

Course Relevance:

The advent of fifth-generation (5G) communication has opened the door to a new era in which devices beyond mobiles can also connect to the cellular network. The recent trend has seen exponential growth in the number of heterogeneous devices connected to the network and the data they generate. Furthermore, sixth-generation (6G) communication will be introduced soon, enabling connectivity to everything, every time. The types and numbers of devices, as well as the generated data, will continue to increase. To meet the requirements of such trends, there has been continuous evolution in signal processing and communication aspects. In particular, machine learning is going to play a major role in dealing with the tremendous number of devices and the volume of data generated. Paradigm shifts toward integrating non-terrestrial networks with the cellular network will support ubiquitous connectivity in 6G. There is a list of several technological shifts that will support recent advances in communications and data processing. This short-term course aims to cover a few of those intriguing techniques in the five-day span of time. The course is also supported with some hands-on and experimentation sessions.

Course Objectives:

- To provide a comprehensive overview of the evolution of wireless communications towards 6G.
- To introduce recent trends in signal and image processing for next-generation communications.
- To demonstrate the state-of-the-art enabling technologies for 5G and beyond, like non-terrestrial communications, underwater communications, OTFS, IoT, integrated sensing and communication, machine learning, etc.
- To introduce advanced computational tools for performance and signal analysis in 6G wireless networks.

Topics to be Covered:

- Recent advances in communications
- Machine learning for wireless networks
- Machine learning for signal and image processing
- Model-based learning
- 5G from space
- OTFS waveform
- Integrated sensing and communication
- Machine learning application to GPR
- Semantic communication
- Underwater communications
- Massive MIMO wireless communications
- Energy harvesting communications
- Integrated space-aerial-terrestrial networks
- Multiple access techniques

Speakers:

- Prof. Poonam Singh, NIT Rourkela
- Dr. Santos Kumar Das, NIT Rourkela
- Dr. Siddharth Deshmukh, NIT Raipur
- Dr. Brijesh Kumbhani, IIT Ropar
- Dr. Kalpant Pathak, Qualcomm, Bengaluru
- Dr. Sourabh Solanki, NIT Warangal
- Dr. Pankaj K. Sharma, NIT Rourkela
- Dr. Pawan Kumar, NIT Rourkela
- Dr. Sobhan Kanti Dhara, NIT Rourkela
- Dr. Vinay Bankey, NIT Rourkela
- Dr. Upendra Kumar Sahoo, NIT Rourkela
- Dr. Ajit Kumar Sahoo, NIT Rourkela
- Dr. Shrishailayya M. Hiremath, NIT Rourkela
- Dr. Anirban Bhowal, NIT Rourkela
- Dr. Prasad Naik Ramavath, NIT Rourkela
- Dr. Sandip Ghosal, NIT Rourkela

Five-day Short-term Course on **Emerging Technologies for Communications and Signal Processing: Towards 6G and Beyond**

**Hybrid Mode
(Offline and Online)**

16th – 20th March 2026

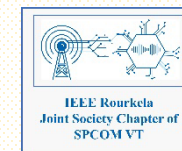


Coordinators:

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Dr. Sobhan Kanti Dhara
Dr. Pankaj Kumar Sharma**

**Department of Electronics and
Communication Engineering,
National Institute of Technology Rourkela
Rourkela-769008, Odisha, India**

Technically Co-sponsored by:





About National Institute of Technology (NIT) Rourkela

National Institute of Technology (NIT), Rourkela was founded as Regional Engineering College, Rourkela in 1961. It is a prestigious institute with a reputation for excellence at both undergraduate and postgraduate levels, fostering the spirit of national integration among the students, a close interaction with industry and a strong emphasis on research, both basic and applied. The city of Rourkela is a bustling industrial city, cosmopolitan by nature and is well connected to all parts of the country by road and rail. The nearest airports are Ranchi, Kolkata and Bhubaneswar, which are well connected by trains. Please visit <https://www.nitrkl.ac.in/About.aspx> to know more about NIT Rourkela.

About Department of Electronics and Communication Engineering

The department was established with the vision to become a nationally acclaimed department of higher learning that will serve as a source of knowledge and expertise for society. The department offers various UG and PG programmes with the mission to advance and disseminate knowledge in the areas of electronics, communication, instrumentation, signal processing, and VLSI, thereby creating wealth and promoting the welfare of humanity. The department also offers Ph.D. programs for both regular and sponsored candidates.

The faculty of the EC department is handling several externally funded research projects. Please visit <https://www.nitrkl.ac.in/EC/> to know more about the Department of ECE.

Important Dates:

Registration Deadline	12 th March 2026
Confirmation to Participants by email	13 th March 2026
Commencement of Course	16 th March 2026 (Offline and Online through MS Teams)

Target Participants:

The short-term course is of immense interest to UG/PG students, research scholars/professionals, staff/faculty members, and industry professionals working in Wireless Communications and Signal Processing. Participants with backgrounds in Electronics and Communication Engineering, Electrical Engineering, and Computer Science and Engineering will benefit from this course.

Coordinators:

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Contact and Queries: Please send your queries directly to the course coordinators.

E-certificates will be provided to the registered participants upon successful completion of the course

Registration Details:

The registration fee including GST (non-refundable) for various participants attending the short-term course is given below:

Registration Type	Fees
Student	INR 400
Faculty Members	INR 800
Scientist from R&D Organization/Industry Person	INR 1200

➤ The students of NIT Rourkela are exempted from the payment of registration fee.

Bank Account Details for Paying Registration Fee:

Account Name	CONTINUING EDUCATION NIT ROURKELA
Account No.	10138951784
Bank	State Bank of India
Branch	NIT Campus Rourkela (02109)
IFS Code	SBIN0002109



UPI ID: 01389517841@sbi
Merchant Name:
Continuing Education NIT

Other Modes for Paying Registration Fee:

Registration: To complete online registration, the participants need to fill out the following Google form:

<https://tinyurl.com/5s65mw39>

Accommodation: Accommodation may be provided on a payment basis.