COURSE BROCHURE

Data Analysis with Python

A hands-on two-week program that moves analysts from Excel to Python, reading, cleaning, analyzing and plotting data with pandas and matplotlib and automating reports.

Code	HT-DAT-107
Category	Data & Analytics
Duration	2 weeks
Level	Intermediate
City	Amsterdam

Introduction

Many analysts hit Excel's limits once files grow large or the same steps repeat every week. Python offers a way to write an analysis once and rerun it on fresh data with a single command.

Objectives

- Write organized, reusable Python code in a Jupyter environment
- Load data from CSV files, Excel workbooks and databases into pandas
- Clean, transform, join and summarize data efficiently
- Produce analytical charts with matplotlib and seaborn
- Automate recurring analyses and export their results as ready-made reports

Who should attend

- Data analysts who rely on Excel and want a more powerful tool
- Financial and operational reporting analysts with repetitive tasks
- Researchers processing survey and field study data
- IT staff moving into analysis roles

Skills you will develop

- Python fundamentals for analysis
- Data wrangling with pandas
- Plotting with matplotlib and seaborn
- Report automation

Learning Outcomes

- Write a Jupyter notebook that reads, joins and cleans several files with no manual steps
- Produce grouped summaries and pivot tables with groupby and pivot_table
- Analyze a monthly time series and calculate moving averages and growth rates
- Deliver a script that generates a recurring Excel report complete with charts

Course Outline

Day 1: The Environment and Python Basics

- Setting up the environment and Jupyter and organizing project files
- Variables, data types and basic operations

- Lists, dictionaries, loops and conditions

Day 2: Functions and Organized Code

- Writing functions, their parameters and return values
- Handling errors and reading error messages
- Importing libraries and reading their documentation

Day 3: Introduction to pandas

- Series, DataFrames and indexes
- Reading CSV and Excel files and exploring their contents
- Selecting, filtering, sorting and creating new columns

Day 4: Cleaning Data

- Missing values, duplicates and correcting column types
- Working with text and standardizing categories
- Converting dates and extracting their parts

Day 5: Aggregating and Joining

- Aggregation with groupby and multiple summary functions
- Pivot tables and reshaping between long and wide formats
- Joining tables with merge and concat and matching keys

Day 6: Time-Based Data

- The datetime index and resampling by week and month
- Moving averages, percentage change and time shifts
- Comparing periods and spotting seasonality visually

Day 7: Plotting

- How a matplotlib plot is built: figure, axes and formatting
- Statistical plots with seaborn
- Multi-panel figures saved at a quality suitable for reports

Day 8: Exploratory Analysis

- A structured workflow for exploring an unfamiliar dataset
- Descriptive statistics, correlations and outliers
- Recording hypotheses and observations inside the notebook

Day 9: Automation and Data Sources

- Reading data from databases with SQL queries
- Turning a notebook into a script that runs on new files

- Exporting results to formatted Excel files with charts

Day 10: Capstone Project

- Scoping the project and splitting it into reviewable stages
- Peer code review and improving readability
- Applied project: a complete analysis of multi-branch sales data, from raw files to an automated report presented to the group

Training methodology

Live coding with the trainer, line by line, in prepared Jupyter notebooks
Short daily challenges solved on data participants have not seen before
Side-by-side comparison of the same task in Excel and in pandas
Paired code review before the capstone presentations

Certification

Participants receive a Harbor Training Center certificate of attendance on completing the course.

Upcoming dates

City	Dates	Language	Fee
Amsterdam	22 February 2027 – 5 March 2027	EN	EUR 10,900
Amsterdam	23 August 2027 – 3 September 2027	AR	EUR 10,900

Fees are per participant.

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To register and for details, scan the code or visit:

https://harbor4training.com/en/courses/python-data-analysis