AICTE TRAINING AND LEARNING (ATAL) ACADEMY

sponsored

Six Days FDP on

Hands-on Training, Research Aspects, and Demonstration in 5G Use Case Lab

16th-21st December 2024

(Offline Mode)

Organised by

Department of Electronics and Communication Engineering
Punjab Engineering College (Deemed to be University), Chandigarh

About PEC

With a history of more than 100 years Punjab Engineering College is a grant in aid institution under administration of Union Territory of Chandigarh, Government of India. The institute offers 8 undergraduate B. Tech programs and 14 postgraduate M. Tech and Ph.D programmes in various disciplines of engineering and technology. The faculty of academic departments and centers is involved in cutting edge research and development works. The institute collaborates very closely with research organizations, industries, alumni and other academic institutions both India and abroad, and has signed MOU's to pursue joint research in niche areas. For more details, visit website of the institute.

About ECE Department

The Department of Electronics and Communication Engineering was established in 1963. The Department offers B. Tech. degree courses in Electronics and Communication Engineering and one full time master's course namely M. Tech. Electronics (VLSI Design). The department also offers full time and part time PhD degree courses. Department has initiated a new B. Tech program in Electronics Engineering (VLSI Design and Technology). The department has excellent research facilities in the core and emerging areas of Electronics and Communication like Embedded systems, VLSI Design, Photonics and Optical Communication, Wireless Communication, Microprocessors, Digital Signal Processing etc. The Department has established, DOT (GOI) sponsored 5G Use Case Lab and a state-of-the-art clean room (funded by DST-FIST) facility for the fabrication of novel nano electronic devices. For more details, visit website of the department.

About ATAL

AICTE Training and Learning (ATAL) Academy, established by MoE, Govt. of India, holds the vision to empower faculty to achieve goals of higher education such as access, equity, and quality. Council understands that there is a need of the day to train the young generation in the skill sector and have faculty and technicians to be trained in their respective disciplines with latest tools and technologies.

The main objective of ATAL Academy is to plan and help impart quality technical education in the country and to support technical institutions in fostering research, innovation, and entrepreneurship through training in various emerging areas. It also provides a variety of opportunities for training and exchange of experiences such as workshops, orientations, learning communities, peer mentoring, and other FDPs. For more details, visit website of the ATAL Academy.

FDP Overview

The Faculty Development Programme introduces the participants about the tools and techniques to up-skill themselves on working with the latest technologies in the field of 5G and beyond. 5G, with its unprecedented speed and low latency, serves as the backbone of next-generation communications, enabling lightning-fast data transfer and connectivity for various devices. It fuels the Internet of Things (IoT), facilitating connectivity and enabling innovations like autonomous vehicles and smart cities.

The several hands-on experiments and demonstrations will be performed in the 5G use case lab of ECE Department, Punjab Engineering College, Chandigarh. The experimentation on 5G 24u Rack (5G core, mobile edge computing, IoT sensors analytics etc.); radio testing station (5G indoor, 5G evaluation board, 5G XR etc.); 5G Drone; Antenna mount; 5G camera etc. will be done. The hands-on work will also be performed on Netsim software to simulate 5G architectures with different user environments and on Optisystem software to implement 5G and beyond core network. The participants also get an opportunity for setting up an end-to-end wireless communication system. Some aspects of the 6G ecosystem will also be explored.

Objectives of the FDP

- To introduce the 5G technology and the research areas in the advanced wireless communication technology.
- To describe the benefits of performance parameters of 5G like higher data rates, low latency communications and enhanced digital experiences across a wide array of connected devices, from smart phones to enterprise laptops to IOT solutions.
- To demonstrate the several setups like radio unit, IoT devices, 5G camera etc. in 5G use case lab of ECE Department.
- To explain the different architectures of 5G and beyond network using Netsim, Optisystem and VPItransmissionMaker Optical System softwares in the communication lab of ECE Department.

Contents of the FDP

- Introduction to 5G Technology and Research areas.
- Demonstration of 5G USE CASE in 5G lab of PEC, Chandigarh.
- Simulation of 5G core and local network.
- AI and ML applications in 5G and beyond.
- LiFi in 5G
- 5G and 6G Antennas and many more

Outcomes of the FDP

- The FDP will provide the exposure of various 5G and 6G activities across globe and in India
- The FDP will provide hands-on experience on the 5G use case lab facilities and network tools.
- Skills enhancement of participants on Optsim, VPI and Optisystem software tools.
- The FDP will familiarize the advance research problems.
- Research collaboration opportunities with the experts and other participants.

Experts

Prof. Swadesh De
Professor, IIT Delhi

Prof. Manpreet Singh Manna
Former Director AICTE; Professor SLIET Longowal; VC, Chandigarh Univ.

Prof. Jyoteesh Malhotra
Professor and Dean Research, NIT Delhi

Mr. Ashok Kumar
Deputy Director General, Department of Telecommunication, GoI

Dr. Baban Bansod
Senior Principal Scientist, CSIO-CSIR Chandigarh

Prof. Akhilesh Mohan
Professor, IIT Roorkee

Prof. Sakshi Kaushal
Professor, Panjab University, Chandigarh

Prof. Ashwani Sharma
Associate Professor, IIT Ropar

Prof. Satyam Agarwal
Assistant Professor, IIT Ropar

Mr. Madhukar Tripathi
Associate Director, Anritsu India Pvt. Ltd.

Organizing Team

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Dr. Radhika Malhotra
Assistant Professor, DoECE
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Guidelines

- The FDP will be conducted in physical mode.
- TA will be given as per AICTE ATAL norms.
- For M.Tech and PhD candidates hostels may be arranged as per the availability. Faculty and Postdocs have to arrange it by own.
- Networking lunch will be arranged during the FDP.

Registration Link

Registration is compulsory for the participants. So kindly register before 5th December 2024.
(Registration is limited to 50 participants on a First come First serve basis).
For registration, use the following link:
Registration ID: https://atalacademy.aicte-india.org/login

Eligibility

The AICTE sponsored FDP is open to the faculty members of AICTE approved institutions, research scholars (Post-Doc/ Ph.D./ M.Tech), participants from government, industry (bureaucrats / technicians / participants from industry etc.) and staff of host institution.

Important Dates

Last date for application: **5th Dec. 2024**
FDP start-end dates: **16th Dec. 2024 to 21st Dec. 2024**

Venues

Event Venue: **Seminar Hall, DoECE, PEC Chandigarh**
Hands-on / Lab Venue: **5G Laboratory, DoECE, PEC Chandigarh**