



## Course: Artificial Intelligence Course

**Fee:** Rs.45000

**Duration:** 6month

**Syllabus:-**

### Module 1: Introduction to Artificial Intelligence

- What is AI? History & Evolution
- Types of AI: Narrow AI vs. General AI vs. Super AI
- Applications of AI in Different Industries
- Ethical Considerations & AI Challenges

### Module 2: Basics of Python for AI

- Introduction to Python for AI
- Setting up the AI Development Environment (Jupyter Notebook, Anaconda)
- Data Structures & Libraries (NumPy, Pandas, Matplotlib)
- Writing Basic Python Programs for AI

### Module 3: Machine Learning Fundamentals

- What is Machine Learning?
- Supervised vs. Unsupervised Learning
- Regression vs. Classification Problems
- Performance Metrics (Accuracy, Precision, Recall, F1-Score)

### Module 4: Data Pre-processing & Feature Engineering

- Understanding Datasets
- Handling Missing Values & Outliers
- Feature Scaling & Encoding Categorical Data
- Splitting Data into Training & Testing Sets

## Module 5: Supervised Learning Algorithms

- Linear & Logistic Regression
- Decision Trees & Random Forests
- Support Vector Machines (SVM)
- Naïve Bayes & K-Nearest Neighbors (KNN)

## Module 6: Unsupervised Learning Algorithms

- Clustering Algorithms (K-Means, DBSCAN, Hierarchical Clustering)
- Dimensionality Reduction (PCA, t-SNE)
- Association Rule Learning (Apriori, Eclat)

## Module 7: Deep Learning with Neural Networks

- Introduction to Neural Networks & Deep Learning
- Activation Functions (ReLU, Sigmoid, Softmax)
- Forward & Backpropagation
- Implementing a Neural Network using TensorFlow/Keras

## Module 8: Convolutional Neural Networks (CNNs) for Image Processing

- What are CNNs?
- Layers in CNN (Convolution, Pooling, Fully Connected)
- Image Classification with CNN
- Transfer Learning with Pre-trained Models

## Module 9: Natural Language Processing (NLP)

- Introduction to NLP
- Text Preprocessing (Tokenization, Lemmatization, Stopwords)
- Sentiment Analysis & Named Entity Recognition (NER)
- Building a Chatbot using NLP

## Module 10: Reinforcement Learning

- Understanding Reinforcement Learning Concepts
- Markov Decision Processes (MDP)
- Q-Learning & Deep Q Networks (DQN)
- AI in Game Development (Training an AI to Play Games)

## Module 11: AI Ethics & Bias in AI

- Ethical Challenges in AI
- AI Bias & Fairness Issues
- Explainability & Interpretability of AI Models

- Responsible AI Development

## Module 12: AI in Real-world Applications & Final Project

- AI in Healthcare, Finance, Automotive, and E-commerce
  - Building an AI-powered Web Application
  - Deployment of AI Models (Flask, FastAPI)
  - Final AI Capstone Project
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### Who Should Take This Course?

- Beginners interested in **Artificial Intelligence & Machine Learning**
- Data Scientists & Developers looking to expand into **AI & Deep Learning**
- Professionals preparing for **AI-related jobs & research**

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