

About Electronics & ICT Academy at PDPM IITDM 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 IITDM 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.

About VIT Chennai

Founded in 1984, Vellore Institute of Technology (VIT) is one of India's premier institutions, recognized for excellence in education, research, innovation, and global collaborations. Established in 2010, VIT Chennai has rapidly evolved into a leading research-oriented campus under the leadership of Dr. G. V. Selvam, offering a vibrant academic ecosystem that fosters innovation, interdisciplinary research, industry collaboration, and application-oriented learning to address global technological and societal challenges.

Faculty Development Programme On

Wavelet Theory and Multi resolution Analysis: From Filter Banks to Real-World Applications

This Faculty Development Program (FDP) is designed to provide participants with a comprehensive understanding of wavelet theory, multiresolution analysis (MRA), and filter bank design, while emphasizing their practical implementation in modern engineering applications. The program bridges the gap between mathematical foundations and industrial practice by integrating theoretical lectures with extensive hands-on laboratory sessions.

Participants will gain insights into discrete and continuous wavelet transforms, perfect reconstruction filter banks, wavelet packet decomposition, lifting schemes, and advanced wavelet-based feature extraction techniques. Special emphasis will be placed on implementing these concepts using MATLAB and Python to solve real-world problems in signal processing, image analysis, biomedical engineering, machine learning, and emerging AI-driven technologies.

Who can attend: Suitable for faculty from colleges, universities, and technical and professional institutes can attend. Students, fresh graduates, researchers, and industry personnel working in allied disciplines can also attend.

Important Dates:

Last Date of Registration: 31 October 2026

FDP Dates: 02–14 November 2026

Coordinators:

Dr. Anil Kumar, PDPM IITDM Jabalpur
Dr. Ranjeet Kumar, VIT Chennai

Faculty Development Programme On

Wavelet Theory and Multi resolution Analysis: From Filter Banks to Real-World Applications

(02–14 November 2026 (Online))

Jointly Organized by

**Electronics and ICT Academy
IITDM Jabalpur**



and

**Vellore Institute of Technology,
Chennai**



VIT[®]
CHENNAI
Vellore Institute of Technology
(Deemed to be University under section 3 of UOE Act, 1986)

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



Faculty Development Programme

On

Wavelet Theory and Multi resolution Analysis: From Filter Banks to Real-World Applications

02–14 November 2026 (Online)

Resource Persons

- Prof. Vikram M. Gadre, IIT Bombay
- Prof. Aparajita Ojha, PDPM IITDM Jabalpur
- Prof. Rajesh Kumar Pandey, IIT (BHU) Varanasi
- Dr. Anil Kumar, PDPM IITDM Jabalpur
- Dr. Varun Bajaj, MANIT Bhopal
- Dr. Mitul Kumar Ahirwal, MANIT Bhopal
- Dr. Koushlendra Kumar Singh, NIT Jamshedpur
- Dr. Nikhil Agrawal, IIT Nagpur
- Dr. Saurav Gupta, VIT Chennai
- Dr. Ranjeet Kumar, VIT Chennai
- Dr. Anand Mahapatra, MathWorks Bangalore

Coordinators

Dr. Anil Kumar, PDPM IITDM Jabalpur

Dr. Ranjeet Kumar, VIT Chennai

Course Contents

- Fundamentals of Wavelet Theory and multiresolution analysis
- Multi-rate Signal Processing & Applications
- Design and of Digital Filters & filter-banks
- Real-World Engineering Applications of MRA, Time-frequency analysis, and Filter-banks.
- Bio-signals & Image processing & applications
- Radar/remote sensed signal/image processing

Hands-On Sessions

Participants will receive extensive practical training through guided laboratory exercises using MATLAB Wavelet Toolbox and Python:

- Multilevel decomposition and coefficient interpretation
- Design and implementation of filter banks
- Wavelet packet decomposition
- Wavelet-based signal denoising
- ECG and EEG signal analysis using wavelets
- Image denoising and enhancement
- Image compression using wavelet transforms

Programme Features

- Expert lectures by renowned academicians, researchers, and industry professionals.
- Balanced learning approach combining theory, algorithms, demonstrations, & implementation.
- Hands-on training using MATLAB and Python with real engineering datasets.
- Application-oriented sessions covering biomedical engineering, communications, AI, image processing, and industrial diagnostics.
- Industry-relevant case studies illustrating the transition from filter bank theory to practical systems. Wavelet filter banks form the foundation of applications such as denoising, compression, and multiscale feature extraction.
- Research-oriented discussions on recent developments in wavelets, multiresolution analysis, and hybrid AI approaches.
- Interactive Q&A with experts.
- E-certificate awarded to participants who successfully complete the FDP.

Registration Details

- Registration link – Please fill out registration using the following link:
<https://forms.gle/8ogfhmdm3qLC8XuP8>
- Registration fee: Rs. 500/- (for online participation)
- Last Date for Registration: **31 October 2026**

Online Payment Details

- **Internet banking**

Beneficiary Name	PDPM IITDM Jabalpur
Bank Name	Indian Bank
A/C No.	50018692852
IFSC Code	IDIB000M694

- **UPI ID:** **iiitdmj@indianbk**
- **QR Code:**



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