AI Course

Duration: **JOB-READY PROGRAM - 6 Months**

Level : Job Ready

Best For : College students, freshers

Goal: Make students **industry-ready AI professionals** with strong foundations in **Python, Machine Learning, Deep Learning & AI projects**.

Highly suitable for software development roles in **IT companies, startups, product-based firms, and freelancing projects**.

⭐ Month 1 – Python Programming & AI Foundations

Explanation:

This month builds a **strong programming foundation** required for AI. Students learn Python from scratch and understand how AI systems work at a high level.

Topics Covered:

1. Introduction to AI & Industry Overview

What is AI? Difference between AI, ML, Deep Learning & Data Science
Narrow AI vs General AI
Real-world AI use cases (Google, Netflix, ChatGPT, Tesla, Healthcare, Finance)
AI career paths & job roles

2. Python Programming (Core)

Python syntax & environment setup
Variables, data types
Conditional statements & loops
Functions & modules
Error handling basics

3. Data Structures in Python

Lists, tuples, sets, dictionaries
Working with strings
File handling basics

4. Python for AI Workflow

Writing clean, reusable code
Introduction to Jupyter Notebook
Understanding datasets & CSV files

Hands-On Work – Month 1

Python practice programs
Data manipulation mini tasks
Basic AI workflow demo

⭐ Month 2 – Data Handling, Statistics & Visualization

Explanation:

AI runs on data. This month focuses on **understanding, cleaning, analyzing and visualizing data** to prepare it for AI models.

Topics Covered:

1. Mathematics & Statistics for AI (Practical)

Mean, median, mode
Probability concepts
Standard deviation & variance
Correlation & data relationships

2. Data Analysis Libraries

NumPy (arrays, operations)
Pandas (dataframes, filtering, grouping)
Handling missing values
Data normalization

3. Data Visualization

Matplotlib basics
Seaborn charts
Visualizing trends & patterns
Interpreting data insights

Hands-On Work – Month 2

Analyze a real dataset
Create visual insights dashboard
Data cleaning & preprocessing project

⭐ Month 3 – Machine Learning (Core Concepts & Models)

Explanation:

Students learn **how machines learn from data** and start building ML models from scratch.

Topics Covered:

1. Machine Learning Fundamentals

What is Machine Learning?

Supervised vs Unsupervised learning
Training data vs testing data
Feature selection

2. Supervised Learning Algorithms

Linear Regression
Logistic Regression
K-Nearest Neighbors (KNN)
Decision Trees

3. Model Training & Evaluation

Train-test split
Accuracy, precision, recall
Overfitting & underfitting
Model improvement techniques

Hands-On Work – Month 3

Build prediction models
Classification problem project
ML performance comparison

⭐ Month 4 – Advanced ML & Deep Learning

Explanation:

This month introduces **advanced ML techniques and neural networks**, which power modern AI systems.

Topics Covered:

1. Advanced Machine Learning

Random Forest
Gradient Boosting (concept)
Clustering (K-Means)
Dimensionality reduction basics

2. Introduction to Deep Learning

What are neural networks?
Perceptron & layers
Activation functions
Loss functions

3. Deep Learning Frameworks

TensorFlow / Keras (intro)
Building simple neural networks
Training deep learning models

Hands-On Work – Month 4

Neural network project
Image or numeric data classification

⭐ Month 5 – NLP, Computer Vision & Generative AI

Explanation:

Students explore **cutting-edge AI fields** used in chatbots, recommendation systems, and image recognition.

Topics Covered:

1. Natural Language Processing (NLP)

Text preprocessing
Tokenization & stemming
Sentiment analysis
Text classification

2. Large Language Models & Generative AI

What are LLMs?
ChatGPT & transformer concepts
Prompt engineering
Building AI assistants

3. Computer Vision (CV)

Image basics
Image preprocessing
Object detection (concept)
Face recognition overview

Hands-On Work – Month 5

Chatbot or NLP project
Image classification project

⭐ Month 6 – AI Applications, Deployment & Career Prep

Explanation:

The final month prepares students for **industry, freelancing, and interviews**, focusing on real projects and deployment.

Topics Covered:

1. End-to-End AI Project Development

Problem definition
Data collection & preprocessing
Model building
Evaluation & optimisation

2. AI Deployment Basics

Model serialization
APIs for AI models
Deploying AI apps (concept)
Cloud overview

3. Responsible & Ethical AI

Bias & fairness
Data privacy
AI limitations
Ethical use of AI

4. Portfolio & Job Preparation

Building AI portfolio
GitHub project showcase
Resume writing for AI roles
Interview questions & mock interviews

Final Projects – Month 6

1 Major AI Project (ML / NLP / CV / Generative AI)
Project documentation
Live demo / presentation

⭐ Final Outcomes After 6 Months

Students will be able to:

AI Engineer (Junior)
Machine Learning Engineer
Data Analyst
AI Research Intern

Why Popular

- High demand in IT companies
- One language (JavaScript) from frontend to backend
- Perfect for full-stack jobs & freelancing

💼 Freshers' Salary Range

₹20,000 – ₹25,000/month

🤝 Our Partners

भारतीय प्रौद्योगिकी संस्थान मंडी

INDIAN INSTITUTE OF TECHNOLOGY MANDI