



Duration: 4 Weeks | **Level:** Beginner to Intermediate

Mode: Hands-on Training + Projects + Assessments

Prerequisites: Basic computer usage. No prior coding experience required.

WEEK 1: Python Programming Fundamentals for Data Science

Topics:

- Introduction to Python
- Variables, Data Types, and Operators
- Conditional Statements and Loops
- Functions and Modules
- Lists, Tuples, Sets, Dictionaries
- File Handling and Exceptions

WEEK 2: Data Handling with Pandas & NumPy

Topics:

- Introduction to NumPy: Arrays, Operations, Indexing
- Introduction to Pandas: Series & DataFrames
- Data Cleaning: Handling Missing/Null Values
- Data Filtering, Sorting, and Grouping
- Importing/Exporting Data (CSV, Excel, JSON)

Lab Exercises:

- Create, slice, and manipulate arrays and DataFrames
- Clean and transform messy datasets

WEEK 3: Data Visualization & EDA (Exploratory Data Analysis)

Topics:

- Introduction to Matplotlib & Seaborn

- Line Plot, Bar Chart, Histogram, Scatter Plot
- Heatmaps, Boxplots, Pairplots
- Exploratory Data Analysis (EDA) Techniques
- Outlier Detection, Correlation Analysis



WEEK 4: Introduction to Machine Learning using Scikit-learn



Topics:

- Introduction to Machine Learning
- Supervised vs Unsupervised Learning
- Data Preprocessing (Scaling, Encoding)
- Building ML Models: Linear Regression, KNN, Decision Tree
- Model Evaluation: Accuracy, Confusion Matrix, Cross-validation



Final Project:

- **End-to-End Machine Learning Project**
(e.g., House Price Prediction, Student Marks Predictor)