

Faculty Development Programme

on

Cryogenic Temperature and Nano Scale Semiconductor
Devices : Challenges of Self Heating, Variability and Reliable
Computing

09th July - 14th July 2026

Time: 9.00AM – 4.00 PM (Daily 6 Hours)



<https://www.iiitmanipur.ac.in>



How to apply?

<https://forms.gle/HgRWPEv4h2CF2pUVA> (FDP Registration Through: IIIT Manipur)

Chief Patron

Prof. Krishnan Baskar
Director, IIIT Manipur

Patron

EICT Academy (Phase II), NIT Patna

Prof. M. P. Singh
Professor, NIT Patna

Dr. B. C. Sahana
Associate Professor, NIT Patna

Dr. Nagesh Ch
HOD ECE, IIIT Manipur

Dr. Ramesh Ch. Mishra
Dean R&D, IIIT Manipur

Joint Principal Coordinators

Dr. Prabhat Singh
Assistant Professor, IIIT Manipur

Dr. G. Gopal
Assistant Professor, NIT Patna

Objective (Electronics & ICT Academy-Phase II)

- To conduct specialized FDPs for faculty/mentor training in line with the vision of MeitY by promoting emerging areas of technology and other high-priority areas that are pillars of both the "Make in India" and the "Digital India" programs.
- To promote synergy and collaboration with industry, academia, universities and other institutions of learning, especially in emerging technology areas.
- To support the National Policy on Electronics 2019 (NPE 2019) which envisions positioning India as a global hub for ESDM sector, including MeitY Schemes/policies such as Programme for Semiconductors and Display Fab Ecosystem; India AI; National Programme on AI, Production Linked Incentive Scheme for IT Hardware & Large-Scale Electronics Manufacturing; EMC; SPECS; Chips to System (C2S); etc.
- To support the vision of the National Education Policy (NEP 2020), which mandates that Indian educators go through at least 50 hours in professional development programmes per year.
- To design, develop & deliver specialized FDPs on emerging technologies/ niche areas/ specialized modules for specific research areas for Faculty in Higher Education Institutions (HEI), besides FDPs on multi-disciplinary areas connected with ICT tools and technologies and other digital hybrid domains, covering a wide spectrum of Engineering, and non-engineering colleges, polytechnics, ITIs, and PGT educators.

IIIT Manipur is an institution under Ministry of Higher Education, Govt. of India. IIIT Manipur was established in 2015 in order to develop Manipur as preferred destination for Information Technology (IT) related manpower and industry. IIITM offers six B.Tech courses in Computer Science and Engineering (CSE) and Electronics and Communication Engineering (ECE) and PhD/PostDoc in CSE, ECE and Humanities and Basic Sciences. It boasts modern infrastructure, cutting-edge laboratories, and a vibrant academic environment. IIIT Manipur is committed to high-quality education and advanced research, fostering innovation and global competence.

Topics to be covered

- Advanced Semiconductor Devices
- Physics Behind Cryogenic Temperatures
- Device-Algorithm In-Memory Computing
- Challenges in Semiconductor Devices
- Applications, Innovation & Future Pathways
- TCAD Tools (SILVACO, Sentaurus, GTS-Framework)

Who should attend?

Faculties, PhD scholars, PG/UG students, and industry professionals from various Engineering Colleges / Institutions / Research Organizations/ Industries can apply.

- Module 1:** Evolution of Semiconductor devices
Module 2: Advanced Non-Planar FET structures
Module 3: Emerging Materials and Devices
Module 4: Cryogenic CMOS Technology
Module 5: Self-Heating in Nanoscale Devices
Module 6: Variability/ Reliability in Devices
Module 7: Device-Circuit-Algorithm Co-design
Module 8: Hands-On on TCAD Simulation
Module 9: Case Studies and Research Trends
Module 10: Research Integration

Program Outcomes:

By the end of the FDP, participants will be able to:

- Understand the evolution of semiconductor devices from CMOS to advanced nanoscale architectures
- Analyze device physics and scaling challenges at nanoscale dimensions
- Gain insights into cryogenic CMOS operation and low-temperature effects
- Evaluate self-heating, variability, and reliability issues in modern devices
- Apply TCAD/EDA tools for device modeling and simulation
- Explore emerging devices and materials (GAA, nanosheet, nanowire, TMDCs)
- Understand device-circuit-algorithm co-design for AI and in-memory computing
- Analyze recent research trends in nanoscale and cryogenic electronics
- Develop strategies for reliability-aware VLSI design
- Integrate concepts into teaching, research, and industry applications

Resource Persons:

- Prof. Sudeb Dasgupta
- Prof. Rajeevan Chandel
- Dr. Ashish Raman
- Dr. Navjeet Bagga
- Dr. Dharmendra Singh Yadav
- Dr. Bijit Choudhuri
- Dr. Wangkheirakpam Vandana Devi
- Dr. Kavicharan Mummaneni
- Dr. Prateek Kumar
- Dr. Jagritree Talukdar
- Dr. Bibhas Manna
- Dr. Malvika
- Dr. Chittotosh Ganguly

E ICT ACADEMY
SCAN & PAY



UPI ID : eictacademy@indianbk

Registration Link:

<https://forms.gle/HgRWPEv4h2CF2pUVA>

Last Date of Registration:

5th July 2026(5:00 PM)

Beneficiary Name: E AND ICT Academy

Bank Name: Indian /Allahabad Bank

A/C No.: 50380476798

IFSC Code: IDIB000B810

Registration Fee: ₹ 500/-

<https://eict.nitp.ac.in/>

Contact for queries:

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