

# 60 Days - Foundation in Data Analytics with Python

## ***Module 1: Introduction to Data Analysis (1 Day)***

- Importance of data analysis in decision-making
- Python environment setup (Jupyter Notebook, Anaconda)
- Overview of libraries: Pandas, NumPy, Matplotlib, Seaborn

## ***Module 2: Python Basics for Data Analysis (4 Days)***

- Python syntax: variables, data types, and control structures
- Working with lists, dictionaries, tuples, and sets
- Functions and modules for data manipulation

## ***Module 3: Data Manipulation with Pandas (10 Days)***

- DataFrames and Series
- Importing/exporting data (CSV, Excel, SQL)
- Cleaning, filtering, sorting, and aggregating data
- Merging and joining datasets

## ***Module 4: Numerical Computations with NumPy (5 Days)***

- NumPy arrays and operations
- Slicing, indexing, and mathematical computations
- Random sampling and statistical operations

## ***Module 5: Data Visualization with Matplotlib and Seaborn (10 Days)***

- Line plots, bar charts, histograms, scatter plots
- Visualizing categorical and numerical data
- Plot customization (titles, legends, colors)

## ***Module 6: Exploratory Data Analysis (EDA) (10 Days)***

- Summary statistics, correlation, and distributions
- Univariate and bivariate analysis
- Identifying trends, patterns, and outliers

## ***Module 7: Data Analysis Case Study (10 Days)***

- Hands-on EDA with real-world datasets (e.g., sales, customer data)
- Drawing insights and presenting findings

## **90 Days - Intermediate Data Analytics with Python**

*Includes All 60-Day Modules*

*Additional Modules:*

### ***Module 8: Advanced Data Cleaning and Transformation (10 Days)***

- Advanced feature engineering techniques
- Handling time-series and categorical data
- Automating data cleaning workflows

### ***Module 9: Introduction to Predictive Analytics (10 Days)***

- Introduction to machine learning for data analysis
- Scikit-learn basics for predictive modeling
- Regression models (Linear Regression, Ridge, Lasso)

### ***Module 10: Advanced Data Visualization (10 Days)***

- Interactive visualizations with Plotly and Dash
- Advanced Seaborn visualizations
- Customizing dashboards for presentation

### ***Module 11: Real-World Projects (20 Days)***

- End-to-end project: Sales forecasting
- Analyzing customer behavior and trends
- Building dashboards for actionable insights

## **180 Days - Master Data Analytics with Python**

*Includes All 90-Day Modules*

*Additional Modules:*

### ***Module 12: Big Data Analytics (30 Days)***

- Introduction to Big Data frameworks (Hadoop, Spark)
- Working with PySpark for distributed data processing

- Handling large datasets and real-time analytics

### ***Module 13: Advanced Statistical Analysis (20 Days)***

- Hypothesis testing (ANOVA, chi-square)
- Time-series analysis and forecasting
- Bayesian statistics and probabilistic modeling

### ***Module 14: Advanced Machine Learning for Analytics (30 Days)***

- Decision Trees, Random Forests, and Gradient Boosting
- Model evaluation techniques (ROC-AUC, confusion matrix)
- Introduction to clustering and segmentation

### ***Module 15: Data Analytics Deployment and Automation (20 Days)***

- Automating data analysis pipelines
- Deploying analytics dashboards using Flask/Django
- Integration with cloud services (AWS, Azure)

### ***Module 16: Capstone Projects (30 Days)***

- Multi-domain projects integrating all concepts
- Building a complete analytics portfolio
- Presentations and feedback on real-world datasets