

Advanced Power BI: Modelling, Analytics and Automation

A two-day continuation for experienced report creators

FA-0551 · 2 days

Data & Analytics

Improve Power BI models, measures and interactive reports, then evaluate refresh, AI-assisted analysis and Python extensions.

Introduction

This two-day continuation course is for professionals who already create Power BI reports. It develops a clearer semantic model, reusable DAX measures, time-aware analysis and purposeful report interactions, then explores integration, refresh and governed sharing.

Selected exercises use an illustrative reporting scenario. AI-assisted analysis, custom visuals and Python are evaluated with attention to feature availability, security and deployment limits. The course does not promise an unrestricted enterprise-scale or near-real-time system in two days.

Use suitable Power BI Desktop/service access and approved sample data. Copilot exercises depend on supported paid capacity, region and tenant settings; where unavailable, they are demonstrated or discussed. Python hands-on work requires a compatible local environment and approved packages.

Learning outcomes

The course teaches participants to:

- Design a star-schema model with appropriate grain, relationships and date handling.
- Write and review foundational DAX measures using row/filter context.
- Analyse trends and seasonality and evaluate the limitations of built-in forecasting.

- Use drill-through, tooltips, bookmarks and navigation for an interactive reporting task.
- Plan data integration, refresh and controlled service access within the selected storage mode and entitlements.
- Evaluate available AI-assisted features and validate generated analysis or DAX.
- Use a guided Python visual or transformation example and identify its security and service-deployment constraints.

Prerequisites

- Prior Power BI training or hands-on experience
- Ability to build basic reports and visuals
- Familiarity with Power Query fundamentals
- Basic understanding of data concepts (tables, relationships, dates)
- Optional: introductory familiarity with Excel formulas or Python

Power BI Desktop and suitable service permissions for the chosen exercises. Python examples use provided scripts; prior Python is helpful and a configured environment is required for independent hands-on execution.

Training outline

1. Day 1 – Models, DAX and Time-Aware Reports

Power BI as an Analytics Platform

- Reframing Power BI beyond static reporting
- Semantic models and their role in reliable business analysis.
- Import vs DirectQuery vs composite models
- Common mistakes made after beginner-level Power BI usage
- Designing reports for decision-making, not decoration

Data Modelling

- Star schema vs flat models
- Fact tables, dimension tables, and granularity
- Managing relationships and cardinality
- Handling date tables and time intelligence foundations
- Model performance and optimization considerations

DAX Measures

- Understanding row context vs filter context
- Measures vs calculated columns
- Core DAX functions used in enterprise reports
- Building reusable and readable DAX patterns
- Common DAX mistakes and how to avoid them

Time Series and Forecasting

- Time-aware reporting concepts
- Using built-in time intelligence functions
- Trend analysis and moving averages
- Power BI forecasting capabilities and limitations
- Evaluating seasonality and patterns in business data

Advanced Report Interactions

- Report-level, page-level, and visual-level interactions
- Drill-down, drill-through, and tooltip pages
- Dynamic titles, measures, and visuals
- Bookmarks, buttons, and storytelling techniques
- Designing intuitive navigation for complex reports

2. Day 2 — Integration, Governed Extensions and AI

Custom Visuals

- Overview of Power BI custom visuals ecosystem
- When to use built-in vs custom visuals
- Advanced charting scenarios not covered by defaults
- Performance and security considerations with custom visuals
- Governance and certification of visuals

Refresh and Data Integration

- Integrating Power BI with Dataverse, SQL, and cloud data sources

- Scheduled/incremental refresh and dataflows: requirements, storage-mode choices and operational limits.
- Evaluate near-real-time requirements and suitable connection/refresh options; do not assume scheduled refresh is real time.
- Power BI service architecture and workspace strategies
- Sharing, app publishing, and controlled access

AI-Assisted Analysis

- Overview of AI features available in Power BI
- Copilot-assisted reporting and DAX where supported capacity, region and tenant configuration permit; review generated results.
- Available built-in anomaly-detection and key-influencer visuals: supported scenarios and interpretation limits.
- Natural-language analysis through available Copilot experiences; discuss legacy Q&A and its announced retirement rather than rely on it for a new long-lived solution.
- Responsible and governed use of AI features

Python Extensions

- When and why to use Python in Power BI
- Python scripts in Power Query for data transformation
- Python-generated chart images for selected analytics; distinguish their limited interaction from native Power BI visuals.
- Using Python for statistical analysis and forecasting
- Package, execution, security, licensing/region and service-refresh/deployment constraints; check the current platform documentation.