Course Relevance:

The ever-increasing demand for Internet applications has increased the demand for fast data transmission over high-speed networks. The Transmission Control Protocol (TCP) has been used significantly to fulfill these requirements by carrying most Internet traffic. Many TCP variants have been developed that focus on utilizing the network's total bandwidth. These variants mainly considered loss rate, increase in delay, and buffer size to decide the level of congestion. Simulation is a key tool used by the networking community to assess the functionality and behavior of network protocols. Over the past few years, various network simulation tools have been created in the communication industry. To implement this, two discrete event network simulators, ns-2 and ns-3, have been used profusely.

Cloud Data Centres (CDCs) have been developed into a virtual computing platform for businesses. It requires significant power, which is essential for processor speed, particularly for IoT activities. Despite the existence of a significant amount of research in the green allocation of resource methodologies has been carried out to minimize the usage of the CDCs. Cloud computing enables users to supply resources on demand and run programs in a way that meets their needs by selecting virtual resources that meet the resource requirements of their application.

Course Objectives:

- To provide a comprehensive overview and the research aspects of evolution of network modelling, big data and cloud computing.
- To demonstrate the state-of-the-art enabling technologies for communications, cloud computing and big data analytics.

Topics to be Covered:

- Stochastic Modeling
- Systems simulation, Stochastic optimization
- Block-chain Technology
- Cloud Computing
- Virtualization in Cloud Computing
- Edge Computing
- Big Data, Data Analytics and AI
- Anomaly Detection in Big Data
- IoT Issues and Real World Challenges
- TCP Modeling, VANET and Simulation
- Hands on using ns-2, ns-3, Cloudsim etc.

Speakers:

- Prof. Karmeshu, UPES Dehradun
- Prof. Shalabh Bhatnagar, IISc Bangalore
- Prof. D. P. Vidyarthi, JNU New Delhi
- Prof. Ashok K Turuk, NIT Rourkela
- Prof. Rahul Katarya, DTU Delhi
- Prof. Manju Khari, JNU New Delhi
- Prof. Neetesh Kumar, IIT Roorkee
- Prof. Sujit Kumar Sahoo, IIT Goa
- Prof. Sanjaya K Panda, NIT Warangal
- Prof. Chandresh Kumar Maurya, IIT Indore
- Prof. Sanjeev Patel, NIT Rourkela
- Prof. Arun Kumar, NIT Rourkela

Short-Term Course on
Network Modeling, Cloud-computing and Big-data

Hybrid Mode
(Online and Offline)
8th – 12th December 2023

Convenor
Dr. Sanjeev Patel
Co-Convenor
Dr. Arun Kumar

Department of Computer Science and Engineering,
National Institute of Technology Rourkela
Rourkela-769008, Odisha, India

Technically 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 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 https://www.nitrkl.ac.in/CS/ to know more about the Department of CSE.

Important Dates:

Registration Deadline	2nd December 2023
Confirmation to Participants by email	6th December 2023
Commencement of Course	8th December 2023

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 Wireless Communications and Networking. The participants having Computer Science and Engineering, Electronics and Communication Engineering and Electrical Engineering background will be benefited with this course.

Convenor/Co-Convenor:

Dr. Sanjeev Patel
Assistant Professor
Department of CSE, NIT Rourkela
Email: patels@nitrkl.ac.in
Mobile no.: +91-9873814970

Dr. Arun Kumar
Assistant Professor
Department of CSE, NIT Rourkela
Email: kumararun@nitrkl.ac.in
Mobile no.: +91-6612462373

Registration Details:

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

Registration Type	Fees
Student	INR 500
Faculty Members	INR 1000
Scientist from R&D Organization/Industry Person	INR 2000

➢ The students 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

Registration Form:

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

https://forms.gle/9wgPSNfr1WKn8o2v9

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

Contact and Queries: Please send your queries directly to the Convenor or Co-convenor.

Department of Computer Science and Engineering
National Institute of Technology, Raurkela
Network Modeling, Cloud -computing and Big-data
(NMCB-2023)
December 08-12, 2023

S. No.	Session	Topic	Venue
Day 1 08 December, 2023			
1.	09:00-09:30	Registration	CS 323
2.	09:30-10:45	Inaugural Function	CS 323
3.	10:45-11:00	Tea Break	
4.	11:00-12:15	Stochastic Modeling Basics by Prof. Karmeshu, Chairman of the Scientific Computing Panel Naval Research Board, DRDO & UPES Dehradun (Retired from JNU New Delhi)	CS 323
5.	12:15-02:30	Lunch Break	
6.	02:30-03:45	Stochastic Modeling Advanced by Prof. Karmeshu, Chairman of the Scientific Computing Panel Naval Research Board, DRDO & UPES Dehradun (Retired from JNU New Delhi)	CS 323
7.	03:45-04:00	Tea Break	
8	04:00-05:15	Systems Simulation and Stochastic Optimization by Prof. Shalabh Bhatnagar, IISc Bangalore.	CS 323
Day 2 09 December, 2023			
1.	09:30-10:45	TCP Modeling and Simulation by Prof. Sanjeev Patel and Research Group, NIT Rourkela	CS 323
2.	10:45-11:00	Tea Break	
3.	11:00-12:15	Vehicular Technology and IoT by Prof. Arun Kumar and Research Group, NIT Rourkela	CS 323
4.	12:15-02:30	Lunch Break	
5.	02:30-03:45	Hands-on Session by Ms. Subhra / Ms. Lopa, NIT Rourkela	CL-2
6.	03:45-04:00	Tea Break	
7	04:00-05:15	Cloud Computing Basics by Prof. Sanjay Panda, NIT Warangal	CS 323
Day 3 10 December, 2023			
1.	09:30-10:45	Block-chain Technology by Prof. Ashok Kumar Turuk, NIT Rourkela	CS 323
2.	10:45-11:00	Tea Break	

Convenor:

Dr. Sanjeev Patel
Email: patels@nitrkal.ac.in
Mob: 9873814970

Co-Convenor:

Dr. Arun Kumar   :   +91-9871867785

Department of Computer Science and Engineering
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3.	11:00-12:15	Fog/Edge Computing by Prof. D. P. Vidyarthi, JNU New Delhi	CS 323
4.	12:15-02:30	Lunch Break	
Day 4 **11 December, 2023**			
1.	09:30-10:45	Recent Trends and Future of Big Data Analytics by Prof. Rahul Katarya, DTU Delhi	CS 323
2.	10:45-11:00	Tea Break	
3.	11:00-12:15	Recent Trends and Future of Big Data Analytics by Prof. Rahul Katarya, DTU Delhi	CS 323
4.	12:15-02:30	Lunch Break	
5.	02:30-03:45	IoT Issues and Real-world Challenges by Prof. Manju Khari, JNU New Delhi	CS 323
6.	03:45-04:00	Tea Break	
7	04:00-05:15	IoT Issues and Real-world Challenges by Prof. Manju Khari, JNU New Delhi	CS 323
Day 5 **12 December, 2023**			
1.	09:30-10:45	Sparse Representation of a Signal by Prof. Sujit Kumar Sahoo, IIT Goa	CS 323
2.	10:45-11:00	Tea Break	
3.	11:00-12:15	Anomaly detection in Big Data by Prof. Chandresh Kumar Maurya, IIT Indore	CS 323
4.	12:15-02:30	Lunch Break	
5.	02:30-03:45	Valedictory Session	CS 323

Convenor:	**Co-Convenor:**		
Dr. Sanjeev Patel Email: patels@nitrkal.ac.in **Mob:** 9873814970	Dr. Arun Kumar	:	+91-9871867785

National Institute of Technology Rourkela
(An Institution of National Importance)

Five-Day Short-Term Course on Network Modeling, Cloud-computing, and Big-data
Course Schedule: December 8 – 12, 2023

INAUGRAL FUNCTION	9.30 : 10.45 AM	VENUE: Conference Hall CS323
	Guest of Honour:	Prof. Karmeshu, JNU New Delhi
	Patron:	Prof. K. Umamaheshwar Rao (Director, NIT Rourkela),
	Chairperson:	Prof. Bibhudatta Sahoo, (HOD, CSE)
	Convenors: Dr. Sanjeev Patel and Dr. Arun Kumar	

	9:30 - 10.45 AM	11:00 – 12:15 PM	Lunch	2:30 – 3:45 PM	4:00 – 5:15 PM
DAY-1 08-12-23	Registration / INAUGRAL FUNCTION	Prof. Karmeshu, UPES Dehradun Title: Stochastic Modeling Basics		Prof. Karmeshu, UPES Dehradun Title: Stochastic Modeling Advanced	Prof. Shalabh Bhatnagar IISc. Bangalore Title: Stochastic Optimization
DAY-2 09-12-23	Prof. Sanjeev Patel and Research Group, NIT Rourkela Title: TCP Modeling	Prof. Arun Kumar and Research Group, NIT Rourkela Title: VANET Architecture and Model		Hands-on Session by Ms. Subhra/Ms. Lopa, NIT Rourkela	Prof. Sanjay Panda, NIT Warangal Title: Cloud Computing Basics
DAY-3 10-12-23	Prof. Ashok Kumar Turuk, NIT Rourkela Title: Blockchain Technology	Prof. D P Vidyarthi, JNU New Delhi Title: Fog/Edge Computing		Prof. Neetesh Kumar, IIT Roorkee Title: Virtualization	Hands-on Session by Ms. Akanksha, NIT Rourkela
DAY-4 11-12-23	Prof. Rahul Katarya, DTU Delhi Title: Recent Trends and Future of Big Data Analytics	Prof. Rahul Katarya, DTU Delhi Title: Recent Trends and Future of Big Data Analytics		Prof. Manju Khari, JNU New Delhi Title: IoT Issues and Real-world Challenges	Prof. Manju Khari, JNU New Delhi Title: IoT Issues and Real-world Challenges
DAY-5 12-12-23	Prof. Sujit Kumar Sahoo, IIT Goa Title: Sparse Representation of a Signal	Prof. Chandresh Kumar Maurya, IIT Indore Title: Anomaly Detection in Big Data		Valedictory Session	