

Power BI Data Analysis – Complete Course Outline

Module 1: Introduction to Business Intelligence & Power BI

Topics

- What is Business Intelligence (BI)?
- Data Analytics vs Business Intelligence
- Components of Microsoft Power BI
- Installing Power BI Desktop
- Power BI Service and Mobile App
- Power BI Workflow
- Power BI Interface Overview
- Creating Your First Report

Lab

- Install Power BI Desktop
 - Import a sample Excel file
 - Create a simple bar chart
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Module 2: Data Sources & Data Import

Topics

- Connecting to Excel
- CSV/Text Files
- SQL Server
- Microsoft Access
- Web Data
- Folder Data
- SharePoint
- PDF Data
- Data Refresh

Lab

- Import data from Excel and CSV
 - Combine multiple CSV files
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Module 3: Power Query Editor (Data Cleaning & Transformation)

Topics

- Power Query Interface
- Data Types

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- Rename Columns
- Remove Columns
- Remove Duplicates
- Replace Values
- Split Columns
- Merge Columns
- Fill Up & Fill Down
- Pivot and Unpivot
- Conditional Columns
- Group By
- Merge Queries
- Append Queries
- Date Transformations
- Text Transformations
- Number Transformations

Lab

- Clean messy sales data
 - Remove blanks and duplicates
 - Create calculated columns
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Module 4: Data Modeling

Topics

- Tables
- Relationships
- One-to-One
- One-to-Many
- Many-to-Many
- Star Schema
- Snowflake Schema
- Active & Inactive Relationships
- Cardinality
- Cross Filter Direction

Lab

- Create relationships between Customer, Product and Sales tables
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Module 5: DAX Fundamentals

Topics

- Introduction to DAX

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- Calculated Columns
- Measures
- Difference between Calculated Columns and Measures
- Variables
- Data Types
- Operators
- Basic Functions

Functions

- SUM()
- AVERAGE()
- MIN()
- MAX()
- COUNT()
- DISTINCTCOUNT()
- IF()
- SWITCH()
- DIVIDE()

Lab

- Create Total Sales
 - Average Sales
 - Profit Margin
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Module 6: Intermediate DAX

Topics

- Filter Context
- Row Context
- Context Transition
- CALCULATE()
- FILTER()
- ALL()
- ALLEXCEPT()
- VALUES()
- SELECTEDVALUE()
- RELATED()
- RELATEDTABLE()

Lab

- Sales after Discount
- Sales by Region
- Dynamic KPIs

Module 7: Time Intelligence

Topics

- Date Tables
- Calendar Table
- Year-to-Date (YTD)
- Month-to-Date (MTD)
- Quarter-to-Date (QTD)
- Previous Month
- Previous Year
- SAMEPERIODLASTYEAR()
- DATEADD()
- TOTALYTD()

Lab

- Sales Trend
 - Year-over-Year Growth
 - Monthly Comparison
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Module 8: Data Visualization

Topics

- Bar Charts
- Column Charts
- Line Charts
- Pie Charts
- Donut Charts
- Area Charts
- Scatter Charts
- Tree Maps
- Waterfall Charts
- Ribbon Charts
- Funnel Charts
- Gauge Charts
- KPI Cards
- Multi-row Cards
- Tables
- Matrix
- Maps
- Filled Maps
- Azure Maps
- Slicers

Lab

- Create a Sales Dashboard
 - Create Customer Dashboard
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Module 9: Formatting & Report Design

Topics

- Themes
- Color Palette
- Titles
- Legends
- Labels
- Backgrounds
- Conditional Formatting
- Icons
- Bookmarks
- Selection Pane
- Page Navigation
- Buttons
- Tooltips
- Drill-through
- Drill-down

Lab

- Design a professional dashboard
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Module 10: Advanced Visuals

Topics

- Decomposition Tree
- Key Influencers
- Q&A Visual
- Smart Narrative
- AI Visuals
- Custom Visuals
- AppSource Visuals

Lab

- Build an Executive Dashboard
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Module 11: Filters & Interactions

Topics

- Visual Filters
- Page Filters
- Report Filters
- Sync Slicers
- Cross Filtering
- Cross Highlighting
- Edit Interactions

Lab

- Interactive Sales Dashboard
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Module 12: Power BI Service

Topics

- Publish Reports
- Workspaces
- Dashboards
- Dataflows
- Scheduled Refresh
- Sharing Reports
- Collaboration
- Apps
- Row-Level Security (RLS)

Lab

- Publish a report to Power BI Service
 - Share dashboard with users
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Module 13: Security

Topics

- Row-Level Security
- Object-Level Security
- Workspace Roles
- Dataset Permissions

Lab

- Create region-wise security
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Module 14: Performance Optimization

Topics

- Query Performance
- Performance Analyzer
- Optimizing DAX
- Model Optimization
- Best Practices

Lab

- Improve dashboard loading speed
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Module 15: Advanced Power Query

Topics

- Parameters
- Functions
- M Language Basics
- Dynamic Data Sources
- Query Folding
- Incremental Refresh

Lab

- Create parameterized reports
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Module 16: Real-World Projects

Project 1 – Sales Dashboard

- Sales Analysis
- Profit Analysis
- Customer Analysis
- Product Analysis

Project 2 – HR Dashboard

- Employee Count
- Attrition
- Gender Ratio
- Department Analysis

Project 3 – Finance Dashboard

- Revenue
- Expenses
- Profit

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- Budget vs Actual

Project 4 – Inventory Dashboard

- Stock Levels
- Reorder Status
- Supplier Analysis

Project 5 – Student Performance Dashboard

- Marks Analysis
- Attendance
- Pass Percentage
- Subject-wise Performance

Project 6 – Healthcare Dashboard

- Patient Statistics
 - Department Performance
 - Admission Trends
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Module 17: Power BI Best Practices

- Naming Conventions
 - Data Modeling Standards
 - Report Layout
 - Dashboard Design Principles
 - Color Psychology
 - KPI Selection
 - Performance Best Practices
 - Documentation
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Module 18: Capstone Project

Develop a complete business intelligence solution that includes:

- Data collection from multiple sources
 - Data cleaning using Power Query
 - Data modeling
 - DAX measures
 - Interactive dashboards
 - Time intelligence
 - KPI analysis
 - Publishing to Power BI Service
 - Row-Level Security
 - Executive dashboard presentation
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