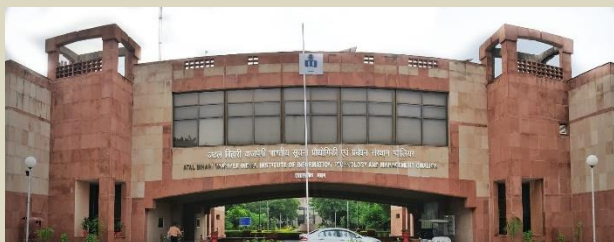


## About Electronics & ICT Academy at PDPM IIITDM Jabalpur



The Ministry of Electronics and Information Technology (MeitY), Government of India has instituted Electronics and ICT Academies in the year 2015. In the second phase, the academy at PDPM IIITDM Jabalpur aims at scalable training programmes in niche areas of Electronics and ICT for the development of the required knowledge base, skills and tools to unleash the talent of the Indian population. The Academy is identified by the MeitY as a hub of activities for capacity building through training, internships, research, and consultancy programmes in fundamental and advanced topics in electronics, information and communication technologies, the Academy conducts customized academic programmes for students, corporate sectors and researchers.

### ABV-IIITM Gwalior



Atal Bihari Vajpayee Indian Institute of Information Technology and Management (ABV-IIITM) Gwalior, established in 1997, is a premier autonomous institute recognized as an Institute of National Importance by the Government of India. Situated on a 160-acre campus near Gwalior Fort, it offers undergraduate, postgraduate, and doctoral programs in areas like Electrical and Electronics Engineering, VLSI, Computer Science, Information Technology, Management, and Engineering Sciences. The institute emphasizes interdisciplinary learning, integrating IT and management education, and is known for its cutting-edge research and strong industry connections.

## Faculty Development Programme (FDP) On Evolution and Trends in Nanoscale Devices and Packaging Technology

The primary objective of this course is to provide comprehensive insight into the evolution, current advancements, and future directions of nanoscale semiconductor devices and their packaging technologies. It aims to enhance understanding of the scientific and engineering challenges related to device miniaturization, integration, and performance enhancement at the nanoscale. Participants will explore emerging device technologies, innovative materials, and advanced packaging methods, including wafer-level, 3D integration, and heterogeneous packaging techniques. The course also intends to equip learners with the analytical tools, machine learning approaches and practical knowledge necessary to address reliability, thermal management, and signal integrity issues inherent in nanoscale device packaging, fostering preparedness for industry and research-oriented challenges in semiconductor technology.

**Who can attend:** Suitable for faculty from colleges, universities, and technical and professional institutes can attend. PhD Research Scholars, PG/UG student and Industry personnel also can attend this FDP.

### Important Dates:

**Last Date of Online Registration:** 30<sup>th</sup> August 2025

**FDP Dates:** 4-11 Sep. 2025

### Registration Link:

<https://forms.gle/3GtvHGzgZWFEKMKi9>

### Coordinators:

1. **Dr. Somesh Kumar**, Assistant Professor, NanoR Group, EEED, ABV-IIITM Gwalior, India.  
Ph. No. 7009594389; somesh@iiitm.ac.in
2. **Dr. Alok Kamal**, Assistant Professor, EEED, ABV-IIITM Gwalior, India
3. **Dr. Pankaj Sharma**, Assistant Professor, ECED, IIITDM Jabalpur

## Faculty Development Programme On Evolution and Trends in Nanoscale Devices and Packaging Technology Jointly Organized by Electrical and Electronics Engineering (EEE) Department, ABV-IIITM Gwalior



विश्वजीवनामृतं ज्ञानम्

and

Electronic and ICT Academy  
IIITDM Jabalpur



*An Initiative of the Ministry of  
Electronics and Information Technology,  
Government of India*



## Faculty Development Programme

On

### Evolution and Trends in Nanoscale Devices and Packaging Technology

**Date: 4-11 September 2025 (Hybrid mode)**

#### Resource Persons\*

Faculty Members across the globe will provide lectures and hands-on sessions.

- Dr. Pankaj Priyadarshi, University of Warwick
- Dr. Debasis Das, BITS Pilani, Goa Campus
- Dr. Avinash Lahgere, IIT Kanpur, India
- Dr. Shankar Kesarwani, IISC Bangalore, India
- Dr. Somesh Kumar, ABV-IIITM Gwalior, India
- Dr. Gaurav Kaushal, ABV-IIITM Gwalior, India
- Prof. Rohit Sharma, IIT Ropar, India
- Mr. Mukul Jangid, EDA TS, India
- Prof. Pankaj Srivastava, ABV-IIITM Gwalior
- Dr. Alok Kamal, ABV-IIITM Gwalior
- Dr. Pankaj Sharma, IIITDM Jabalpur
- Dr. Rahul Kumar, ANSYS, India
- Dr. Maanvi Bhatnagar, NDS Infoserv, Mumbai

#### Technical Industry Partners

- M/S Vidhilekha Soft Sol. Pvt. Ltd., Gurgaon, India
- Ansys, India

\*Tentative list

#### Coordinators

1. **Dr. Somesh Kumar**, Assistant Professor, NanoR Group, EEED, ABV-IIITM Gwalior, India.  
Ph. No. 7009594389; somesh@iiitm.ac.in
2. **Dr. Alok Kamal**, Assistant Professor, EEED, ABV-IIITM Gwalior, India
3. **Dr. Pankaj Sharma**, Assistant Professor, ECED, IIITDM Jabalpur

## Course Contents

- Overview of Scaling Trends and Nanoscale Challenges
- Emerging Nanoscale Devices:
- Advanced Fabrication Techniques
- Defect detection at sub-10nm nodes
- Material Innovations in Devices
- Trends in IC Packaging Technologies
- Reliability, Thermal & Signal Integrity
- RLC Modeling and Performance Metrics
- Machine Learning in VLSI and Packaging
- EDA Tools and Simulation Techniques
- Future Trends and Roadmaps

#### Hands-On Sessions

- Deep Learning for Transmission Line Fault Detection: Hands-on Implementation with Python and MATLAB Simulink
- Device Simulation on the TCAD tool.
- Interconnect Simulation on Ansys HFSS tool.
- Material Atomic Simulations on Quantum ATK tools.
- Circuit Simulation on Cadence.

#### Programme Features

- Comprehensive Technical Coverage of nanoscale device evolution, advanced IC packaging, material innovations, and fabrication techniques, including sub-10nm challenges.
- Machine Learning Integration in VLSI and packaging for fault detection, defect classification, yield optimization, and thermal/reliability modeling.
- Hands-on sessions using industry-standard tools like TCAD, Cadence, Ansys HFSS, QuantumATK, and MATLAB-Python for deep learning and simulation.

- Focus on Practical Challenges such as RLC modeling, thermal/signal integrity, electromigration, and sustainable packaging technologies.
- Future-Oriented Perspective covering IRDS roadmaps, 2.5D/3D integration, and green semiconductor technologies.

#### Registration Details

- Registration link – Please fill out registration using the following link:

<https://forms.gle/3GtvHGzgZWFEKMKi9>



- Registration fee: 1000/- INR for offline participation and 500/ for online participation
- **Last Date for Registration: 30<sup>th</sup> July 2025**
- Seats are Limited to **50** only (On a first come-first serve basis)
- **Sleeper class fare will be reimbursed to first 25 offline registered students.**

#### Online Payment Details

Beneficiary Name	ABV-IIITM ACCOUNT	FDP
Bank Name	Bank of India	
A/C No.	945210110009380	
IFSC Code	BKID0009462	

- **UPI ID: boi-945263969380@boi**
- **QR Code:**

