

# Data Analysis Basic to Advanced

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## Course Syllabus

Day 1

### Get started with Microsoft data analytics

#### Module 1: Discover data analysis

- Different types of Analysis
- Data analyst tasks

#### Module 2: Get started building with Power BI

- Power BI services and applications work
- The Flow of Power BI
- Building Blocks of Power BI

### Prepare data in Power BI Desktop

#### Module 3: Get data in Power BI

- Identify and connect to a data source
- Select storage mode
- Fix performance issues
- Resolve import errors
- Lab: Get data in Power BI Desktop

#### Module 4: Clean, transform, and load data in Power BI

- Resolve inconsistencies and data quality issues
- Apply user friendly naming conventions
- Apply data shape transformations
- Lab: Load data in Power BI Desktop

Day 2

### Model data with Power BI Desktop

#### Module 5: Design a data model in Power BI

- Introduction to Dimensional Modeling
- Elements of the Dimensional Data Model
- Attributes
- Fact Table
- Dimension Table
- Understanding cardinality
- Creating Relationships and their effects

- Define data granularity
- Configuring Tables
- Work with relationships and cardinality
- Resolve modelling challenges
- Creating Hierarchy
- Lab: Design a data model in Power BI Desktop

Day 3

#### Module 6: Add measures to semantic models

- DAX concept and syntax
- Calculated measures, columns, and tables
- Lab: Create DAX calculations in Power BI Desktop

#### Module 7: Use DAX functions

- Filter context
- Understand and manipulate filter context
- Use DAX functions to extend semantic models
- Create custom date table for Time intelligence functions
- Lab: Advanced DAX calculations in Power BI Desktop

#### Module 8 Using DAX to perform Advanced calculations

- Understanding Row Context with Iterator function
- SUMX
- AVERAGEX
- MAXX
- RANKX

Creating and Manipulating Table in DAX with functions

- FILTER
- SUMMARIZE
- SUMMARIZECOLUMNS
- GROUP BY
- ADD COLUMN
- CALENDAR & CALENDARAUTO

Working with Time Intelligence

- DatesYTD
- DatesQTD
- DatesMTD
- Year on Year growth calculation
- DateAdd
- Parallelperiod
- SameperiodLastYear
- Semi-additive measures

- USERRELATIONSHIP

## Day 4

### Module 9 Empty Values vs Zero

- The BLANK() Function
- The ISBLANK() Function
- Testing for Zero
- Using Measures to find Blanks and Zero
- Using the COALESCE function

### Module 10: Create Visual Calculations

- Understand visual calculations and how they differ from measures
- Create visual calculations in Power BI Desktop
- Use parameters in visual calculations
- Lab: Create visual calculations in Power BI Desktop

### Module 11 Optimizing Performance

- Importance of Variables and Comments
- Introduction to Optimizing Model Performance
- Performance Analyzer
- Dynamic Parameters

## Day 5

### Build Power BI visuals and reports

#### Module 12: Design Power BI reports

- Understand Power BI report structure and report objects
- Choose effective visuals
- Format and configure visuals
- Explore interactive features of visuals
- Creating reports with different visuals
- Cluster and Stacked column and bar chart
- Map visualizations
- Matrices and tables
- Create scatter, waterfall, and funnel charts
- Modify colors in charts and visuals
- Page layout and formatting
- Formatting different Visuals
- Lab: Design a report in Power BI Desktop

### Module 13: Enhance reports for user experience

- Filtering and Sorting Reports
- Sync Slicers
- Creating Drill Through Pages
- Applying Conditional Formatting
- Bookmarks and Selection
- Introduction to advanced data visualization concepts
- Create and import a custom report theme
- Enable personalized visuals in a report
- Explore statistical summary
- Identify outliers with Power BI visuals
- Apply clustering techniques
- Conduct time series analysis
- Use the Analyze feature
- Use advanced analytics custom visuals
- Advanced Analytics – Grouping
- Advanced Analytics – Binning
- Creating Animated Scatter Charts
- Using Visuals to Forecast Values
- Tooltips in Power BI
- Lab: Enhance a report in Power BI Desktop

Day 6

### Module 14 Power BI Reporting

- 01 Get Started
- 02: Designing Report Layouts
  - 02A: Create Your First Report
  - 02B: Develop a Report Template
- 03: Retrieving Report Data
  - 03A: Develop a List Report
- 04: Working with Parameters
  - 04A: Work with Parameters
- 05: Visualizing Report Data
  - 05A: Develop a Table Report
- 06: Adding Interactivity Features
  - 06A: Add Interactivity Features
- 07: Beyond Report Development
  - 07A: Use the Paginated Report Visual

Day 7

## Manage workspaces and datasets in Power BI

### Module 15: Create and manage workspaces

- Create workspaces and manage permissions
- Explore different workspace items
- Explore reports on Power BI service
- Create Report using copilot feature
- Share and distribute reports
- Monitor usage and performance
- Creating and Publishing Apps

### Module 16: Manage semantic models

- Use a Power BI gateway to connect to on-premises data sources
- Configure a scheduled refresh for a semantic model
- Creating Parameters
- Configure incremental refresh settings
- Manage and promote semantic models
- Working with What if Parameter

Day 8

### Module 17: Create Dashboards

- Create a Power BI dashboard
- Pin a live report page to a dashboard
- Add a theme to the visuals in your dashboard
- Set a mobile view
- Lab: Create a Power BI Dashboard

### Module 18: Implement row-level security

- Configure row-level security by using a static method
- Configure row-level security by using a dynamic method
- Lab: Enforce row-level security in Power BI

Day 9

### Module 19: Explore Copilot for Power BI

- Understand semantic model requirements
- Create visuals and reports using Copilot for Power BI
- Create summaries using Copilot for Power BI

### Module 20: Explore end-to-end analytics with Microsoft Fabric

- Describe end-to-end analytics in Microsoft Fabric

- Understand data teams and roles that use Fabric
- Describe how to enable and use Fabric

Day 10

#### **Module 21: Designing Advanced Queries using M**

- Understanding Query Design and the ETL Process
- Introduction to Programming with M
- Understanding Query Folding
- Designing with Query Functions
- Designing with Query Parameters
- Creating Reusable Project Template Files

Day 11

#### **Module 22: Developing Custom Data Connectors**

- Understanding the Role of Custom Data Connectors
- Developing with the Power Query SDK
- Packaging, Deploying and Testing a Custom Data Connector
- Configuring Authentication for a Custom Data Connector
- Understanding Authentication Flows with OAuth2
- Creating a Custom Data Connector for the Microsoft Graph API

#### **Module 23: Getting Started with the Power BI**

- Developer Tools
- Getting Started with Visual Studio Code
- Getting Started with Visual Studio 2019
- Working with Node.js and Node Package Manager
- Data Gateway

Day 12

#### **Module 24: Programming with TypeScript and the D3.js Library**

- TypeScript Language Primer
- Getting Started with D3 and SVG Graphics
- Creating Data-driven Visuals
- Enhancing Visuals with Scales and Axes
- Using D3 Layouts
- Event Handling and Transitions

#### **Module 25: Developing and Distributing Custom Visuals**

- Understanding the Power BI Visuals API

- Creating Custom Visual Projects with PBIVIZ
- Understanding the Custom Visual Build Process
- Testing and Debugging a Custom Visual
- Defining Visual Capabilities and Data Mappings
- Programming D3-style Data Binding using Categorical Data
- Extending a Visual with Custom Properties
- Packaging and Distributing Custom Visuals

Day 13

#### **Module 26 Programming the Power BI Service API**

- Power BI Service API Overview
- Registering Applications with Azure AD
- Programming Authentication and Managing Access Tokens
- Developing Custom Applications to Publish PBIX Project Files
- Patching Data source Credentials and Refreshing Datasets

#### **Module 27 Developing with Power BI Embedded**

- Overview of the Embedding Features in Power BI
- Understanding Premium Capacities versus Embedded Capacities
- Retrieving Embedding Data using the Power BI Service API
- Generating and Managing Embed Tokens
- Using the Power BI JavaScript API to Embed Reports and Dashboards
- Writing Client-side Code to Interact with an Embedded Report

Day 14

#### **Module 28 Securing Datasets using Row Level Security**

- Understanding Row Level Security (RLS)
- Implementing RLS in a Power BI Desktop Project
- Designing for RLS with the User-Owns-Data Model
- Implementing RLS Dynamically using the USERNAME Function
- Designing for RLS with the App-Owns-Data Model
- Generating Embed Tokens Restricted by RLS R

#### **Module 29 Developing Streaming Datasets and Real-time Dashboards**

- Introduction to Real-time Datasets
- Creating a Streaming Dataset using Python Code
- Designing Dashboards with Streaming Data Tiles
- Creating a Push Dataset with Real-time Data

Day 15

#### **Module 30 Advanced Security & Deployment**

- Advanced Row-Level Security (RLS) with complex scenarios
- Object-Level Security (OLS)
- Sensitivity labels and data loss prevention (DLP)
- Deployment pipelines for Dev/Test/Prod environments
- Automating deployments with PowerShell and REST APIs
- Lab: Build a deployment pipeline with RLS/OLS

Day 16

#### **Module 31 Power BI Administration & Governance**

- Understanding Power BI tenant settings
- Managing capacity (Premium vs Pro)
- Monitoring usage with the Power BI Admin Portal
- Auditing and compliance features
- Data lineage and impact analysis
- Lab: Configure governance policies in Power BI Service

Day 17

#### **Module 32 AI & Machine Learning in Power BI**

- Using AI visuals (Key Influencers, Decomposition Tree, Smart Narrative)
- Integrating Azure Cognitive Services with Power BI
- Applying AutoML in Power BI Dataflows
- Sentiment analysis and text analytics
- Forecasting with built-in and custom models
- Lab: Create an AI-powered report with Key Influencers and AutoML

Day 18

#### **Module 33 Advanced Integration with Microsoft 365 Ecosystem**

- Embedding Power BI reports in Teams channels
- Using Power BI with SharePoint Online web parts
- Exporting and analyzing data in Excel with live connections

#### **Capstone Project**

- End-to-end solution: ingest → transform → model → visualize → secure → deploy
- Incorporating AI visuals and predictive analytics
- Delivering a real-world dashboard for executive decision-making