Indian Institute of Technology Indore
Department of Electrical Engineering
Organizes
Anusandhan National Research Foundation (ANRF) Sponsored Two-day Workshop
on

Beyond 5G Wireless Technologies, Architectures, and Use cases

(19 & 20 December 2025)

About IIT Indore

IIT Indore is in Indore, a city that takes pride in being the cleanest city in India. Established in 2009 with the motto 'ज्ञानम सर्वजनहिताय (Knowledge is for the well-being of everyone)', it is a part of the prestigious IIT system known for delivering the highest standards of education and research in engineering, science, and technology across the nation. Over the years, IIT Indore has consistently demonstrated excellence through its strong academic programs, world-class faculty, and research-driven culture. Recently, IIT Indore has achieved remarkable success in national and global benchmarks. It is ranked **12th in Engineering**, **24th in Research**, and **27th Overall** in the **NIRF 2025** rankings announced by the Ministry of Education, Government of India. The institute is recognized for its vibrant research ecosystem, state-of-the-art laboratories, and emphasis on innovation and entrepreneurship. With its growing presence in national missions, international projects, technology development initiatives, and its expanding innovation and incubation ecosystem, IIT Indore continues to emerge as one of the fastest growing and most impactful technical institutes in India.

Course Features

- Certificate to the participants on successful completion of the course
- Course materials and stationery/consumable items will be provided to the participants

General Information

- **Eligibility:** Faculty members working in academic institutions with specialization relevant to wireless communications and networks. Participation may be extended to motivated students and post-doctoral researchers from reputed institutions, contingent on their interest and alignment with the course objectives
- **Accommodation** for participants may be provided in the IIT Indore hostel/guest house based on availability, if requested.
- Daily essentials such as stationery, consumables, lunch, snacks, etc. for participants will be covered under the registration fee.
- Travel and accommodation charges, including dinner and breakfast, must be borne by the participants
- The number of seats is limited; hence, early registration is advised.

Course Timings
10:00 AM – 04:30 PM
Course Date
19 & 20 December 2025
Venue
LRC Seminar Hall, IIT Indore
Mode of Workshop
Physical

Last Date of Registration

17 Dec 2025

Registration Details:

- **Registration Fee: Rs 1180/- (Inclusive of GST)**
- **Online payment Link:** Pre-Payment Pages
- **After payment, complete the registration using the following link:** REGISTRATION LINK

Brief description about the workshop

This workshop offers a comprehensive introduction to the cutting-edge developments that will define next-generation communication systems. It brings together emerging concepts, advanced physical-layer techniques, intelligent network architectures,

and AI-driven communication methods to provide participants with a complete understanding of the technological landscape beyond 5G. The sessions cover the evolution of wireless networks, highlight key innovations enabling ultra-high data rates, low latency, global coverage, and enhanced reliability, and discuss how future communication infrastructures will seamlessly integrate terrestrial, aerial, and space-based connectivity. Participants will also explore how intelligent surfaces, optical wireless technologies, and advanced coding schemes contribute to improved performance and energy efficiency. A major component of the workshop includes practical exposure through simulation-based activities and demonstrations in 5G Use Case labs at IIT Indore. These hands-on sessions are designed to bridge theory with practice, allowing participants to experiment with state-of-the-art tools, testbeds, and real-world scenarios

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Tentative Workshop Contents

- Non-Terrestrial Networks (NTNs)
- Intelligent Reflecting Surfaces (IRSs) – Modelling to Fabrication
- Integrated Sensing and Communication (ISAC)
- Free Space Optics (FSO) and Visible Light Communication (VLC)
- LDPC and Polar Codes for 5G Communications
- Machine Learning Based Intelligent Receiver Design
- **Hands-on-Training Sessions using MATLAB and at 5G Use Case Labs**

Expert Speaker(s):

Experts from IIT Indore will be delivering talks along with hands-on training sessions in the state-of-the-art research labs.

Biography of the Coordinator:

Dr. R. Swaminathan (Senior Member, IEEE) is an Associate Professor and Head of the Department of Electrical Engineering at the Indian Institute of Technology (IIT) Indore. He earned his Ph.D. from IIT Kharagpur in 2016. From 2015 to 2019, Dr. Swaminathan served as a Postdoctoral Research Fellow at Nanyang Technological University (NTU), Singapore, and later as a Visiting Faculty Member there in July 2023 and 2024. He joined IIT Indore as an Assistant Professor in 2019 and has been an Associate Professor since October 2023. Dr. Swaminathan has authored and co-authored over 100 research publications, including journal articles, IEEE conference papers, book chapters, technology disclosures, patents, and a textbook. His research interests span Wireless Communications, Communication Systems, and Coding Theory.

He has received several notable recognitions, including the Best Research Paper Award at IIT Indore (2025) and being featured among the Top 2% Scientists in the World (2025) in a global study by Stanford University, USA. In 2021, he was recognized as an Exemplary Reviewer by the IEEE Communications Society, USA, for his outstanding contributions to *IEEE Communications Letters*. He was also honoured with the Gold Medal from the College of Engineering, Guindy, Anna University, for academic excellence. Dr. Swaminathan has delivered numerous invited talks on Entrepreneurship and Wireless Communications at premier engineering institutions. He actively contributes to the global research community as a reviewer for leading IEEE journals and as a Technical Program Committee (TPC) member for major IEEE conferences.

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