

Power BI Course Syllabus

Section 1: SQL Introduction

- Introduction to SQL (Structured Query Language)
- Advantages of SQL
- > Database
- > Tables
- SQL Data Types Numeric Types, StringTypes, Date & Boolean
- SQL Commands DDL, DML, DCL, TCL, and DQL
- > Data Definition Language (DDL) CREATE, ALTER, DROP, TRUNCATE
- Data Manipulation Language(DML) INSERT, UPDATE, DELETE
- Data Query Language (DQL) SELECT
- SQL Operator
- SQL Clauses GROUP BY, HAVING & ORDER BY
- SQL JOINS INNER JOIN, LEFT JOIN, RIGHT JOIN, FULL JOIN
- SQL Keys Primary Key & Foreign Key
- Tables Relations One-to-One, One-to-Many, Many-to-Many

Section 2: Power BI Fundamentals

- Overview of Power BI
- Power BI Components
- Understanding the Power BI Workflow
- Installing Power BI Desktop
- > What is Power BI Interface



Section 3: Connecting to Data Sources

- Importing Data from Various Sources Excel, CSV, PDF, SQL Server, Azure, JSON, Folders, and Web
- Understanding Data Connectivity Modes Import Mode
- Understanding Data Connectivity Modes Direct Query Mode

Section 4: Data Transformation

- Power Query Editor
- Creating Custom Columns in Power Query
- Managing and Splitting Columns
- Reducing Rows in Power Query
- Applied Steps and Error Handling
- Transforming Unstructured Data
- Exploring Transform Menu Options
- Pivoting Data in Power Query
- Unpivoting Columns
- Transforming Text, Numbers, Dates, and Times
- Filtering and Sorting Data in Power Query
- Grouping Data in Power Query
- Merging Queries in Power Query
- Appending Queries in Power Query
- Removing Duplicate Rows in Power Query
- Creating Conditional Columns and Custom Logic
- Using Group By for Data Aggregation
- Extracting Data from JSON and XML Sources
- > Applying Date and Time Functions in Power Query
- Creating and Using Query Parameters
- > Data Profiling and Quality Control in Power Query
- > Transforming Data from Web Sources



Section 5: Data Modeling

- What is Data Modeling and Why is it Important?
- Key Concepts in Data Modeling Tables, Relationships, Measures, Columns, and Schema Types
- Understanding Entities Dimension Tables & Fact Tables
- Exploring Data Relationships
- > Creating Relationships (Cardinality) in Power BI with Real-World Examples
- Establishing a One-to-One Relationship
- Establishing a One-to-Many Relationship
- Establishing a Many-to-Many Relationship
- Cross Filter Direction
- Best Practices for Managing Relationships
- Data Models
- Solution State of Denormalized Structures with a real-life example
- Exploring the Star Schema with an actual use case
- Understanding the Snowflake Schema with a real-world illustration
- Normalization & Denormalization
- Understanding How to Normalize Real-Time Data

Section 6: DAX - Data Analysis Expressions

6.1: Introduction to DAX (Data Analysis Expressions)

- > Overview of DAX and its role in Power BI, Power Pivot
- Purpose of DAX for creating custom calculations, aggregations, and enhancing data models.

6.2: DAX Syntax and Functions

Structure and syntax of DAX formulas.



Commonly used DAX functions and operators.

6.3: Creating Calculated Columns and Measures

- > Differences between Calculated Columns and Measures.
- > How to create Calculated Columns and Measures in Power BI.

6.4: Performing Basic Calculations with DAX

- Basic arithmetic operations and common aggregation functions: SUM, AVERAGE, MIN, MAX.
- Calculating totals and averages using DAX.

6.5: Measures vs. Calculated Columns: Key Differences

- Static calculations in Calculated Columns vs. dynamic, context-based calculations in Measures.
- > When to use one over the other.
- 6.6: Aggregation Functions in DAX
 - Key aggregation functions: SUM, COUNT, AVERAGE, DISTINCTCOUNT, COUNTROWS.
 - > Aggregating data at different levels of detail.

6.7: Logical Functions in DAX

- > Conditional logic with IF, SWITCH.
- > Complex logical expressions and handling multiple conditions.



6.8: Time Intelligence in DAX

- Year-over-Year (YoY) comparisons, running totals, and other date-based calculations.
- Time Intelligence functions: SAMEPERIODLASTYEAR, TOTALYTD, DATESYTD, etc.

6.9: Advanced DAX Functions

- CALCULATE, FILTER, and ALL functions for modifying filter context and performing advanced calculations.
- Using these functions for complex scenarios and calculations.

6: 10: Context in DAX

- > Row Context: Row-wise calculations and iteration.
- > Filter Context: Impact of filters applied in reports on DAX calculations.

6.11: Iterators in DAX

- functions like SUMX, AVERAGEX, MINX, MAXX for row-wise calculations
- Using iterators to perform calculations across tables.

Section 7: Visualizations

- Overview of Data Visualization
- Types of Visuals
- > Bar Charts: Comparing data across different categories.
- > Line Charts: Displaying trends over time.
- > Pie Charts: Representing proportions or percentages of a whole.



- Column Charts: Displaying data comparisons across categories (vertical bars).
- Scatter Plots: Showing relationships or correlations between two variables.
- How Power BI Handles Data Visuals
- Formatting Visuals
- > On-object Interaction: Using interactive elements like filters and slicers.
- Font and Font Size: Customizing text appearance in visuals for better readability.
- Colors and Stylistic Options: Personalizing visuals through color schemes, themes, and styles to enhance user experience.
- Scatter Charts and Bubble Charts
- Customizing Visuals
- Advanced Filtering
- Hierarchies, Drill-Downs, and Conditional Formatting
- Matrices and Bar Charts
- Tree Maps and Funnel Charts
- Maps and Geo-Data Visualizations
- Key Performance Indicator (KPI) Dashboard
- Drill Through and Drill-Down Visualizations
- Time-Based Visualization
- AI Visuals in Power BI Decomposition Tree, Key Influencers Visual & Q&A Visual

Section 8: Interactive Dashboards

- Designing Dashboards
- Creating Interactive Dashboards
- Enhancing User Experience
- > To design for Mobile Devices
- Incorporating Visual Interactions Sync Slicers, Selection Controls



Section 9: Power BI Service - Publishing and Sharing Reports

- To publish Power BI Service
- Steps to Publish Reports
- Understanding Workspaces and Apps
- Overview of Sharing and Collaborating
- Sharing Reports and Dashboards
- Collaboration Features in Power BI Service
- Exporting Reports
- Embedding Reports
- Exporting Reports to PDF
- Exporting Reports to Excel
- Embedding Power BI Reports in Applications

Section 10: Row-Level Security - RLS

- Introduction to Data Security
- > To Implement Row-Level Security in Reports
- What is Role-Based Access Control RBAC

Section 11: Real-World Applications

- Industry Use Case
- > To Create Dashboards for Business Insights
- Create a Real Time Sales Dashboard
- Capstone Project