AICTE Training and Learning (ATAL) Academy

Online
5 days Faculty Development Program
On
Architecture and Technologies for 5G and Beyond Wireless Networks

Department of Electronics Engineering,
Indian Institute of Technology (BHU) Varanasi
Date:16-20 August 2021

Course Objective: Explosive growth of mobile data traffic requires higher capacity, lower latency and higher energy efficiency in wireless networks. The electromagnetic spectrum with favorable communication properties below 20 GHz is almost completely expended. Research has been directed towards developing alternative technologies and utilizing alternative spectrum regions. These have culminated in the development of the Fifth Generation (5G), and 5G and beyond (5GB) wireless communication systems. The course will provide an overview of various technologies driving these future wireless communication networks. Further, the role of machine learning (ML) will be explored in 5GB wireless networks in the program. The course brings experts researching various aspects of future wireless communication networks. The program aims at providing direction and vision for future research and development in 5G and 5GB wireless networks.

Target Audience: Faculty Members, Research Scholars, Master Research Students and Industry Professionals
How to apply: https://atalacademy.aicte-india.org/login
Registration Fee: There is no fee to attend this FDP
Online Platform: Google meet

Tentative Course Schedule:

Days	10:00 to 11:30 AM	11:30 to 12:00 PM	12:00 to 1:30 PM	1:30 to 2:30 PM	2:30 to 4:00 PM
16/8/21	Inauguration and Overview	Break	Session-1 NOMA for 5G and Beyond	Break	Session-2 Caching in Cellular Networks
17/8/21	Session-3 Full duplex communications	Break	Session-4 Sparse Signal Processing	Break	Session-5 AI/ML for Communications-1
18/8/21	Session-6 AI/ML for Communications-2	Break	Session-7 Terahertz Communications	Break	Session-8 Massive MIMO
19/8/21	Session-9 VLC Communications	Break	Session-10 IRS-assisted Communication	Break	Session-11 Orthogonal Time Frequency and Space (OTFS)
20/8/21	Session-12 Hands on Experience and Interactive Session-1	Break	Session-13 Hands on Experience and Interactive Session-2	Break	Session-14 Quiz/Feedback Interaction and Validation

About Institute: The Indian Institute of Technology (Banaras Hindu University) owes its existence to Mahamana Pandit Madan Mohan Malviya, Bharat Ratna-the founder of the first residential university of modern India, the Banaras Hindu University. The three of the erstwhile engineering colleges of BHU, namely BENCO, MINMET and TECHNO, were merged to form the Institute of Technology (IT-BHU) in 1968 to provide an integrated educational base. The IT-BHU has been admitting students through the JEE conducted by the IIT's since 1972, and has been consistently ranked amongst the top few engineering institutions of the country. IT-BHU became IIT (BHU) in June 29, 2012 by an Act of Parliament. The Institute has maintained high academic standard since its inception. It has turned out luminary engineers and administrators who served the nation with great distinction

The IIT (BHU) Varanasi was ranked 9th and 11th by the National Institutional Ranking Framework (NIRF) in 2019 and 2020, respectively, among engineering colleges in India. IIT (BHU) Varanasi offers four-year program for the degree of Bachelor of Technology, five-year programs for Integrated Dual Degree and various postgraduate programs

About Department: Department of Electronics Engineering (DEE) came into existence as an offshoot of Electrical Engineering Department in the year 1971 (when Banaras Engineering College, College of Mining and Metallurgy and College of Technology had been amalgamated to form the Institute of Technology in its present form). The intake every year of the Department is 79 in the B. Tech. level and 47 in the M. Tech. level. Besides teaching students of our own discipline (Electronics Engineering), we also offer the basic courses in Electronics Engineering to almost all the Departments of the Institute, we also teach advanced-level courses to the students of Electrical and Computer Engineering Departments. The DEE has a close interaction with many reputed national R&D laboratories and leading software companies as well as foreign Universities in major thrust areas of wireless communications, signal processing, and microelectronics.

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