



Continuing Education Programme in Towards 5G and Beyond Communications

23rd – 27th December 2019
Indian Institute of Technology Indore



Overview

The past decade has seen many advances in wireless communication theory such as multiple input multiple output (MIMO), multi-user MIMO, Network MIMO, massive MIMO, full-duplex radio, millimeter wave (mmWave) communications, etc., have recently gain considerable research attention. While some of the technologies have been implemented in cellular systems such as LTE/LTE-A, others are being considered for 5G and beyond. This course takes a unified view of the fundamentals of wireless communication and the recent developments and explains the concepts underpinning these advances at a level accessible to an audience with a basic background of digital communications.

Objectives The primary objectives of the course are as follows:

Exposing participants to the fundamentals of wireless communication techniques.

Providing a deep understanding of advanced signal processing techniques associated with MIMO communications systems including array processing, beamforming, space-time coding, BLAST architectures, precoding technique and related information theoretic capacity limits.

Providing the students with a clear idea of single-user, multi-user and multicarrier communications, single and multi-cell (including the emerging small cell architectures) and ad-hoc networks.

Exposing the students to advance mobile communication techniques such as massive MIMO, mmWave, non-orthogonal multiple access (NOMA) communications, full-duplex radio and the Internet of Things (IoT).

Providing a hands-on experience on latest communication (LTE, massive MIMO) and signal processing techniques through labs and tutorials.

Teaching Faculty



Prof. Tharmalingam Ratnarajah is currently with the Institute for Digital Communications, University of Edinburgh, UK, as a Professor in Digital Communications and Signal Processing. His research interests include signal processing and information theoretic aspects of 5G wireless network, mmWave communications, and full-duplex radio. He has published over 375 publications in these areas and holds four U.S. patents. <http://www.profratnarajah.org>

Modules

S. NO.	TOPICS	DATE
1	Fundamental of wireless communications	23-24 Dec
2	Advanced topics: Massive MIMO, Full-Duplex, etc	25-26 Dec
3	Wireless edge caching and machine learning	27 Dec

Course Fee (includes breakfast and lunch, all instructional materials, computer use for tutorials, MATLAB programming and assignments):

Industry/ Research Organizations : Rs 10,000

Academic Institutions : Rs 5,000

Students : Rs 3,000

Max. Seats: 50

Last date for registration is 19th December 2019 and acceptance is on first-come-first basis.

Course Coordinator

Prof. Vimal Bhatia,
Discipline of Electrical Engineering,
Indian Institute of Technology Indore,
India-453552
Phone: 0732 4306 592
E-mail: vbhatia@iiti.ac.in
Website: <http://iiti.ac.in/people/~vbhatia/>

For Institute Accommodation and Charges

Contact at: IITI Guest House (guesthouse@iiti.ac.in)
or IIT Hostel (hostel@iiti.ac.in)

Registration

Register at: <https://forms.gle/LqdFmdxjGaYEGFK16>

For more information please contact at:

cepiiti2019@gmail.com

The fee can be paid online through the following steps:

<https://bit.ly/31LURQ9>>> Select Your Institute's Area
(see left pane of the page)>> Registration For Events
>> Select Fee Details >> CEP