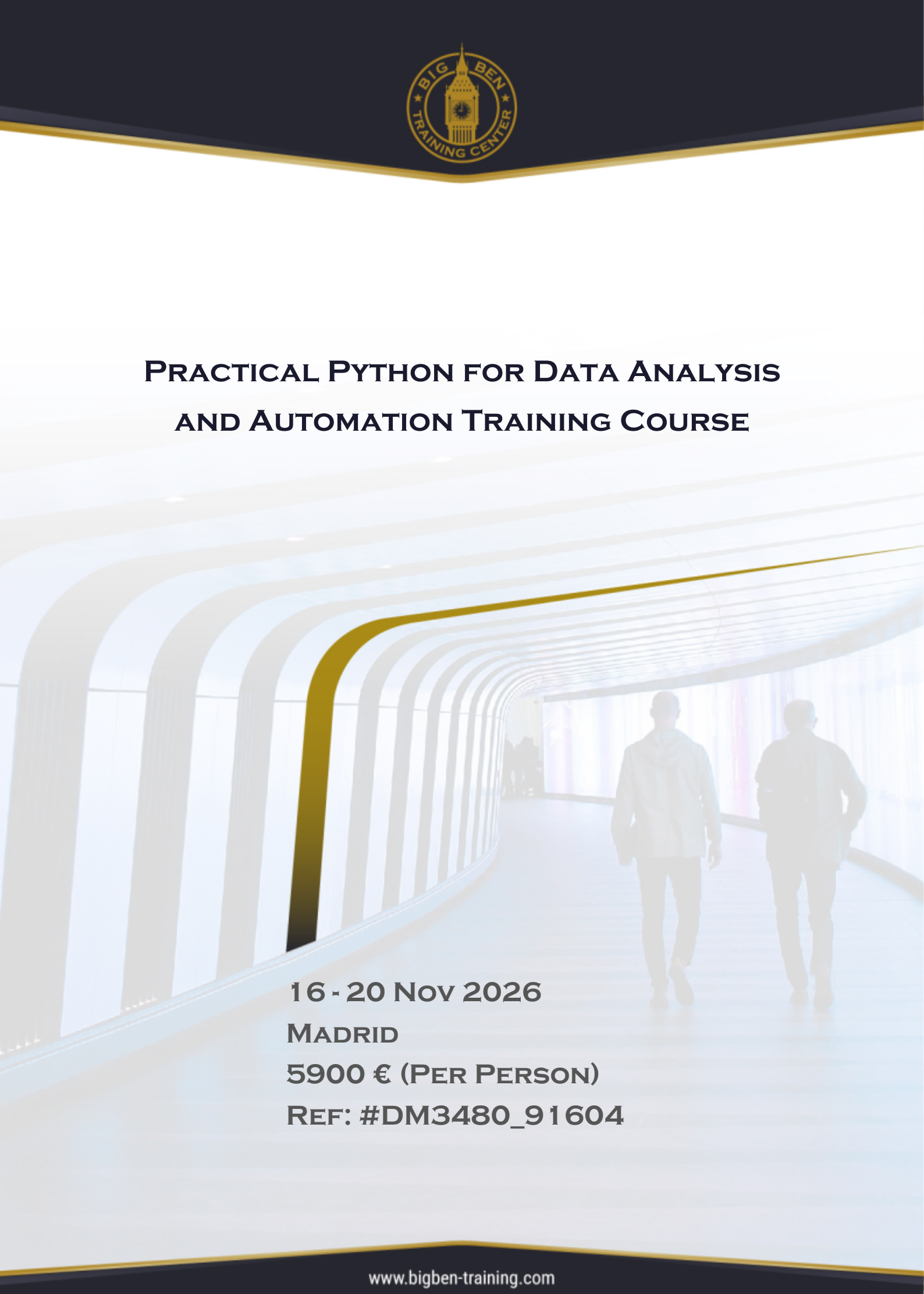
Practical Python for Data Analysis and Automation Training Course



16 - 20 Nov 2026

Madrid

5900 € (Per Person)

Ref: #DM3480_91604

Course Introduction / Overview:

This comprehensive course is designed to equip professionals with the essential Python programming skills required for effective data analysis and task automation. In today's data-driven world, the ability to programmatically manipulate, analyze, and visualize data is no longer a niche skill but a core competency for a wide range of roles. This training moves beyond theoretical concepts to provide hands-on experience with industry-standard libraries. As Wes McKinney, creator of the Pandas library, outlines in his seminal book "Python for Data Analysis," the power of Python lies in its simplicity and the robustness of its ecosystem. Participants will learn to harness this power, starting from the fundamentals of Python syntax and progressing to advanced techniques in data wrangling, exploratory data analysis, and visualization. Furthermore, the course uniquely integrates the principles of automation, teaching participants how to write scripts that can handle repetitive data processing tasks, interact with files, and even scrape data from the web. BIG BEN Training Center has structured this program to ensure that by the end of the five days, attendees will not only understand the concepts but will be able to apply them directly to solve real-world business problems, enhancing efficiency and enabling deeper insights.

Target Audience / This training course is suitable for:

- Data Analysts and Aspiring Data Scientists.
- Business Intelligence Professionals.
- Financial Analysts and Accountants.
- Marketing Analysts and Researchers.
- IT Professionals and System Administrators.
- Engineers and Scientific Researchers.
- Project Managers seeking to leverage data.
- Anyone interested in automating repetitive office tasks.

Target Sectors and Industries:

- Financial Services and Banking.
- Healthcare and Pharmaceuticals.
- Technology and Software Development.
- Retail and E-commerce.
- Consulting and Professional Services.
- Manufacturing and Supply Chain.
- Telecommunications.
- Governmental Agencies and Public Sector Organizations.

Target Organizations Departments:

- Finance and Accounting.
- Marketing and Sales.
- Operations and Logistics.
- Information Technology (IT).
- Research and Development (R&D).
- Human Resources.
- Business Intelligence and Analytics.
- Customer Service and Support.

Course Offerings:

By the end of this course, the participants will have able to:

- Master the fundamental concepts of Python programming, including data types, loops, and functions.
- Utilize the Pandas library to efficiently load, clean, manipulate, and merge datasets.
- Perform powerful numerical computations and array manipulations using NumPy.
- Create a wide range of static and interactive data visualizations with Matplotlib and Seaborn.
- Conduct comprehensive exploratory data analysis (EDA) to uncover patterns and insights.
- Automate repetitive tasks involving file and directory management.
- Write scripts to interact with web APIs and perform basic web scraping to collect data.
- Develop a capstone project that integrates data analysis and automation techniques to solve a practical problem.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be highly interactive, practical, and engaging to ensure maximum knowledge retention and skill acquisition. This course adopts a hands-on, learning-by-doing approach, where theoretical concepts are immediately followed by practical coding exercises and real-world labs. Participants will work with realistic datasets, tackling challenges that mirror those found in a professional environment. The instructor will facilitate a dynamic learning atmosphere through a blend of expert-led lectures, live coding demonstrations, and interactive Q&A sessions. A significant portion of the course is dedicated to case studies and group projects, encouraging collaborative problem-solving and the exchange of ideas among participants. This peer-to-peer learning is a cornerstone of our approach, allowing attendees to learn from diverse perspectives. Continuous feedback is provided by the instructor throughout the sessions to guide participants and solidify their understanding. By the end of the program, attendees will have built a portfolio of scripts and analysis projects, demonstrating their newfound proficiency in Python for data analysis and automation.

Course Agenda (Course Units):

Unit One: Python Fundamentals for Data Analysis

- Introduction to Python and its ecosystem for data science.
- Setting up the development environment (Jupyter Notebooks).
- Python basic syntax, variables, and data types.
- Working with data structures: lists, tuples, dictionaries, and sets.
- Control flow: conditional statements and loops.
- Writing and using functions for reusable code.
- Introduction to Python modules and libraries.

Unit Two: Data Manipulation with NumPy and Pandas

- Introduction to NumPy for numerical data processing.
- Creating and manipulating multi-dimensional NumPy arrays.
- Core concepts of the Pandas library: Series and Data Frame.
- Importing data from various sources (CSV, Excel).
- Indexing, selecting, and filtering data in Data Frames.
- Handling missing data and data cleaning techniques.
- Grouping, merging, and joining datasets.

Unit Three: Data Visualization and Exploratory Analysis

- Principles of effective data visualization.
- Creating static plots with Matplotlib: line, bar, and scatter plots.
- Building more advanced and aesthetically pleasing visuals with Seaborn.
- Customizing plots with labels, titles, and colors.
- Introduction to Exploratory Data Analysis (EDA).
- Generating descriptive statistics and summaries.
- Visualizing distributions with histograms and box plots.

Unit Four: Introduction to Automation with Python

- Automating file and directory operations using the OS module.
- Reading from and writing to text files and CSV files.
- Understanding the basics of web scraping.
- Using the Requests library to fetch web content.
- Parsing HTML with the Beautiful Soup library.
- Introduction to Application Programming Interfaces (APIs).
- Automating data retrieval from a simple web API.

Unit Five: Applied Data Analysis and Automation Projects

- Integrating skills: a complete data analysis workflow.
- Case Study 1: Analyzing sales data to identify trends.
- Case Study 2: Automating the generation of a weekly report.
- Introduction to the capstone project requirements.
- Workshop: Developing a personal automation or analysis project.
- Presenting project findings and code walkthroughs.
- Course review, best practices, and next steps in learning Python.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

As automation capabilities with Python become more advanced, how might the role of a data analyst evolve to focus more on strategic interpretation rather than manual data processing?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by uniquely integrating two critical and synergistic skill sets: data analysis and process automation. While many programs focus solely on one or the other, this curriculum is built on the understanding that modern professionals gain a significant competitive advantage by mastering both. It moves beyond simply teaching the syntax of libraries like Pandas and Matplotlib; it instills a problem-solving mindset focused on efficiency and scalability. The curriculum is structured around a project-based learning philosophy, ensuring that participants are not just passive recipients of information but active builders of solutions. Instead of abstract examples, the course uses realistic case studies and datasets that reflect the complexities of real business challenges. This practical emphasis ensures that the skills learned are not just theoretical but are immediately transferable to the participant's workplace. The focus is on building robust, automated workflows—from data acquisition and cleaning to analysis and reporting—empowering attendees to fundamentally transform how they and their organizations work with data, thereby saving time and unlocking deeper, more strategic insights.