राष्ट्रीय इलेक्ट्रॉनिकी एवं सूचना प्रौद्योगिकी संस्थान
National Institute of Electronics & Information Technology
(Under Ministry of Electronics and Information Technology, Govt. of India)
Deoria Road, Gorakhpur-273010

Industrial Training on AI, Data Analytics & Cyber Security - A Multidisciplinary Approach

03 Weeks / 45 Hrs. (3 Hrs. per day)

About the Program

This 03 weeks Industrial Training Program offers a comprehensive journey into Artificial Intelligence, Data Analytics, and Cyber Security, three of the most transformative technologies shaping today's digital era. With industries, education systems, and governance increasingly adopting these innovations, there is a growing need for skilled professionals who can understand and apply these domains effectively. Faculty members of ITIs, Polytechnics, Engineering Colleges, and Technical Universities play a critical role in preparing the next generation of students to thrive in this fast-changing environment.

Objective

The key objectives of this program are to:

- Build foundational and advanced knowledge in AI, Data Analytics, and Cyber Security.
- Provide hands-on exposure to tools, frameworks, and platforms used in industries.
- Develop participants' ability to integrate multidisciplinary approaches into teaching, research, and innovation.
- Strengthen the capacity of faculty members to mentor students in project-based learning and industry-driven applications.
- Promote awareness about the role of data-driven decision-making and cyber resilience in modern digital ecosystems.

Intended Users

The program is specifically designed for:

- Faculty members of ITI, Polytechnic, Engineering Colleges, and Technical Universities.
- Trainers and educators engaged in Computer Science, Information Technology, Electronics, and related disciplines.
- Any Faculty members from any stream who aspire to update their knowledge in cutting-edge technologies and introduce innovative teaching practices.

Key Deliverables of the Program

Participants shall gain practical, industry-ready skills in AI, Data Analytics, and Cyber Security, blending theory with hands-on practice for teaching, research, and career advancement.

- **Week 1 – Artificial Intelligence**
  - AI fundamentals, supervised & unsupervised learning
  - Deep learning, NLP, computer vision
  - Practical applications in Cyber Security, IoT, and industry use cases
- **Week 2 – Data Analytics using Spreadsheet**
  - Basics: data handling, formatting, visualization
  - Advanced: PivotTables, financial analysis, investment appraisal
  - AI-powered Excel tools for decision-making
- **Week 3 – Cyber Security**
  - Core concepts & real-world attack cases
  - OSINT, ZTA, SIEM, DLP, MDM
  - Honeypot , IDS , Next Gen Firewall
  - Web application security, penetration testing, network defense
  - Cyber Law & DPDP Act 2023
  - Python-based security automation
  - Cyber hygiene and future trends

How to Apply?

Visit the Online Registration Portal (ORP) to register in the course https://regn.nielitvte.edu.in

(under Online Program Select "Gorakhpur" from "Program Offered by" drop down menu then apply for the course "Industrial Training on AI, Data Analytics and Cyber Security- A Multidisciplinary approach")

Scan the QR code

Certification

E-Certificate will be provided to the successful participants

Program Fees

*₹ 1350.00

(* Inclusive of GST and other taxes)

Eligibility

Open to all Faculty/Trainer/ Staff/ Teacher/ of ITI/ Polytechinc/ Engineering College / School STEM Teacher

Duration & Mode

03 Weeks/ 45 Hours (03 hours per day)

Mode: Online

Prerequisite

- Candidate must have computer/laptop with at least 8 GB RAM or higher.
- Internet connection with good speed (preferably 4 Mbps or higher).
- Candidates should have basic knowledge of Computer.

Get in Touch

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Apply through : https://regn.nielitvte.edu.in

Day wise Contents

Days	Topics	Duration
Day 01	Introduction to AI & Supervised Learning Basics	03 Hours*
Day 02	Advanced Supervised & Model Deployment	03 Hours*
Day 03	Unsupervised Learning & AI in Data Analytics	03 Hours*
Day 04	Deep Learning with NLP	03 Hours*
Day 05	Computer Vision & AI in Cybersecurity/IoT	03 Hours*
Day 06	Spreadsheet Fundamentals & Data Basics	03 Hours*
Day 07	Data Handling & Operations	03 Hours*
Day 08	Charts, Visualization & Functions	03 Hours*
Day 09	Pivot Tables, Data Models, Flash Fill, AI Tools	03 Hours*
Day 10	Data View and Security, Miscellaneous	03 Hours*
Day 11	Fundamentals of Cyber Security	03 Hours*
Day 12	Real-world Technology to mitigate the cyber attack	03 Hours*
Day 13	Web Application Security & Penetration Testing	03 Hours*
Day 14	Cyber Security using Python	03 Hours*
Day 15	Cyber Hygiene, Policies & Future Trends**:**	03 Hours*
	Total	**45 Hours**

***Duration:**
Theory+Practical: - 02 hours
Exercise/Assignment/Quiz: - 01 hour

Section-A: Artificial Intelligence (AI)

Unit-1 – Introduction to AI & Supervised Learning Basics

- Introduction to AI & Its Applications – history, growth, and future of AI, ethical & responsible AI (bias, fairness, privacy), AI applications in industry
- Supervised Learning Foundations – linear regression, logistic regression,
- Real life example (Demo)predicting student performance using regression

Unit-2 – Advanced Supervised & Model Deployment

- Classification Algorithms: KNN (theory + demo) and Evaluation metrics (accuracy, precision, recall, F1-score)
- Model Deployment Basics: Best practices in model deployment
- Hands-on: Deploying a trained ML model (simple Flask app / Jupyter demo)

Unit-3 – Unsupervised Learning & AI in Data Analytics

- Unsupervised Learning – K-Means Clustering , case study: market segmentation
- AI in Data Analytics – predictive & prescriptive analytics, case study: customer churn prediction with clustering insights

Unit-4 – Deep Learning with NLP

- Deep Learning Foundations – Neural Networks (Perceptron & MLP), basics of CNN & RNN, transfer learning & pre-trained models
- Natural Language Processing (NLP) – text preprocessing & tokenization, sentiment analysis with ML/DL models, case study: spam/phishing detection

Unit-5 – Computer Vision & AI in Cybersecurity/IoT

- Computer Vision – CNN in practice (image classification), hands-on: recognizing handwritten digits or objects
- AI in Interdisciplinary Domains – AI for IoT & Smart Manufacturing, AI in Cyber Security (anomaly detection, phishing detection)

Section-B: Data Analytics (using Spreadsheet)

Unit-6 – Spreadsheet Fundamentals & Data Basics

- Introduction to Spreadsheet Applications – concepts, interface, navigation (ribbon, row, column, cell, worksheet, workbook, cell address, data range, formula, chart)
- Working with Worksheets – selecting areas, saving/opening files, inserting/deleting rows or columns, using named cells, multiple sheets, avoiding errors
- Understanding Data – quantitative (discrete, continuous) and qualitative (categorical, ordinal) data types
- Formatting – cell & sheet formatting, conditional formatting, format as table, cell styles

Unit-7 – Data Handling & Operations

- Data Handling Essentials – find, replace, go to, go to special
- Cell Referencing – relative, absolute, mixed references
- Sorting & Filtering – quick sort, multi-criteria sort, quick filter, multi-criteria filter, performing calculations on filtered data
- Data Tools – get external data (Access, web, text, other), parsing, text-to-columns, remove duplicates, data validation, consolidate
- What-if Analysis – scenario manager, goal seek, data tables

Unit-8 – Charts, Visualization & Functions

- Chart Design – chart types, quick layout, chart styles, colors, switch row/column, select data, move/change chart type
- Functions in Excel – date/time, financial, logical, lookup & reference, math/trigonometry, statistical, text functions

Unit-9 – Pivot Tables & Data Models

- Introduction to Pivot Tables – creating, modifying, grouping (dates, ranges), drill-down, sorting & refreshing
- Advanced PivotTable Operations – multiple row labels, collapsing/expanding, user-defined groups, subtotals, formulas on pivoted data, tabular forms
- Pivot Charts & Power Pivot – adding unrelated data, creating data models, building relationships between tables, creating PivotCharts

Unit-10 – Advanced Financial Analysis, Security & Miscellaneous

- Financial Arithmetic – simple & compound interest, fractional years, compounding variations, equivalent annual rate, growth rate, annuities, sinking funds, debt repayments
- Investment Appraisal – present value, discounting, NPV, IRR, APR
- Data View & Security – hide/show rows/columns/sheets, protect sheet/workbook, sharing, allowing users to edit ranges
- Miscellaneous – page setup & printing (margins, orientation, size, breaks, print area, titles, scaling, background)
- AI Tools & Add-ins – intro to AI-powered features in Excel, installing/getting add-ins

Section-C: Cyber Security

Unit-11 – Fundamentals of Cyber Security

- Introduction to Cyber Security and its Importance
- Threat landscape & attack vectors
- CIA triad (Confidentiality, Integrity, Availability)
- Security Concepts & Terminology
- Real-world cyber attack cases (ransomware, phishing, data breaches)

Unit-12 – Real-world Technology to mitigate the cyber attack

- Introduction to OSINT (Open-Source Intelligence)
- ZTA (Zero Trust Architecture)
- SIEM (Security Information and Event Management)
- DLP (Data Loss Prevention)
- MDM (Mobile Device Management)
- DMZ (**Demilitarized Zone)**
- Honeypot
- IDS (Intrusion Detection System)
- Next-Gen Firewall (NGFW)

Unit-13 - **Web Application Security**

- Secure coding principles
- OWASP Top 10
- Web application architecture and common attack surface
- Setup & explore DVWA (Damn Vulnerable Web Application)
- Perform SQL Injection & XSS attacks on DVWA

Unit-14 – Penetration Testing & Network Security

- Introduction to penetration testing lifecycle (Reconnaissance, Scanning, Exploitation, Reporting)
- Basics of Nmap for network scanning (host discovery, port scanning, service detection)
- Wireshark: Capture HTTP vs HTTPS traffic

Unit-15 – Cyber Security using Python

- Python essentials for cyber security (sockets, subprocess, regex, requests etc**)**
- Automating security tasks with Python
- Applications: Port scanner with Python, Automate Nmap scanning with Python, Simple brute-force script demo, Log file parsing & anomaly detection, IDS Implementation

Unit-16 – Cyber Hygiene, Policies & Future Trends:

- Cyber Hygiene essentials
- Cyber Law & DPDP Act
- Policies & Frameworks
- Future trends