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Data Analysis with Python

Transform Data into Actionable Business Insights

4 Weeks Duration • 20 Total Lectures (5 Lectures/Week) • Beginner to Intermediate

About the Course

- **Structured Learning Journey:** From Python basics to advanced Pandas wrangling and executive data storytelling
- **Career-Oriented:** Designed specifically for aspiring Data Analysts, Business Analysts, and IT professionals
- **Comprehensive Scope:** Covers NumPy, Pandas, Exploratory Data Analysis (EDA), Matplotlib, Seaborn, and SQL
- **Hands-On Methodology:** Practical business case studies analyzing real retail, sales, and HR datasets
- **Portfolio Capstone:** Build and present an interactive business analytics dashboard with actionable KPI insights

Who Can Attend?

- Software Developers & Python Developers wanting to master data analysis
- Business Analysts & Data Analysts transitioning to Python workflows
- QA & Test Engineers, Operations Specialists, and Project Managers
- IT Professionals and graduates seeking entry into Data Analytics careers

**No previous Python experience required. Starting points are tailored to learner background.*

Course Outline

Module 1: Python Fundamentals (Week 1)

- Python Basics, Data Types & Variables
- Control Flow: If-Else conditions, For & While loops
- Functions & Reusable Logic
- Exception Handling & Debugging

Module 2: Data Structures & File I/O (Week 1)

- Lists, Tuples, Dictionaries & Sets
- String manipulation & regular expressions
- File Handling: Reading and writing CSV, Excel & JSON files

Module 3: NumPy for Numerical Computing (Week 2)

- NumPy Arrays, Indexing, Slicing & Reshaping
- Vectorized Operations & Broadcasting
- Mathematical & Statistical Operations on large arrays

Module 4: Pandas for Data Wrangling (Weeks 2–3)

- DataFrames & Series: Data loading and inspection
- Data Cleaning: Handling nulls, deduplication & type conversion
- Filtering, Sorting & Conditional Selection
- GroupBy aggregations, Pivot Tables & Multi-indexing
- Merge, Join & Concatenation of multiple business tables

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Module 5: EDA & Visualization (Week 3)

- Exploratory Data Analysis (EDA) framework and correlation analysis
- Matplotlib: Line charts, Bar graphs, Histograms & Scatter plots
- Seaborn: Statistical distribution plots, Boxplots & Heatmaps
- Executive Dashboard Storytelling: Designing intuitive reporting layouts

Module 6: SQL & Industry Case Studies (Week 4)

- SQL Integration with Python (SQLite & SQLAlchemy connection)
- Sales Analytics: Revenue breakdown, customer trends & churn rate
- HR Analytics: Employee turnover, compensation benchmarking & performance
- Customer Analytics: Segmentation, RFM analysis & lifetime value
- Building automated executive KPI reporting dashboards

Hands-on Labs & Projects

- **Sales Performance Dashboard:** Analyzing revenue trends, product category sales, and profit margins
- **Customer Behavior Insights:** Segmenting customer purchasing patterns and calculating retention metrics
- **HR Workforce Analytics:** Visualizing attrition drivers, departmental satisfaction, and headcounts

Tools & Technologies

Python, Jupyter Notebook, VS Code, NumPy, Pandas, Matplotlib, Seaborn, SQL, Microsoft Excel, Git & GitHub

Why This Program?

- Industry-oriented curriculum focused 100% on practical data manipulation
- Hands-on labs using real enterprise transaction datasets
- Build an interview-ready GitHub portfolio with verified projects
- Dedicated mentor support and career transition guidance for Data Analyst roles

How This Fits Your Full Learning Stack

- Data Analytics → SQL → Power BI / Tableau → Data Engineering
- **Final Result: Professional Business & Data Analyst**

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