रा.इ.सू.प्रौ.सं
NIELIT
RAIPUR

MINISTRY OF ELECTRONICS & IT
Government of India

SPECIAL COLLEGE MOBILIZATION INITIATIVE

5-DAY INTENSIVE PROGRAM • HANDS-ON BOOTCAMP

Artificial Intelligence, Machine Learning & Generative AI

A skill-building bootcamp designed to bridge academia and industry demands. Tailored for undergraduate, postgraduate, and diploma students to develop production-grade AI solutions through practical coding and real-world datasets.

30
HOURS
Rigorous hands-on lab training

5
MODULES
Python to Deep Learning & GenAI

1
LIVE PROJECT
Guided end-to-end capstone

Govt.
CERTIFICATE
Issued by NIELIT Raipur (MeitY)

ELIGIBILITY & STREAM

Open to all Engineering & Non-Engineering disciplines

B.Tech/BE, BCA, MCA, B.Sc IT/CS, Polytechnic, and curious non-IT students. No prior coding experience required; foundational programming is taught from ground up.

TECHNOLOGY STACK & ENVIRONMENT

- **Python & Data** — NumPy • Pandas
- **Visualization** — Matplotlib • Colab
- **Machine Learning** — Scikit-Learn • Models
- **Deep Learning** — Neural Nets • CNN
- **Generative AI** — LLMs • Prompt Eng.
- **Modern RAG** — APIs • JSON Parser

CURRICULUM PLAN

Five days.

Python to production-ready AI.

10:00 AM – 5:00 PM daily • Lunch: 1:00 PM – 2:00 PM

PHASE 1 FOUNDATIONS & CLASSICAL ML

DAY 1

Python for Artificial Intelligence & Data Science

CORE PROGRAMMING & DATA WRANGLING

- **Programming Refresher:** Python syntax, variables, lists, dictionaries, iteration control, functions, and error handling.
- **Environment Setup:** Google Colab setup, running cloud notebooks, local IDE configuration, and runtime management.
- **Data Science Tooling:** Multi-dimensional arrays with NumPy; DataFrames, slicing, and CSV processing with Pandas.
- **Exploratory Analysis:** Handling missing values, computing metrics, and charting actionable insights with Matplotlib.

DAY 2

Applied Machine Learning with Python

SUPERVISED LEARNING & PREDICTIVE MODELING

- **ML Fundamentals:** Supervised vs. unsupervised workflows, feature extraction, labels, and one-hot encoding.
- **Data Splitting & Scikit-learn:** Train/test partitioning rationale, cross-validation concepts, and Scikit-learn architecture.
- **Algorithms in Action:** Building, training, and predicting with Classification (Logistic/Trees) and Linear Regression models.
- **Model Validation:** Evaluating accuracy, precision, recall, confusion matrices, and saving models via Joblib/Pickle for reuse.

PHASE 2 DEEP LEARNING, GENAI & PROJECT

DAY 3

Deep Learning & Computer Vision

NEURAL ARCHITECTURES & IMAGE CLASSIFICATION

- **Neural Network Principles:** Perceptrons, hidden layers, activation functions, loss functions, backprop, and gradient descent.
- **Convolutional Networks (CNN):** Feature maps, convolution filters, pooling layers, and modern computer vision pipelines.
- **Deep Learning Frameworks:** Introduction to TensorFlow/Keras or PyTorch workflow; image dataset preprocessing and normalization.
- **Classifier Deployment:** Training an image classifier, monitoring loss/epochs, evaluating on unseen test photos, and error triage.

DAY 4

Generative AI & Large Language Models (LLMs)

PROMPT ENGINEERING, APIS & RAG WORKFLOWS

- **Generative AI Concepts:** Foundation models, generative vs. discriminative paradigms, tokenization, and temperature tuning.
- **LLM APIs & Python:** Integrating API keys, building robust API client requests, prompt templating, and managing context limits.
- **Applied Automation:** Building conversational chat interfaces, automated document summarization, and structured JSON parsing.
- **Retrieval-Augmented Generation (RAG):** Vector grounding fundamentals, knowledge retrieval pipeline demonstration, and coding challenge.

DAY 5

End-to-End Guided Capstone

MINI-PROJECT & LIVE DEMO SHOWCASE

Students collaborate in multidisciplinary teams under direct mentor guidance. Teams define problem statements, architect data pipelines, train models or integrate LLM APIs, debug applications, and present live demonstrations followed by comprehensive project evaluation and closing ceremonies.

WHAT YOU WALK AWAY WITH

Key Student Learning Outcomes

01

Production Readiness

Confidence to clean raw data, train algorithms, and persist deployable models.

02

Modern AI Literacy

Hands-on experience with LLM APIs, prompt engineering, and intelligent chatbot architectures.

03

Portfolio Capstone

A verified GitHub-ready mini project to showcase on resumes and internship applications.

INSTITUTIONAL COLLABORATION DETAILS

TARGET GROUPS	Engineering (all branches), BCA/MCA, B.Sc (IT/CS/Maths/Physics), Polytechnic, and MBA/BBA.
NOMINATION PROCESS	College Training & Placement (T&P) cells or Department Heads can submit bulk candidate rosters.
VENUE OPTIONS	NIELIT Raipur Campus or Host College Computer Labs (equipped with internet & browser support).
TIMING & SCHEDULE	10:00 AM – 5:00 PM daily (Morning session, Lunch break, Afternoon hands-on lab, Evening wrap-up).

REGISTRATION & CONTACT DESK

रा.इ.सू.प्रौ.सं NIELIT RAIPUR

HOST INSTITUTE

NIELIT Raipur

TRAINING DATES

26-09-2026

Limited seats per batch to ensure individual terminal hands-on practice.

Build. Train. Deploy.

Your first production-grade AI project starts here.

National Institute of Electronics & Information Technology (NIELIT) Raipur | Ministry of Electronics & IT, Government of India