

## AI & Machine Learning Internship Curriculum (3 Months + Mini Project)

### Month 1: Programming & Data Foundations

#### Week 1: Python for AI/ML

- Introduction to AI & ML
- Python Basics for ML
- Data Types, Loops, Functions
- NumPy Basics

#### Week 2: Data Handling & Visualization

- Pandas (DataFrames, Cleaning)
- Handling Missing Data
- Data Preprocessing
- Data Visualization (Matplotlib, Seaborn)

#### Week 3: Statistics & Math for ML

- Mean, Median, Mode
- Variance & Standard Deviation
- Probability Basics
- Correlation & Covariance

#### Week 4: Exploratory Data Analysis (EDA)

- Understanding Datasets
- Feature Engineering
- Outlier Detection
- Data Scaling & Normalization

### Month 2: Machine Learning Algorithms

#### Week 5: Supervised Learning

- Linear Regression
- Logistic Regression

- K-Nearest Neighbors (KNN)
- Decision Trees

### **Week 6: Unsupervised Learning**

- Clustering (K-Means)
- Hierarchical Clustering
- Dimensionality Reduction (PCA)

### **Week 7: Model Evaluation & Optimization**

- Train-Test Split
- Cross Validation
- Accuracy, Precision, Recall, F1-score
- Overfitting & Underfitting

### **Week 8: ML Libraries & Pipelines**

- Scikit-learn
- ML Pipelines
- Model Saving & Loading
- Intro to Real-Time ML Applications

## **Month 3: AI Concepts & Mini Project**

### **Week 9: Introduction to AI**

- What is Artificial Intelligence
- Search Algorithms (Basics)
- Rule-Based Systems
- Intro to Neural Networks

### **Week 10: Deep Learning Basics**

- Artificial Neural Networks (ANN)
- TensorFlow / Keras Basics
- Model Training Concepts

### **Week 11–12: Mini Project**

- Problem Statement Selection
- Dataset Collection
- Model Building & Training
- Testing & Evaluation
- Project Deployment (Basic)

### Mini Project Ideas

- House Price Prediction
- Student Performance Prediction
- Spam Email Detection
- Movie Recommendation System
- Credit Card Fraud Detection

### Internship Outcomes

- Strong AI & ML Fundamentals
- Hands-on Project Experience
- Real-world Dataset Handling
- GitHub Portfolio
- Internship Certificate & Interview Guidance