Recipro Skills

Data Science Foundation

1. Introduction to Data Science

- What is Data Science?
- Applications of Data Science in Real World
- Overview of Data Science Workflow
- Tools Used in Data Science (Python, Jupyter Notebook)

2. Python for Data Science

- Basics of Python (Variables, Data Types, Operators)
- Control Flow (If-Else, Loops)
- Functions and Modules
- List, Tuple, Dictionary, and Set Operations

3. Introduction to Data Handling & Manipulation

- Importing and Exporting Data (CSV, Excel, JSON)
- Using `pandas` for DataFrames
- Data Cleaning (Handling Missing Values, Duplicates)
- Data Filtering, Sorting, and Indexing

4. Data Visualization

- Introduction to Data Visualization
- Matplotlib Basics (Line, Bar, Scatter Plots)
- Seaborn for Advanced Visualizations (Heatmaps, Boxplots, Pairplots)
- Customizing Plots for Better Understanding

5. Introduction to Statistics for Data Science

● Descriptive Statistics (Mean, Median, Mode, Variance, Standard Deviation)
● Probability Basics
● Data Distributions (Normal, Binomial, Poisson)
● Correlation vs Causation

6. Introduction to Machine Learning Concepts *(Theory Only)*

● What is Machine Learning?
● Types of ML (Supervised vs Unsupervised)
● Basic ML Workflow (Data Preprocessing, Model Training, Testing)

7. Introduction to Numpy for Numerical Computing

● Creating and Manipulating Arrays
● Broadcasting and Vectorized Operations
● Indexing, Slicing, and Reshaping Arrays
● Working with Mathematical Functions

8. Working with Large Datasets

● Handling Large Datasets with Pandas
● Performance Optimization Techniques
● Introduction to SQL for Data Queries

9. Basics of Exploratory Data Analysis (EDA)

● Understanding Distributions with Histograms
● Identifying Outliers (Boxplots, Z-score, IQR)
● Feature Engineering Basics
● Data Cleaning Best Practices

10. Basics of Data Ethics & Real-World Applications

● Ethical Considerations in Data Science
● Responsible Data Usage & Bias Awareness
● Case Studies on Real-World Data Science Applications

*We suggest you to Follow this Syllabus - Recipro Skills