About Institute

Guru Nanak Dev Engineering College (GNDEC), Ludhiana, established in 1956, is one of the oldest and a premier Engineering Institute of India. The Institute is set up on 88 acres of sprawling pristine land along Gill Road (Ludhiana Malerkotla Highway). The foundation stone of the college was laid by Honourable Dr. Rajendra Prasad Ji, President of India on April 8, 1956. GNDEC is now an autonomous college under UGC Act 1956 [2(f) and 12(B)] and also accredited by NAAC with 'A' grade The Institution has six Under Graduate (UG) programmes, thirteen Post Graduate (PG) programmes, besides being a QIP centre for Ph.D.

About Department

The Information Technology Department at Guru Nanak Dev Engineering College (GNDEC), Ludhiana, established in 2001, offers a B.Tech. program with an annual intake of 180 students, as well as postgraduate (M.Tech.) and doctoral research opportunities. The B.Tech. program has been accredited with 'A' grade by NBA since 2008, demonstrating the department's dedication to maintaining high academic standards. Faculty members are actively involved in research in emerging and high-impact areas such as Artificial Intelligence, Machine Learning, Internet of Things, Image Processing, Big Data, Cloud Computing and Network Security. The department remains committed to nurturing technically competent and ethically responsible professionals to address the dynamic needs of the global IT industry.

Objective

Artificial Intelligence (AI), Machine Learning (ML), and the Internet of Things (IoT) are converging to drive the next wave of smart, connected systems across industries. This training program introduces the foundational concepts of AI, ML, and IoT, including sensor interfacing, data acquisition, preprocessing, machine learning algorithms, and model deployment. Through hands-on projects and real-world case studies, students will learn to build intelligent systems capable of sensing, analyzing, and responding in real time. By the end of the program, participants will be equipped with both the technical skills and practical experience required to develop end-to-end AI-ML-IoT solutions.

Who can apply?

Students enrolled in all academic programs at Guru Nanak Dev Engineering College (GNDEC), Ludhiana, including B.Tech., B.Arch., BBA, BCA, B.Com (Entrepreneurship), B.Voc (Interior Design), MBA, MCA, M.Tech., M.Sc., and Ph.D., are eligible to apply for this training program. Additionally, students from other recognized Engineering, Polytechnic, and Degree institutions are encouraged to apply.

FOUR WEEKS SUMMER TRAINING PROGRAM

ON

SMARTFUSION
(AI - ML - IoT)

(June - July, 2025)

Dr. Kulvinder Singh Mann
(Head of IT Department)

Dr. Randeep Kaur
(Training Coordinator)

Prof. Himani Sharma
(Training Coordinator)

Organized by:

Testing and Consultancy Cell

Department of Information Technology

Guru Nanak Dev Engineering College, Ludhiana, Punjab – 141006

Phone: 0161 – 2490339, 2491193 (Consultancy)
Website: www.gndec.ac.in

SMARTFUSION
(AI - ML - IoT)

Duration: 4 Weeks   **Mode:** Offline

Curriculum Overview

Week 1: Introduction to IoT and AI/ML Basics

Concepts include IoT architecture, components, and applications; a comparative overview of AI, ML, and traditional programming; and the integration of AI-ML in IoT-enabled smart systems. Hands-on sessions cover the setup of Raspberry Pi, Arduino, or NodeMCU (or simulators), sensor interfacing (temperature, motion), and Python environment configuration for AI-ML development.

Week 2: Data Handling and Preprocessing for IoT Devices

Focus on acquiring data from IoT sensors, followed by data cleaning, normalization, and exploratory data analysis using Matplotlib and Seaborn. Discussion of data storage options, both local and cloud-based. Practical activities include real-time data visualization, preprocessing of collected data, and sending data to cloud platforms like ThingSpeak or Azure IoT Hub.

Week 3: ML Algorithms for IoT Applications

Coverage of both supervised and unsupervised learning, including algorithms such as linear regression, KNN, decision trees, and K-means clustering. Emphasis on evaluation metrics like accuracy, precision, recall, and confusion matrix analysis. Practical exercises include applying ML algorithms to IoT data for tasks such as temperature prediction and anomaly detection.

Week 4: AI-ML Enabled IoT Applications and Deployment

Exploration of deploying ML models on IoT devices, with a focus on edge computing versus cloud-based AI. Use cases across smart homes, healthcare, and agriculture. Additional topics include ethical considerations and security in AI-IoT systems. Hands-on activities involve deploying ML models on hardware or simulators and building responsive systems such as smart alarms that detect anomalies and trigger notifications.

- **Weekly Quiz**
- **Hands on Practice on daily tasks**
- **Weekly Assignment with Practical Problems**
- **Project Submission Within One Week after completion of the course.**

Registration Form

Name (in block letters): _____

University Roll Number: _____

Class Roll Number: _____

Department: _____

Institution: _____

Mailing Address: _____

_____

Age: _____   Gender (M/F): _____

Mobile Number: _____

Email: _____

Registration Fee: *Rs. 3800 (Including GST)*

Receipt No. (Cash Payment): _____ Date: _____

Signature of the Applicant: _____

Contact Details:

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