3-Month (12-Week) Data Science Course Curriculum

Module 1: Python + Statistics Foundations

Subheading: Programming + Mathematical Base for Data Science

Week 1

- Python Basics (Variables, Loops, Functions)
- Data Structures (List, Tuple, Dict, Set)
- NumPy Fundamentals (Arrays, Indexing, Operations)

Week 2

- Descriptive Statistics (Mean, Median, Mode, Std Dev)
- Probability Basics
- Distributions (Normal, Skewed)
- Sampling & Central Limit Theorem

Module 2: Data Analysis & Visualization

Subheading: Data Cleaning, EDA & Insights

Week 3

- Pandas (DataFrames, Filtering, Grouping)
- Data Cleaning (Missing Values, Duplicates, Outliers)
- Feature Understanding

Week 4

- Exploratory Data Analysis (EDA)
- Visualization using:
    - Matplotlib
    - Seaborn
- Correlation & Insights Extraction

Module 3: SQL for Data Science

Subheading: Data Extraction & Feature Creation

Week 5

- SQL Basics (SELECT, WHERE, ORDER BY)
- JOINs (INNER, LEFT, RIGHT)
- GROUP BY, Aggregations

Week 6

- Subqueries & CTEs
- Window Functions (RANK, ROW_NUMBER)
- Feature Engineering using SQL
- Real Dataset Practice

Module 4: Machine Learning (Core)

Subheading: Model Building & Evaluation

Week 7 – Supervised Learning (Regression)

- Linear Regression
- Polynomial Regression
- Model Evaluation (MAE, MSE, RMSE, R^2)

Week 8 – Classification

- Logistic Regression
- KNN
- Decision Tree
- Confusion Matrix, Accuracy, Precision, Recall, F1

Module 5: Advanced Machine Learning

Subheading: Ensemble & Unsupervised Learning

Week 9

- Random Forest
- Gradient Boosting
- XGBoost
- Model Tuning (GridSearchCV)

Week 10

- Clustering (K-Means, DBSCAN)
- Dimensionality Reduction (PCA)
- Introduction to Feature Engineering

Module 6: Business Intelligence & Deployment

Subheading: Visualization + Real-World Usage

Week 11

- Power BI / Tableau
- Dashboard Building
- Business Case Study
- KPI Analysis

Week 12

- Capstone Project (End-to-End Data Science Pipeline)
    - Data Collection
    - Cleaning
    - Modeling
    - Evaluation
    - Dashboard
- Model Deployment (Basic)
    - Streamlit
- Resume + Mock Interviews