Jointly Organized by
Electronics & ICT Academy

MNIT Jaipur
http://www.mnit.ac.in/eict

# Online FDP on
# Neuromorphic Computing Hardware & VLSI Architectures

5th Oct.–16th Oct.,2026

Faculty Development Programme
Electronics & ICT Academy under aegis of

Ministry of Electronics and Information Technology
Government of India

meity.gov.in/content/schemes-projects

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**Objective (Electronics & ICT Academy-Phase II)**

1)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.
2) To promote synergy and collaboration with industry, academia, universities and other institutions of learning, especially in emerging technology areas.
3) 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.
4) To promote standardization of FDPs through Joint Faculty Development Programmes.
5) 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.
6) To design, develop & deliver specialised FDPs on emerging technologies/ niche areas/ specialised 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.

An intensive 40 Hours Training Programme in Online mode is being organized for faculty and doctoral students of engineering and technological institutions. It is also open to working professionals from industry/organizations. The main theme of the training program will be oriented around exploring the state-of-the-art methods for Neuromorphic Computing Hardware & VLSI Architectures.

**Experts/Speakers-**

Experts will be from IITs, NITs, Industries and national laboratories.

**Tentative Programme Modules:**

**Module 1: Foundations of Neuromorphic Thinking-** Introduction to brain-inspired computing, Biological neuron & synapse structure, Action potentials, spike timing, Limitations of von Neumann architecture, Evolution from AI to neural networks to neuromorphic systems. Spiking Neural Networks (SNNs) vs. traditional ANNs

**Module 2: Devices and Circuits-** Neuromorphic circuits: analog, digital, and mixed-signal, CMOS, memristors, RRAMs, and phase-change materials, Crossbar arrays for synaptic weights, Low-power VLSI design for neuromorphic hardware

**Module 3: Architectures and Algorithms-** Spiking Neural Networks architecture, Neuromorphic learning rules, Event-driven computation and asynchronous processing, Neuromorphic chips, Benchmarking metrics: latency, power, energy, sparsity

**Module 4: Compute in Memory and Neuromorphic programing -**SRAM basics, SRAM compute in memory (CIM), SRAM compute in memory logic gates, adders, content addressable memory architectures. Relevance of SRAM CIM for neuromorphic computing architectures.
- Introduction to neuromorphic programming platforms, Neuromorphic dataset handling (DVS data), Simulation vs Deployment, Hybrid systems: edge AI with neuromorphic cores, Neuromorphic interfaces with robotics/sensors

**Module 5: Applications and Future Directions-** Edge computing: IoT, drones, smart sensors, Brain-machine interfaces and cognitive prosthetics, Anomaly detection in industry/aviation, Neuromorphic vision and event cameras, Challenges, ethics, and bio-mimetic philosophy, Future directions: quantum + neuromorphic, hybrid AI

**Programme Coordinator:**

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**Registration:**

Registration is open to faculty, working professionals, industry persons, doctoral, postgraduate and graduate students from India and rest of the world. Participants will be admitted on first-come first-served basis. Register online at– (http://online.mnit.ac.in/eict/) or scan QR

**Registration Fee: (excluding GST @ 18%)**

| Mode of programme | Academia (faculty/PhD Students): India/SAARC/Africa | Others: India/SAARC/Africa | Rest of the world |
|---|---|---|---|
| Online | Rs. 750/- | Rs. 1500/- | US $ 60/- |

(A) Fee once paid will not be refunded back.
(B) The fee covers online participation in the programme, tutorial notes and examination, certification charges etc.
(C) The registration amount may be paid through online mode- NEFT/UPI/Cards/SWIFT, provided at the registration portal.
(D) Detailed schedule will be shared after receiving registration form.**For any other query, email us at** fdp.academy@mnit.ac.in

**MNIT Jaipur**one of the oldest NITs, the institute has a rich heritage of sixty years producing world class engineers, managers, architects and scientists. Ranked 42nd nationally in the NIRF ranking-2025 (Engineering), the institute offers learning opportunities for undergraduate, postgraduate students, and researchers in various domains.Having a lush green campus of over 317 acres within the heart of the pink city, close to Jaipur International Airport, the campus offers a safe and lively environment. A world class teaching infrastructure, state-of-art laboratories welcome you at the campus.The institute has a vision to impart education of internationalstandards and conduct research at the cutting edge of technology.