Course Relevance

The Internet of Things (IoT) is transforming the way devices interact, enabling seamless connectivity between the physical and digital worlds. This short-term course in AI-Enabled IoT Systems provides a comprehensive foundation in IoT concepts, smart devices, and communication technologies, along with the integration of Artificial Intelligence for intelligent decision-making.

Covering essential topics such as IoT architecture, communication protocols (MQTT, CoAP, HTTP), wireless technologies, embedded systems (Arduino, Raspberry Pi), cloud and edge computing, and data analytics, the program ensures a deep understanding of how modern IoT ecosystems function. It also introduces AI and machine learning techniques for processing IoT data and enabling smart, autonomous systems.

Participants will gain practical exposure through real-world applications in smart homes, smart cities, industrial IoT, healthcare, and connected vehicles, along with a hands-on mini project on AI-based IoT application development. This program is ideal for those aspiring to build careers in IoT development, embedded systems, AI-driven applications, and smart system design, equipping them with the skills to develop, analyze, and manage intelligent IoT solutions.

Course Objectives

- To provide a strong foundation in the fundamentals of Internet of Things (IoT), including architecture, smart devices, sensors, and actuators.
- To introduce IoT communication protocols (MQTT, CoAP, HTTP) and wireless technologies such as Bluetooth, Zigbee, 6LoWPAN, and LoRa.
- To explore Machine-to-Machine (M2M) communication and interoperability challenges in IoT systems.
- To develop an understanding of Artificial Intelligence and Machine Learning techniques for IoT data analysis and intelligent decision-making.
- To demonstrate the role of edge AI, cloud, and fog computing in enhancing IoT system performance.
- To provide hands-on knowledge of embedded systems and microcontrollers such as Arduino and Raspberry Pi.
- To examine data handling, storage, analytics, and security considerations in IoT environments.
- To highlight real-world applications in smart homes, smart cities, industrial IoT, healthcare, and transportation, along with practical experience through a mini project on AI-based IoT application development.

Topics to be Covered

- Fundamentals of Internet of Things (IoT).
- IoT ecosystem and system architecture.
- Sensors, actuators, and smart devices.
- Basics of networking in IoT systems.
- IoT communication protocols (MQTT, CoAP, HTTP).
- Wireless technologies for IoT (Bluetooth, Zigbee, 6LoWPAN, LoRa).
- Machine-to-Machine (M2M) communication.
- Interoperability in IoT systems.
- Introduction to Artificial Intelligence and Machine Learning.
- Data collection and preprocessing in IoT systems.
- Machine learning techniques for IoT data analysis.
- Edge AI and intelligent decision-making in IoT.
- Cloud computing and IoT integration.
- Fog and edge computing for IoT systems.
- Embedded systems and microcontrollers (Arduino, Raspberry Pi).
- Data storage, handling, and analytics in IoT.
- Security and privacy in IoT environments.
- Applications in smart homes, smart cities, healthcare, and industry.
- Case studies in AI-enabled IoT systems.
- Mini project on AI-based IoT application development.

Keynote Speakers

- Prof. Peter Han Joo Chong, AUT, Auckland, New Zealand
- Prof. G. G. Md. Nawaz Ali, Bradley University, Peoria, Illinois, United States of America (USA)
- Prof. William Liu, AUT, Auckland, New Zealand
- Prof. Saroj Kumar Meher, ISI, Bangalore
- Prof. Chiranjeev Kumar, IIT (ISM) Dhanbad, Jharkhand
- Prof. Bidyut Kumar Patra, IIT (BHU) Varanasi, Uttar Pradesh
- Prof. Manju Khari, JNU, New Delhi
- Prof. Pushpendra Singh, JNU, New Delhi
- Prof. Anupam Kumar, NIT Patna, Bihar
- Prof. Sudhakar Pandey, NIT Raipur, Chhattisgarh
- Prof. Suvendu Rup, NIT Raipur, Chhattisgarh
- Prof. Puneet Kumar Jain, Dr B R Ambedkar NIT Jalandhar, Punjab
- Prof. Alekha Kumar Mishra, NIT Jamshedpur, Jharkhand
- Prof. Lopamudra Hota, BIT Mesra, Ranchi, Jharkhand
- Prof. Ashok Kumar Turuk, NIT Rourkela, Odisha
- Prof. Bibhudatta Sahoo, NIT Rourkela, Odisha
- Prof. Panthadeep Bhattacharjee, NIT Rourkela, Odisha
- Prof. Arun Kumar, NIT Rourkela, Odisha

One Week short-Term Course

on

Artificial Intelligence for the Internet of Things and Its Applications

Hybrid Mode
(Online and Offline)

25th - 29th May 2026

Patron:

Prof. K. Umamaheshwar Rao, Director, NIT Rourkela

Chairman:

Prof. Bibhudatta Sahoo

Convener:

Prof. Arun Kumar
Prof. Sanjeev Patel
Prof. Panthadeep Bhattacharjee

Department of Computer Science and Engineering
National Institute of Technology, Rourkela,
Odisha-769008
http://www.nitrkl.ac.in

About NIT Rourkela

National Institute of Technology (NIT) Rourkela is an institution of national importance funded by the Ministry of Education. NIT Rourkela was established as Regional Engineering College (REC) on August 15, 1961. NIT Rourkela was ranked 601-800 in the world by the Times Higher Education World University Rankings of 2018 and 126th in Asia. In India, it was ranked 16 among engineering colleges by the National Institutional Ranking Framework (NIRF) in 2023. For details about the institute please visit us at www.nitrkl.ac.in.

Tourist Places Nearby


Khandadhar Waterfall


Pitamahal Dam


Hanuman Vatika


Vedvyas Temple


Mandira Dam

About Department of Computer Science and Engineering

The department was established with the vision to prepare its students for professional employment and graduate education through study and implementation of the fundamental principles of theory, abstraction, and software design, while at the same time presenting the ethical and social issues associated with computer science.
The department offers various UG and PG programmes with the mission to o provide high-quality education that prepares the graduates for success in their professional practice and advanced 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. Please visit https://website.nitrkl.ac.in/CS/ to know more about the department of CSE.

Important Dates	
Registration Deadline	10th May 2026
Registration Confirmation	12th May 2026
Commencement of Course	25th May 2026
Max Offline Participanta (FCFS Basis)	**50**

Coordinator:
Prof. Arun Kumar
Assistant Professor
Department of CSE, NIT Rourkela
Email: kumararun@nitrkl.ac.in
Mobile no.: +91 9971867785

Contact and Queries:
Please send your queries directly to the student coordinator:
Ms. Prangya Priyadarshini, Mr. Putcha Sai Kiran
Email: stc.itssc.2023@gmail.com, putchasaikiran@gmail.com
Mobile no: +91-9337860838; +91-7077876261

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 networking and IoT.

Registration Details

Registration Details (Fees Non-Refundable)	
Registration Type	**Fees**
Students	**INR 2360(Online) INR 3540 (Offline)**
Faculty from Academic Institutions	**INR 3540**
Scientist from R &D Organization/Industry Persons	**INR 4720**

Registration fees include Registration Kit, Refreshment, Tea, and Snacks, and 18% GST. Lodging, boarding, lunch, and dinner facilities can be availed on a separate payment basis and based on availability.

Bank Account Details for Registration

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

To complete the online registration, the participants need to scan or use below link for the google form:
https://forms.gle/ging4WuxLvSxUUKX6