

ABOUT THE COURSE

This short-term course furnishes participants with a thorough introduction to the principles of cybersecurity and the application of Deep Learning in this domain, integrating academic foundations with substantial practical experiential learning. The course encompasses both offensive and defensive strategies to furnish learners with a comprehensive understanding of modern intelligent security systems.

Participants will gain foundational knowledge in networking essentials, information gathering, and vulnerability scanning, progressing toward the collection and preprocessing of real-world network traffic data for Deep Learning pipelines, using tools such as NMAP, Nessus, and Wireshark. Building on this, the course covers the design and evaluation of Deep Learning architectures - including CNN, RNN, and LSTM - applied to intrusion detection, malware classification, and network anomaly detection on benchmark cybersecurity datasets.

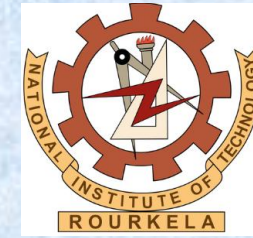
CONTENTS OF THE COURSE

- **Foundations:** An overview of cybersecurity principles, threat landscape, and attack taxonomies, complemented by networking essentials including OSI/TCP-IP models, protocols, and traffic flow. This module also introduces core Deep Learning concepts and their relevance to modern security applications, establishing a strong interdisciplinary base for the course.
- **Data Collection & Preprocessing:** Using tools like NMAP, Nessus, and Wireshark to perform reconnaissance, host discovery, vulnerability scanning, and network traffic capture. Participants will learn to clean, label, and transform raw network data into structured datasets suitable for Deep Learning model training, including feature selection and normalization techniques.

- **Deep Learning Essentials for Security:** A focused study of core DL architectures - ANN, CNN, RNN, and LSTM - covering their working principles, training pipelines, loss functions, and optimization strategies. Each architecture is contextualized with cybersecurity problem domains to bridge theoretical understanding with practical application.
- **Intrusion Detection Systems:** Hands-on design and evaluation of CNN and LSTM-based IDS models trained on benchmark datasets such as NSL-KDD and CICIDS. Covers multi-class attack classification, model tuning, and real-time detection concepts for network-based threats.
- **Malware Analysis & Classification:** Introduction to static and dynamic malware analysis, feature extraction from binary samples and opcode sequences, and the application of DL models for automated malware family identification and classification.
- **Anomaly Detection & Threat Hunting:** Applying auto encoders and unsupervised Deep Learning techniques to model normal network behaviour and detect deviations indicative of zero-day threats, insider attacks, and advanced persistent threats (APTs).

COURSE OBJECTIVES

1. Collect and preprocess real-world network data from vulnerability assessments for DL model training.
2. Design DL-based models for effective cyber threat detection and classification.
3. Develop and evaluate CNN, RNN, and LSTM architectures for intrusion detection and malware classification.
4. Apply DL-based anomaly detection to identify abnormal network behaviour and emerging threats.



**Short Term Course
On**

**Deep Learning for Network Security
and Threat Detection
(DeepNetSec-2026)**

**Hybrid Mode
(Online and Offline)
15th-19th JUNE 2026**

**Chairman
Prof. Bibhudutta Sahoo, HoD(CS)**

**Convener
Dr. Dev Narayan Yadav**

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

<https://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. In India, it was ranked 13 among engineering colleges by the National Institutional Ranking Framework (NIRF) in 2025. For details about the institute please visit us at <https://www.nitrkl.ac.in/>.



ABOUT DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Department of Computer Science & Engineering, NIT, Rourkela was established in 1982. Since its inception, the Department is under dynamic progress and is able to establish the reputation for imparting quality education both at undergraduate and graduate programmes. The department also offers Ph. D. for regular as well as sponsored candidates. Please visit <https://www.nitrkl.ac.in/CS/> to know more about the Department of CSE. The department has well equipped modern laboratories such as Software Engineering, Distributed Object Systems, Information Security & Data Communication, Image Processing & Cluster Computing and Advanced Database Engineering Labs for pursuing research keeping in view of the technological advancement.



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 Cyber Security. The participants from different Science and Engineering (Computer Science and Engineering, Electronics and Communication Engineering, Electrical Engineering, etc.) background will be benefitted with this course.

IMPORTANT DATES

Registration Starts	15 th March 2026
Registration Ends	25 th May 2026
Maximum Offline Participants (First Come First Serve Basis)	100
Registration Confirmation	27 th May 2026
Course Schedule	15 th - 19 th JUNE 2026

PREREQUISITES

The offline participants should bring their laptop.

TOURIST PLACES NEARBY



**Khandadhar
Waterfall**



Pitamahal Dam



Vedvyas Temple



Mandira Dam

REGISTRATION FEE PARTICULARS

Registration Fee	
Students	Rs. 1,180/- (online) Rs. 2,360/- (offline)
Faculty from Academic Institutions	Rs. 2,360/-
Employees from Industry and R&D Organizations	Rs. 3,540/-
Accommodation Charges	
Guest house (South / North block)	As Per Institute
Hostel	Norms

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

BANK ACCOUNT DETAILS FOR REGISTRATION

Account Name:	CONTINUING EDUCATION NIT ROURKELA
Account No.:	10138951784
Bank Name	State Bank of India(002109)
Branch:	NIT Rourkela Campus
IFSC Code	SBIN0002109

REGISTRATION FORM

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

<https://forms.gle/34ocz9z83pj56e2b9>

Patron	Prof. K. Umamaheswar Rao, Director, NIT Rourkela
Chairperson	Prof. Bibhudatta Sahoo
Coordinator	Dr. Dev Narayan Yadav

Correspondence

Dr. Dev Narayan Yadav
Asst. Prof., & Coordinator, (Deep-NetSec - 2026)
Department of Computer Science & Engineering
National Institute of Technology, Rourkela
Rourkela-769008, Odisha, India
Phone: 8349869748(Mob)
E-mail: yadavd@nitrkl.ac.in