

One Week

Faculty Development Program

On

Smart Metasurfaces for Next-Generation Wireless Systems: Concepts, Design, and Applications

November 16th -20th 2026 (Online Mode)

Under the banner of Electronics and ICT Academy, National Institute of Technology Patna

IEEE AP-S/CRFID Chapter, Delhi Section

In association with

Faculty of Technology (FoT), University of Delhi

Motilal Nehru National Institute of Technology Allahabad



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Govt. of India.

ELECTRONICS AND ICT ACADEMY

The Ministry of Electronics and Information Technology, Government of India has instituted seven Electronics and Information & Communications Technology (ICT) Academies of which, the academy of NIT Patna is one. The Academy at NIT Patna aims to design and organize basic as well as specialized training programs in niche areas of electronics and ICT for the development of the required knowledge base, skills, and tools to equip the teaching community with better knowledge and understanding.

ABOUT FOT, DU

The Faculty of Technology (FoT), University of Delhi, is dedicated to excellence in engineering education, research, innovation, and technological advancement. It offers engineering programmes across diverse disciplines, fostering interdisciplinary learning and industry collaboration. With a strong focus on research-driven education, innovation, and societal impact, FoT provides an excellent academic environment for students, faculty, and researchers while contributing to the University of Delhi's vision of advancing knowledge and technology.

ABOUT MNNIT ALLAHABAD

Motilal Nehru National Institute of Technology Allahabad (MNNIT), Prayagraj, was established in 1961 as a Regional Engineering College through a joint initiative of the Government of India and the Government of Uttar Pradesh. On 26 June 2002, it became a National Institute of Technology and a Deemed University, fully funded by the Government of India. Under the NIT Act, 2007, it was recognized as an Institution of National Importance, effective from 15 August 2007. The Department of Electronics and Communication Engineering became an independent department in 1996 and offers B.Tech., M.Tech., and Ph.D. programmes. With 32 qualified faculty members, the department actively conducts research in antennas, wireless communications, signal processing, microelectronics, VLSI design, optoelectronics, embedded systems, and networking. It is also recognized as a Quality Improvement Programme (QIP) centre for M.Tech. and Ph.D. studies.

ABOUT THE THEME

The one-week Faculty Development Programme (FDP) on “Smart Metasurfaces for Next-Generation Wireless Systems: Concepts, Design, and Applications” aims to provide participants with comprehensive knowledge of emerging metasurface technologies and their role in shaping future wireless communication systems. Smart metasurfaces, particularly reconfigurable intelligent surfaces, enable intelligent control of electromagnetic wave propagation, improved signal coverage, enhanced spectral efficiency, and energy-efficient communication. The programme will cover fundamental principles, electromagnetic modelling, metasurface unit-cell design, phase manipulation, beam steering, polarization control, and practical design methodologies. Special emphasis will be placed on applications in 5G/6G communications, millimetre-wave systems, intelligent wireless environments, integrated sensing and communication, and advanced antenna technologies. Participants will explore electromagnetic simulation tools, computational techniques, recent research developments, and implementation challenges associated with smart metasurface systems. Expert lectures and technical discussions will facilitate knowledge exchange and encourage innovative research approaches. The programme seeks to strengthen teaching and research competencies, foster interdisciplinary collaboration, and promote technology-driven solutions for next-generation wireless networks. It will benefit faculty members, researchers and industry professionals working in electronics, communication engineering, electromagnetics, antennas, and related interdisciplinary fields.



FDP INCLUDES

In this FDP 05 days training will be conducted by experts from academia and industries with experience ranging several years to several decades in delivering within the country and abroad. The training hour 08 hours each day. The mode of training is instructor led live online.

- **40 Hours of Instructor-led live online Hands-on learning & Interactive Q&A Sessions.**
- Soft copy of study material, Training PPTs, recorded session & project code
- E-certificates will be given to participants who have **attended more than 70%** of the workshop sessions and complete the **assessment** at the end of the FDP.
- **Mode of conduction: ONLINE**
- Timings: Mon-Fri (09.00 AM- 06.00 PM)

TOPICS TO BE COVERED

- Fundamentals of Metamaterials and Smart Metasurfaces
- Electromagnetic Principles and Wavefront Manipulation
- Design and Analysis of Metasurface Unit Cells
- Reconfigurable Intelligent Surfaces: Concepts and Architectures
- Phase Control, Polarization Manipulation, and Impedance Engineering
- Beam Steering, Beamforming, and Wide-Angle Scanning
- Circularly Polarized Antennas and Metasurface-Enabled Antenna Design
- Electromagnetic Modelling and Simulation Using CST and Ansys HFSS
- Smart Metasurfaces for 5G/6G and Millimetre-Wave Communications
- Integrated Sensing and Communication (ISAC) Using Smart Metasurfaces
- Programmable and Dynamically Reconfigurable Metasurfaces
- PIN Diodes, Varactor Diodes, and RF Switching Technologies
- RIS-Assisted Wireless Communication and Coverage Enhancement
- Experimental Characterization, Fabrication, and Measurement Techniques
- Emerging Research Challenges and Future Directions in Intelligent Wireless Systems

RESOURCE PERSONS (TENTATIVE)

1. Prof. Mahesh P Abegaonkar – IIT Delhi
2. Prof. Vivek Ashok Bohara – IIIT Delhi
3. Dr. Somak Bhattacharyya – IIT (BHU) Varanasi
4. Dr. Mohammad Ameen, Research Fellow, National University of Singapore
5. Dr. Sambit Ghosh University of Alberta, Edmonton,
6. Dr. Rajan Agrahari – NIT Patna
7. Dr. Sanjeev K Yadav – University of Delhi
8. Dr. Anand Sharma, MNNIT, Allahabad
9. Dr. Jogesh Chandra Dash, NIT Rourkela
10. Dr. Nrusingha Charan Pradhan – CUK, Karnataka
11. Dr. Sougata Chatterjee, GMRT-TIFR
12. Dr. Raghavendra Singh, NSUT, New Delhi
13. Mr. Swapnil – Numeregion (TaraNG)
14. Dr. Nilotpal – Dr. Nilotpal, Keysight EDA
15. Other distinguished speakers from Academia and Industry

WHO CAN PARTICIPATE

Faculty members, Research scholars of recognized Universities from India and Abroad, Research scholars, and Industry personnels. However, priority will be given to the faculty members.

Selection will be made on a first-come, first-served basis.

REGISTRATION FEE

For Indian Nationals: Rs. 500/- (Faculty/ Research Scholar/Student), Rs. 500/- (Industry)

For Foreigners: 60 US Dollars (Faculty/Research scholar/student), 60 US Dollars (Industry)

REGISTRATION PROCESS

1. Registration fee should be paid through online mode, the account details for this purpose is

Account Name: NIT Patna
Account No.: 50380476798
IFSC Code: IDIB000B810
Bank Name: Indian Bank

E ICT ACADEMY

SCAN & PAY



UPI ID : eictacademy@indianbk



2.Registration form link:

<https://forms.gle/bAUUnSdxuPNcHf8T87>



3. The brochure of the program may be downloaded from the website <https://fot.du.ac.in/Home>

4. Registration deadline: **14th November 2026**

5. A PDF file of the online filled registration form with proof of registration fee paid should be sent by email drsamantaray@fot.du.ac.in and aksaurabh@mnnit.ac.in

ADDRESS FOR CORRESPONDENCE

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