Data Science Internship Curriculum (6 Months + Major Project)

Month 1: Python & Statistics Foundations

Week 1–2: Python for Data Science

- Python Basics
- Data Types & Control Structures
- Functions & Modules
- File Handling
- Virtual Environments

Week 3–4: Statistics Basics

- Types of Data
- Mean, Median, Mode
- Variance & Standard Deviation
- Probability Basics
- Data Visualization Introduction

Mini Task: Basic Data Analysis using Python

Month 2: Data Analysis & Visualization

Week 5–6: Data Analysis Libraries

- NumPy
- Pandas
- DataFrames & Series
- Data Cleaning Techniques

Week 7–8: Data Visualization

- Matplotlib
- Seaborn
- Exploratory Data Analysis (EDA)
- Insights & Reporting

Mini Project: Exploratory Data Analysis Project

Month 3: Machine Learning Basics

Week 9–10: Supervised Learning

- Introduction to Machine Learning
- Linear Regression
- Logistic Regression
- KNN
- Decision Trees

Week 11–12: Model Evaluation

- Train/Test Split
- Confusion Matrix
- Accuracy, Precision, Recall
- Overfitting & Underfitting

Mini Project: Prediction Model using ML

Month 4: Advanced Machine Learning

Week 13–14: Unsupervised Learning

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

Week 15–16: Ensemble Techniques

- Random Forest
- Gradient Boosting
- Hyperparameter Tuning

Mini Project: Customer Segmentation Project

Month 5: Tools, SQL & Big Data Basics

Week 17–18: SQL for Data Science

- SQL Basics
- Joins & Subqueries
- Aggregations
- Window Functions (Basics)

Week 19–20: Advanced Tools

- Power BI / Tableau Basics
- Time Series Analysis (Intro)
- Big Data Concepts (Hadoop, Spark – Overview)

Mini Project: Dashboard & Insights Project

Month 6: Major Project & Career Skills

Week 21–22: Major Project Development

Major Project Options:

- Sales Forecasting System
- Recommendation System
- Customer Churn Prediction
- Fraud Detection System
- Healthcare Data Analysis

Features:

- Data Collection & Cleaning
- EDA & Visualization
- Model Building & Evaluation
- Reporting & Presentation

Week 23–24: Career Preparation

- Git & GitHub
- Resume & Portfolio Building
- Interview Preparation

- Mock Interviews
- Data Science Career Guidance

Tools & Technologies

- Python
- NumPy, Pandas
- Matplotlib, Seaborn
- Scikit-learn
- SQL
- Power BI / Tableau
- Jupyter Notebook

Internship Deliverables

- Weekly Assignments
- Mini Projects
- Major Project
- Internship Certificate
- Project Documentation

Final Outcome

- Strong Data Science Fundamentals
- Hands-on Real-Time Projects
- Industry-Ready Skill Set
- Interview & Job Confidence