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# Power BI



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## POWER BI COURSE CONTENT

This course is designed for the beginner to expert -level Power BI user. It is for anyone who works with data – regardless of technical or analytical background. This course is designed to help you understand the important concepts and techniques used in Power BI, Power Query to move from simple to complex visualizations and learn how to combine them in interactive dashboards.

**Learning Objectives:** At the end of this class, the student will be able to

- Understand the many options for connecting to data
- Understand the Power BI & Power Query interface data elements etc.
- The student will be able to use this knowledge to effectively create the most powerful visualizations.
- Create calculations including string manipulation, arithmetic calculations, custom aggregations and ratios, YTD, MTD, logic statements and measures etc.
- Able to represent your data using the following visualization types:  
Crosstab, Geographic Map, Heat Map, Density Chart, Scatter Plots, Pie Chart and Bar Charts

**Note:** This course will include extensive hands-on activities to re-enforce the skills and knowledge attained.

**Live Projects:** we will be doing Multiple Projects i.e

➤ **First Project:**

We will learn how to create different type of charts while connecting to different data sources and even creating Dashboards,calendars, power query etc. (we will see how to open them in Power Bi service, etc.)

➤ **Second Project:**

The company has two modules; a Web application and an Onsite application. The project we develop using **Power BI**. We need to capture information from both applications i.e., **Sales data, Products' information and Customers' data.**



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Web application was their health care platform, data for which was available in MS Access File. Onsite application was for In-store sales, data for which was available to us in Flat Files.

- Requirement is to be able to get these datasets in the Power BI desktop, and then merge the dataset together, i.e., data as a collection of these two applications. And we even had to create a Star schema.
- While merging the data from both applications and creating star schema, we had to use many transformation techniques like append queries, merge queries, conditional columns, adding new columns, using DAX functions in creating and modifying existing data.

## ➤ **Third Project:**

We use Adventure works database to create data model, calendar, custom Dax calculations, and data modelling using star schema model. And develop sales related dashboard and publish it on Power BI server (Power BI service). So that clients can access it from there.

**Note:** At the end of the course, you will synthesize and apply everything you learned in a realistic final project, allowing you to test yourself and seek additional help if needed

## 1) Introduction to Power BI Desktop

Installing Power BI Desktop

First Power BI Desktop Dashboard

Loading the Source Data

Data Load Process

Navigator Window Navigator

Data Preview Modifying

Data.

## 2) Creating Power BI Desktop Dashboard

- a) Find out Sales per Country by Year?
- b) Find out Delivery Charge by Model?
- c) Labour Cost by Country?
- d) Total Cost of Spare Parts?



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- e) How to add a slicer by make? And use it as a filter.
- f) Organising the Dashboard and going through properties. Like Adding Pages, Renaming Pages, Deleting Pages, Moving Pages, Duplicating Pages etc

### 3) Discovering and Loading Data with Power BI Desktop

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Loading Data i.e Web Pages, CSV Files, Text Files, XML Files, Excel, Microsoft Access Databases etc.

#### 1) Transforming Datasets:

##### -Power BI Desktop Queries

Editing Data After a Data Load

Transforming Data Before Loading

The Power BI Desktop Query Editor

The Power BI Desktop Query Editor Ribbons

**Dataset Shaping:** i.e Renaming Columns, Reordering Columns, Removing Columns, Merging Columns, Removing Records, Removing Duplicate Records, Sorting Data, Reversing the Row Order

**Filtering Data:** i.e Selecting Specific Values, Finding Elements in the Filter List, Filtering Text Ranges, Filtering Numeric Ranges, Filtering Date and Time Ranges,

#### 2) Data Cleansing

Changing Data Type, Detecting Data Types, Replacing Values, Transforming Column Contents

Filling Down, Using the First Row As Headers.

#### 3) Data Mashup

- The Power BI Desktop View Ribbon
- Extending Data
- Duplicating Columns, Splitting Columns .Splitting Column by a Delimiter, Splitting Columns by Number of Characters



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- Merging Columns
- Custom Columns
- Index Columns
- Merging Data
- Aggregating Data During a Merge Operation
- Types of Join
- Joining on Multiple Columns
- Preparing Datasets for Joins
  
- Changing the Data Structure i.e. Unpivoting Tables, Pivoting Tables, Transposing Rows and Columns.
- Managing the Transformation Process
- Managing Queries

## **4) Creating a Data Model**

- Data Modelling in the Power BI Desktop Environment
- The Power BI Desktop Data View
- Data Model or Query
- Manipulating Tables, Manipulating Columns, Power BI Desktop Data Types, Formatting Power BI Desktop Data, Preparing Data for Dashboards
- Adding Hierarchies
- Designing a Power BI Desktop Data Model
- Data View and Relationship View
- Relationship View Display Options
- Creating Relationships Manually and automatically.
- Advanced Relationship Options

## **5) Relational Databases: SQL Server**

- Automatically Loading Related Tables
- Database Options



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- Analysis Services Cube Tools
- Microsoft SQL Server Analysis Services Tabular Data Sources
- Pinning a Data Source
- Refreshing a Query
- Refreshing All the Queries in a Power BI Desktop File

## 10) Data Analysis expressions (DAX)

Math Operators ○ Rounding Values ○ Calculating Across  
Tables ○ DAX Topic: VALUES(), HASONEVALUE(),  
SELECTEDVALUE(), and

CONCATENATEX(),FILTER() ○ DAX Topic: ALL(), ALLEXCEPT(), and  
ALLSELECTED() ○ Using Functions in New Columns like Safe Division,  
Counting Reference

Elements, Statistical Functions, the IF( ) Function, Exception  
Indicators, Flagging Data, Creating Custom Groups Using Multiple Nested  
IF() Statements, Multiline Formulas etc. ○ Basic Aggregations in  
Measures.

- Cross-Table Measures ○  
Filtering Data in Measures ○ Multiple  
Criteria in Filters.
- The ALLEXCEPT() Function,  
CALCULATE() ○ Displaying Rank ,  
Calculation Options etc.

## 6) Analyzing Data over Time using DAX

- Simple Date Calculations, Date and Time Formatting, Calculating the Age of Cars Sold
- Adding Time Intelligence to a Data Model



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- Creating and Applying a Date Table
- Applying Time Intelligence
- Comparisons with Previous Time Periods
- Rolling Aggregations over a Period of Time
- Comparison with a Parallel Period in Time

## 7) Filtering Data

- Visual-Level Filters
- Filtering Different Data Types
- Advanced Text Filters
- Specific Visualization-Level Filters
- Page-Level Filters
- Report-Level Filters
- Using the Filter Hierarchy

## 8) Using Slicers

- Formatting Slicers
- Using Charts as Slicers
- Charts as Filters

## 9) Enhancing Dashboards

- Adding Text Boxes to Annotate a Report
- Modifying the Page Background Color
- Custom Images
- Adding Shapes
- Organizing Visuals on the Page
- Exporting Data from a Visualisation

## 10) Power BI service.com (power bi cloud server)

- Publishing Reports to PowerBI.com



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- Using Power BI Desktop Files in PowerBI.com
- Interacting with a Report on PowerBI.com
- Creating PowerBI.com Dashboards
- Sharing Dashboards
- Creating New Reports in Power BI service □ Workspaces etc.

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