

### Course Relevance:

In recent years, we have seen a significant enhancement in the performance of standard TCP congestion control algorithms. The number of packets dropped, and high round-trip time (RTT) are the indications of network congestion. Many congestion control mechanisms have been proposed to overcome the challenge of achieving increased throughput and reduced latency. This course's aim to examine the various TCP algorithms in the presence of 5G networks. It has been observed that Multipath TCP is the preferred mechanism in the case of mobile networks. Further, MPTCP will be explored to examine the existence of TCP for future internet. Later, we would explore on advantages of software defined networks over traditional networks. Further, we will explore the various approaches for detecting DDoS attacks in SDN. This course will also include the new thrust areas such as Cyber security and Cyber physical systems for the advancement of the technology. In the current trend of mobile networks, cloud computing and edge computing are the demanding trend towards the technology that provides the user to avail the computing services online from anywhere. In the last, course will discuss various techniques of data processing and task scheduling for edge computing. This course is very relevant to touch the recent technology for development of future technologies.

### Course Objectives:

- To provide a depth knowledge of networking, cloud computing, and big-data.
- Explore the thrust areas such as cyber security and cyber physical system to incorporate their applications to being ready for future technologies
- To demonstrate the state-of-the-art technologies in the areas of TCP, SDN, and Image processing using AI and big data analytics.

### Topics to be Covered:

- Network modeling
- TCP Congestion Control
- Multipath TCP
- Software-defined Networking
- Cyber Security and Cyber Physical System(CPS)
- Cloud Computing
- Spherical Multiplication for Quantum Computing
- Edge Computing and Data Processing for Edge Node
- Internet of Things (IoT)
- Image Processing, Big Data, and AI
- Hands on using ns-2, ns-3, Cloudsim etc.

### Speakers:

- Prof. Shalabh Bhatnagar, IISc Bangalore
- Prof. Rajeev Srivastav, IIT-BHU, Varanasi
- Prof. D. P. Vidyarthi, JNU New Delhi
- Prof. B. D. Sahoo, NIT Rourkela
- Prof. Dinesh K. Vishwakarma, DTU Delhi
- Prof. Pushpendra Singh, JNU New Delhi
- Prof. Munesh Singh, IIITDM Jabalpur
- Prof. Neetesh Kumar, IIT Roorkee
- Prof. Chandresh Kumar, IIT Indore
- Prof. Mohit P. Tahiliani, NIT Surathkal
- Prof. Rahul Katarya, DTU Delhi
- Prof. Sanjeev Patel, NIT Rourkela
- Prof. Arun Kumar, NIT Rourkela



ANRF-SERB Sponsored  
Five Day Short-Term Course  
on  
Network Modeling, Cloud -computing and  
Big-data (Phase-II)

Hybrid Mode  
(Online and Offline)  
5<sup>th</sup> – 9<sup>th</sup> December 2024



Patron

Prof. K. Umamaheshwar Rao, Director  
Chairman  
Prof. B. D. Sahoo, HoD(CSE)  
Convenor  
Dr. Sanjeev Patel

Organized By

Department of Computer Science and 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 nearest airports are Rourkela, Jharsuguda, and Ranchi. In India, it was ranked 19 among engineering colleges by NIRF in 2024. Please visit [www.nitrkl.ac.in](http://www.nitrkl.ac.in) to know more about NIT Rourkela.

### About Department of Computer Science and 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 the society. The department offers various UG and PG programmes with the mission to provide high-quality education that prepares the graduates for success in their professional practice and advance studies. The department also offers M. Tech in Computer Science, Information Security and Software Engineering; and Ph. D. for regular as well as sponsored candidates.

The faculties of CS department are handling several externally funded research projects. Please visit [www.nitrkl.ac.in/CS](http://www.nitrkl.ac.in/CS) to know more about the Department of CSE.

### Important Dates:

Registration Deadline	3 <sup>rd</sup> December 2024
Confirmation to Participants by email	4 <sup>th</sup> December 2024
Commencement of Course	5 <sup>th</sup> December 2024

### Target Participants:

The short-term course is of immense interest for UG/ PG students, research scholars/professionals, staff/ faculty members and industry professionals working in the area of traffic engineering, Internet traffic, cloud computing, cyber security and Image processing. The participants having Computer Science and Engineering, Electronics and Communication Engineering and AI/ML background will be benefited with this course.

### Convener

**Dr. Sanjeev Patel**

Assistant Professor Grade-I

Department of CSE, NIT Rourkela

Email: [patels@nitrkl.ac.in](mailto:patels@nitrkl.ac.in)

Mobile no.: +91-9873814970

### Registration Details:

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

Registration Type	Fees
Student	INR 590
Faculty Members	INR 1180
Scientist from R&D /Industry Person	INR 2360

- The students and staffs of NIT Rourkela are exempted from the payment of registration fee.

### Bank Account Details for Paying Registration Fee:

The registration fee is to be deposited in the following bank account:

Account Name	CONTINUING EDUCATION NIT ROURKELA
Account No.	10138951784
Bank	State Bank of India
Branch	NIT Campus Rourkela (02109)
IFSC Code	SBIN0002109
UPI ID	01389517841@sbi

### Registration Form:

To complete online registration, the participants need to fill the following google form:

<https://forms.gle/Qi2FiUubhFMuoLWQA>

*E-certificates will be provided to the registered participants upon successfully completing the course.*

*Contact and Queries: Please send your queries directly to the Convener or Co-convener.*