



शिक्षा मंत्रालय
MINISTRY OF
EDUCATION

A Workshop on NGMA for 6G and Beyond Wireless Networks

14 December 2026

A one-day engaging workshop on Next-Generation Multiple Access for 6G and beyond wireless network



NANYANG
TECHNOLOGICAL
UNIVERSITY
SINGAPORE

Workshop Overview

Welcome to the Certification Program on Next-Generation Multiple Access (NGMA) for 6G and Beyond Wireless Networks. The program provides a comprehensive introduction to NGMA principles and techniques, with particular emphasis on their role in addressing the emerging requirements of sixth-generation (6G) wireless networks. NGMA enables multiple users to share the same resource block, such as a time slot, subcarrier, or spreading code, thereby supporting heterogeneous communication demands including low latency, high reliability, massive connectivity, improved fairness, and high throughput.

The program covers the fundamental concepts and emerging techniques of NGMA and provides a general framework through which several recently proposed 6G multiple-access schemes can be understood. Through lectures and practical components, participants will gain exposure to the technologies, applications, implementation aspects, and research challenges of NGMA, preparing students, researchers, faculty members, industry professionals, and R&D personnel to contribute to the development of 6G and beyond wireless communication systems.

The course will be delivered by Prof. Zhiguo Ding, Prof. Debarati Sen and Dr. Arzad Alam Kherani and includes topics such as NGMA grouping, MIMO-NGMA, cooperative NGMA, mmWave applications, machine-learning-assisted NGMA, movable antennas, and Pinching-Antenna Systems (PASS). The laboratory components further provide hands-on experience in NGMA power allocation, outage probability analysis, and MIMO-NGMA receiver design, helping participants develop practical skills and identify promising directions for future research and development.

Benefits of the program

- Gain a clear understanding of Next-Generation Multiple Access (NGMA) and its role in meeting key 6G requirements, including massive connectivity, low latency, high reliability, improved fairness, and high throughput.
- Understand advanced NGMA techniques such as hybrid NGMA grouping, MIMO-NGMA, and cooperative NGMA, including their performance-complexity trade-offs and achievable diversity gains.
- Explore practical NGMA applications in emerging wireless systems, including mmWave networks, movable antennas, and Pinching-Antenna Systems (PASS), with emphasis on next-generation 6G communications.
- Develop knowledge of machine-learning-assisted NGMA, particularly signal-processing approaches for beamforming and user association in mmWave-NGMA networks.
- Gain hands-on experience through MATLAB-based exercises, including NGMA power allocation, outage-probability analysis using order statistics, and zero-forcing-based MIMO-NGMA receiver design.
- Identify current challenges, open problems, and research opportunities in NGMA, enabling participants to formulate research directions and contribute to spectrally and energy-efficient 6G and beyond wireless networks.

Course Coordinator

Keynote Speakers



Prof. Vimal Bhatia,
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Prof. Zhiguo Ding
(NTU Singapore)



Dr. Arzad Alam
Kherani
(IIT Bhilai)



Prof. Chandra R.
Murthy
(IISc Bangalore)



Prof. Debarati Sen
(IIT Kharagpur)



Dr. Prabhat Sharma
(VNIT, Nagpur)

Scan
to
Register



Registration Fees (incl GST):

Students of IIT Indore : Free
Students outside IIT : ₹ 2000/-
Faculties and Industrial
personnel outside IIT : ₹ 4000/-
Registration Deadline: 13th Dec. 2026

Registration link

Register at: <https://forms.gle/agUenmtxE8jGPx1J9> or scan QR code.
For more information, please contact at: vbhatia@iiti.ac.in
Website: <https://sites.google.com/view/signalsoftware/sasg/>

📍 **Venue: IIT Indore**