



ARTIFICIAL INTELLIGENCE COURSE

Prepared By (CTO) SYNTHOQUEST

45 Days Duration

Duration: 45 days × 2 hrs/day = 90 hrs

Goal: Equip learners with foundational AI knowledge, machine learning techniques, neural networks, and practical AI applications.

Core Domains

1. Introduction to AI (5%)

- History, definition, and applications of AI
- AI vs Machine Learning vs Deep Learning
- Types of AI: Narrow, General, Super AI

2. Mathematics & Statistics for AI (10%)

- Linear algebra: vectors, matrices, operations
- Probability & statistics: distributions, Bayes theorem
- Calculus basics: derivatives, gradients for optimization

3. Python for AI (10%)

- Python basics: data types, loops, functions
- Libraries: NumPy, Pandas, Matplotlib
- Data preprocessing, visualization, and cleaning

4. Machine Learning (20%)

- Supervised learning: regression, classification
- Unsupervised learning: clustering, dimensionality reduction
- Reinforcement learning basics
- Model evaluation: accuracy, precision, recall, F1-score

5. Deep Learning & Neural Networks (15%)

- Perceptron, multilayer perceptron
- Activation functions, backpropagation
- Convolutional Neural Networks (CNN) basics
- Recurrent Neural Networks (RNN) basics

6. Natural Language Processing (NLP) (10%)

- Text preprocessing: tokenization, stemming, lemmatization
- Bag-of-Words, TF-IDF, word embeddings
- Applications: chatbots, sentiment analysis

7. Computer Vision (10%)

- Image processing basics
- Feature extraction, object detection, image classification
- Tools: OpenCV, PIL, TensorFlow/Keras for images

8. AI Tools & Frameworks (10%)

- Scikit-learn, TensorFlow, PyTorch, Keras
- Jupyter Notebook, Colab environment
- Pre-trained models and APIs

9. AI Ethics, Deployment & Applications (10%)

- Bias, fairness, transparency, explainable AI
- AI in healthcare, finance, robotics, security
- Model deployment basics: Flask, FastAPI, cloud deployment

Business Associate: vivek

Email: contact@synthoquest.com

Mobile: +91-8333801638 (whats app)