

Advanced Power BI Analytics with Python

An integrated four-day data preparation, modelling and visualisation workshop

FA-0552 · 4 days

Data & Analytics

Combine Python data preparation with Power BI models and reports, then review deployment constraints through a practical capstone.

Introduction

This four-day workshop builds on basic Power BI and Python knowledge to integrate data preparation, modelling and visual analysis. Participants use pandas and plotting libraries alongside Power Query and DAX, then assemble a guided analytics capstone.

Practice covers selected skills also found in the PL-300 and PCEP study domains, followed by workshop questions and debrief. The programme does not claim complete exam-domain coverage, official certification-provider affiliation or guaranteed exam readiness.

Publishing and refresh are reviewed against the selected environment's permissions, licences, Python package support, gateway and privacy requirements. Exercises use public, synthetic or approved non-confidential data, rather than relaxing privacy controls for confidential sources.

Learning outcomes

The course teaches participants to:

- Configure Python integration in Power BI Desktop and understand its execution context.
- Clean and enrich a dataset with pandas and compare Python, Power Query and DAX responsibilities.
- Build a suitable model and reviewed DAX calculations for an analytics scenario.
- Create and interpret Python-generated charts alongside Power BI reports.

- Evaluate service publishing, row-level security and refresh prerequisites without assuming Desktop/service parity.
- Assess selected exam-style knowledge gaps through workshop practice, without a certification outcome promise.
- Present a guided capstone connecting Python preparation, a Power BI model and reviewed visuals.

Prerequisites

- Basic proficiency with Power BI (data import, simple reports).
- Foundational Python knowledge (syntax, loops, functions).
- Installed environments: Power BI Desktop + Python 3.x with pandas, matplotlib, seaborn.

Suitable Power BI service access for publishing exercises and an approved sample dataset. Current official exam study guides are optional learning references, not a condition for attending.

Training outline

1. Day 1 – Environment and Python Review

Environment Setup and Integration

- Configure Python and necessary libraries.
- Enable Python scripting within Power BI Desktop.
- Understand execution context and limitations.
- Create a baseline ETL pipeline: Python → DataFrame → Power BI import.

Python Fundamentals for BI

- Control flow: if/else, loops, boolean logic.
- Data types & collections: strings, lists, tuples, dictionaries.
- Functions & error handling: definition, invocation, scope, try/except.
- Debug techniques for scripting issues inside Power BI.

2. Day 2 – Data Preparation, Modelling and DAX

Transformation and Enrichment

- Use pandas for cleaning, aggregating, merging, pivoting.

- Handle missing values and duplicates.
- Generate enriched datasets—import back into Power BI.
- Compare performance and clarity: ETL in Python vs. Power Query & DAX.

Data Model and DAX

- Build star schemas and optimize relationships.
- Create and review DAX measures and calculated columns, choosing the appropriate calculation context.
- Review filter context, time-intelligence calculations and performance trade-offs.
- Relate selected work to current PL-300 domains: prepare data, model data, visualise/analyse data, and manage/secure Power BI; do not claim coverage of every assessed skill.

3. Day 3 – Analytics, Visuals and Deployment Constraints

Analytics and Custom Visuals

- Create heatmaps, correlation matrices, and distribution plots using Seaborn/Matplotlib.
- Embed Python-generated plot images in Power BI and recognise their interaction and deployment limits.
- Interpret and present analytical patterns, outliers, trends.

Security, Publishing and Refresh

- Publish an approved sample report to Power BI service and review workspace/access prerequisites.
- Apply row-level security and appropriate permissions to the sample; inspect role behaviour.
- Compare scheduled and incremental-refresh requirements. For inline Python scripts, inspect current personal-gateway and privacy constraints; consider external preprocessing where inline refresh is unsuitable.

4. Day 4 – Knowledge Review and Capstone

Study-Domain Review and Workshop Practice

- Review current PL-300 domains and suitable question/case-study practice; use the provider's current guidance rather than fixed obsolete exam details.
- Review Python foundations related to PCEP: syntax, control flow, collections, functions and exceptions.

- Timed workshop practice and debrief to identify gaps and revisit weak concepts; questions are learning exercises, not official exam papers.

Capstone and Presentation

- Build a guided solution: Python data preparation, Power BI model, reviewed visuals and an optional test publication where access permits.
- Present the solution, discuss limitations and refine the scripts/report through constructive review.