in the year 2006. The Department of Mechanical Engineering aims at creating aspirants into Employable Engineers and Successful Entrepreneurs. The department provides excellent learning resources and research opportunities for scholars from Undergraduate to Doctoral level in a wide spectrum of areas. The department strives to continuously improve the quality of education through evolving of curriculum and its content in tune with contemporary technology, and develop innovative solutions to technological challenges.

### CONFERENCE THEME

Parallel technical sessions will run on different themes in thermal, fluids and structures. ATFS 2022, seeks original contributions in the following track areas. While the following list is a general guideline for authors, there is flexibility and prospective authors may suggest and include contribution on alternative themes in related other fields. All papers will

undergo a peer review process and will be put through a quality control system. The conference topics include,

Fluid dynamics, Aerodynamics, Propulsion systems, Combustion, Computational Fluid Dynamics, Finite Element Analysis, Rotor dynamics, Optimization of Systems, CAD/CAM/CAE/CIM, Rapid Prototyping, Composites and micro mechanics, Wear, Tribology and NDT, Repair technology in composites, Vibration, Noise analysis, Machine design.

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## TRACK 4: ADVANCEMENTS IN PHYSICAL SCIENCE

### ABOUT ADVANCEMENTS IN PHYSICAL SCIENCE

Advancements in Physical Science (APS-2022) aims to bring together the research scholars and the leading scientists from academic and industrial sector to exchange the knowledge and share their experiences and research outcomes about all aspects of Material Science and Chemistry. It provides a premier interdisciplinary forum for scientists, engineers, and practitioners to present their latest research findings, ideas, developments and applications.

### ABOUT THE DEPARTMENT OF SCIENCE AND HUMANITIES

The Department of Science and Humanities at Nehru Institute of Engineering and Technology is highly focused on imparting quality education to meet the global challenges of science and technology. The department plays a vital role in laying the strongest foundation so that the students are well equipped to stand up to higher education. The department comprises well-experienced and highly qualified faculty members from various disciplines such as mathematics, physics, chemistry, language (English) and soft skills training. Faculty members of the department have made consistent, pamper and strenuous efforts to the students to improve their learning process

### CONFERENCE THEME

Parallel technical sessions will be conducted on different themes in Physical science and Mathematical science. International Conference on advancement in science and Technology seeks original contributions in the following track areas. While the following list is a general guideline for authors, there is flexibility and prospective authors may suggest and include contribution on alternative themes in related other fields. All papers will undergo a peer review process and will be put through a quality control system. The topics includes,

2D and 3D Nano Materials, Advanced Analytical Techniques, Advanced Biomaterials, Advanced Computational Materials, Advanced Energy Materials, Advanced Functional Materials, Batteries and Solid Electrolyte Materials, Environmental and Green Chemistry, Functional Inorganic Materials, Homogeneous, Heterogeneous and Biocatalysis, Materials in Green Technology, Materials Physics and Chemistry, Metals, Alloys, Metallurgy and Materials, Nano technology, Natural Product Synthesis, Nuclear and Radiation Chemistry, Optical, Electrical and Magnetic Materials, Organometallic Compounds, Peptide & Protein Synthesis, Polymers, Ceramics and Composite Materials, Small Molecule Activation, Solar Energy Materials, Surface Science and Engineering, Topology and Digital Topology, Neutrosophic Topology, Stochastic Process, Differential equation, Difference equation, Fuzzy

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6. Nehru Institute of Technology
7. Nehru College of Management
8. Nehru Institute of IT and Management
9. Nehru School of Management
10. Nehru School of Architecture
11. Nehru College of Architecture
12. Nehru College of Nursing
13. Nehru College of Nursing and Research Institute
14. Nehru Arts and Science College
15. Nehru Academy of Law
16. PK DAS Institute of Medical Sciences
17. Nehru College of Pharmacy
18. Nehru Institute of Health Sciences
19. Nehru College of Physiotherapy
20. Nehru Industrial School of Hotel Management
21. Nehru Technical Training College
22. Nehru International School



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