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# Power BI Advanced

**Course #:** BI-300 **Duration:** 2 days

## Prerequisites

Power BI Fundamentals or equivalent.

## Details

This course is designed to deepen your understanding and skills in data analysis, offering comprehensive coverage on advanced data querying, data modeling, DAX (Data Analysis Expressions), and reporting features within Power BI. The course begins with an in-depth look at the Query Editor, introducing M language fundamentals, custom functions in Power Query, and advanced techniques for manipulating data, such as column transformations, table normalization, and dynamic code parameters. It further explores the intricacies of DAX, including editing methods, data model reviews, calculated columns and measures, and advanced functions and variables. The class also covers sophisticated reporting features for desktop and web service environments, focusing on modern visualizations, advanced conditional formatting, dynamic tooltips, slicers, action buttons, and accessibility considerations. Special attention is given to integrating AI data insights for language detection, sentiment analysis, and image tagging, as well as handling JSON, XML, and API data. The course concludes with exploring advanced web service reporting features like comments, scorecards, data flows, and cross-report drillthroughs.

## Software Needed

Power BI Desktop

## Outline

- **The Query Editor and Intro to M**
  - Intro to M
    - Key Vocabulary
    - Dot Notation Logic in M
  - Creating Columns
  - Column Transforms
    - Splitting (3 Methods)
    - Extracting Data
    - Merging Columns
  - Normalizing Tables
    - Getting Unique Lists
    - Adding ID Numbers
    - Replacing Text with ID Numbers
    - Final Relationships
  - Custom Functions (Power Query)
    - How Custom Functions Work
    - Case Study – Parsing Postcodes
    - Case Study – Combining Worksheets
    - Case Study – Combining Webpages

- **Advanced Query Editor**
    - Stored Procedures
        - Loading from Stored Procedures
        - Dynamic M Code Parameters
    - Loading HTML
        - HTML Table function
        - Scraping Websites in Power Query
    - JSON and XML
        - Parsing JSON
        - Expanding Your Results
        - APIs
        - How they Work
        - Simple Examples
        - Exchange Rates
        - Bridging Tables
    - AI Data Insights
        - Language Detection
        - Key Phrases
        - Sentiment Analysis
        - Image Tagging
- **DAX and Model Review**
    - Ways to Edit DAX
        - Power BI
        - DAX View in PBI
        - PowerPivot
        - SSAS Tabular
        - DAX Studio
    - Data Model Review
        - Linking to Data
        - Creating a Data Model
            - Relationships
            - Fact vs Dimension Tables
            - Primary vs Foreign Keys
            - Star Schema
    - Basic Measures and Columns Review
        - DAX Syntax Review
        - Creating Calculated Tables, Calculated Columns, and Measures
        - Basic Statistical Measures
        - Using a Measures Table
        - How to Move Measures into Different Tables
        - Date Table Review
            - Date Table with DAX
            - Date Table with Power Query
- **Calculated Columns and Measures**
    - Overview
        - Understanding Filter Contexts Between Calculated Columns and Measures
    - FILTER Function
        - Review
        - Row Context
        - Applying Criteria
    - Calculated Columns
        - Nested IF and SWITCH Statements
        - Showing RELATED Data
        - Dealing with Blanks
    - CALCULATE Function
        - Filter Context Revisited
        - Removing and Replacing Context
        - Context Transition
    - VALUES Function
        - VALUES
        - LOOKUPVALUE
        - HASONEVALUE Function
        - Listing Single Values
        - Parameter Tables

- Iterator Functions
  - AggregateX Functions
- Text and Information Functions
  - ISBLANK
  - CONCATENATE
  - SUBSTITUTE vs REPLACE
- Operators
  - Text and Grouping
    - &
    - ( )
    - IN
  - Logical Operators
    - NOT
    - &&
    - ||
  - Comparison Operators
    - =, <>, <, <=, >, >=
    - Arithmetic operators
    - +, -, *, /, ^

- **Advanced Functions and Variables**
  - Dynamic Titles
    - How to Create and Edit
  - Filter Measures
    - ISFILTERED Function
    - ALL Function
    - ALLSELECTED Function
    - SELECTEDVALUE Function
  - Understanding EARLIER
    - How it Works
    - Banding using EARLIER
    - Ranking using EARLIER
  - DAX Variables
    - Creating Variables
    - Using for Debugging
    - Comments
  - Advanced Date Functions
    - Date-based Functions
    - Multiple Relationships
    - Moving Averages
  - Parent-Child Hierarchies
    - PATH functions
    - Displaying Different Levels
    - Making the Results Neater

- **Advanced Desktop Reporting Features**
  - Advanced Tables
    - Preventing Data Grouping
    - URLs as Icons
    - Images in Tables
  - Advanced Conditional Formatting
    - Dynamic Displays and Field Values Review
    - Icons and Data Bars
  - Modern Visual Tooltips
  - Advanced Slicers
    - Apply all/clear all Slicers
    - Page Navigation with Slicers
  - Action Buttons
  - Accessibility
    - Tooltip Headers
    - Alt Text
    - Colorblind Themes
    - Customizing Themes

- **Advanced Web Service Reporting Features**
  - The Web Service

- Comments
- Scorecards
- Data Flows and Data Sets
    - Dataset Limitations
    - Creating Dataflows
    - Using Dataflows in Power BI Desktop
- Cross-Report Drillthroughs
    - Drillthrough Review
    - How to Create Cross-report Drillthroughs