

Data Analysis with Python for Non-Programmers

Duration: 5 days

Prerequisites: Overview of Programming and Data Analysis

Day 1 – Python Basics for Data Analytics

Topics:

1. What is Data Analytics & Why Python?
 - Python vs Excel for analytics
 - Real-world use cases in business
2. Setting Up the Environment
 - Installing Anaconda & Jupyter Notebook
 - Running your first Python script
3. Python Essentials (No Jargon)
 - Variables & data types (numbers, strings, dates)
 - Lists, tuples, dictionaries for storing data
 - Comments & code readability
4. Working with External Files
 - Reading CSV & Excel
 - Viewing data with Pandas DataFrame

Labs:

- Read sales dataset into Python & view top 5 records
 - Calculate total & average sales
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Day 2 – Data Cleaning & Preparation

Topics:

1. Pandas Basics
 - Selecting rows & columns
 - Filtering data with conditions
2. Cleaning Data
 - Handling missing values
 - Removing duplicates
 - Formatting text data (case, trim, replace)
3. Working with Dates
 - Converting strings to dates
 - Extracting month, year, day for analysis
4. Combining Data
 - Merging & joining datasets
 - Appending rows from multiple files

Labs:

- Clean messy HR dataset and create “Attrition by Month” table
 - Merge sales and customer datasets for analysis
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Day 3 – Python for Data Analysis

Topics:

1. Descriptive Statistics
 - mean(), median(), mode() in Pandas
 - min(), max(), sum(), count()
2. Grouping & Aggregation
 - groupby() for KPIs by category/region
 - Multiple aggregations (sum, avg, count)
3. Pivot-Table Equivalent in Python
 - pivot_table() for summary reports
4. Logical Operations
 - IF/ELSE equivalents in Python
 - Creating calculated columns

Labs:

- Analyze sales by region & category
 - Create profit margin & growth rate columns
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Day 4 – Visualizing Data

Topics:

1. Introduction to Visualization in Python
 - Matplotlib basics
 - Seaborn for better styling
2. Business Charts
 - Line charts for trends
 - Bar charts for comparison
 - Pie charts for share analysis
 - Heatmaps for correlation analysis
3. Chart Customization
 - Titles, labels, legends
 - Color palettes for storytelling
4. Saving & Sharing Visuals
 - Exporting charts as PNG/JPEG
 - Adding charts to Excel reports

Labs:

- Create sales trend chart for last 12 months
 - Build a heatmap showing KPI correlations
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Day 5 – Expanding Python Skills for Analytics

Topics:

1. Python Functions (Beginner-Friendly)
 - Creating and using simple functions
 - Using functions for repetitive calculations
2. Loops for Data Processing
 - for loops and while loops in data analysis
 - Looping through files for batch processing
3. Introduction to APIs
 - What is an API & why it matters in analytics
 - Fetching JSON data from an API
4. Exporting Reports
 - Writing cleaned data to Excel with formatting (xlsxwriter)
 - Creating multiple sheets & charts in Excel
5. Introduction to Automation
 - Scheduling Python scripts for daily/weekly reports

Labs:

- Create a function to calculate KPIs for any dataset
- Loop through multiple monthly sales files & combine into one Excel report
- Fetch live currency exchange rates from a free API and save to Excel