Mastering Power BI Fundamentals:

- **Overview of Power BI**
  - What is Power BI?
  - Components of Power BI (Power BI Desktop, Power BI Service, Power BI Mobile)
  - Power BI Licensing Overview
- **Getting Started with Power BI Desktop**
  - Installing Power BI Desktop
  - Overview of the Power BI Interface
  - Basic Workflow in Power BI

Module 2: Connecting to Data Sources

- **Introduction to Data Sources**
  - Importing Data from Excel
  - Connecting to SQL Server, CSV, and Web Data
  - Overview of other popular data sources (SharePoint, Azure, etc.)
- **Data Loading and Transformation**
  - Introduction to Power Query Editor
  - Basic Data Transformation (Remove columns, Filter rows, Rename columns)
  - Merging and Appending Queries
  - Handling Missing Data

Module 3: Data Modeling

- **Understanding Data Models**
  - What is a Data Model?
  - Relationships between Tables
  - Creating and Managing Relationships
  - Star Schema vs. Snowflake Schema
- **Creating Calculated Columns and Measures**
  - Introduction to DAX (Data Analysis Expressions)
  - Basic DAX Functions (SUM, COUNT, AVERAGE)
  - Creating Calculated Columns
  - Creating Measures

Module 4: Building Visualizations

- **Introduction to Visualizations**
  - Types of Visualizations (Bar, Line, Pie, Table, etc.)
  - Creating and Customizing Visuals
  - Understanding Visual Interactions
- **Advanced Visualization Techniques**
  - Using Slicers and Filters
  - Conditional Formatting
  - Drill-through and Tooltips
- **Custom Visuals**
  - Introduction to Custom Visuals
  - Importing and Using Custom Visuals

Module 5: Creating Reports

- **Report Layout and Design**
  - Best Practices for Report Design
  - Creating Multi-Page Reports
  - Using Themes and Templates
- **Using Bookmarks and Buttons**
  - Introduction to Bookmarks
  - Creating Interactive Reports with Buttons and Bookmarks
- **Publishing and Sharing Reports**
  - Publishing Reports to Power BI Service
  - Creating Dashboards in Power BI Service
  - Sharing Reports and Dashboards with Others

Module 6: Power BI Service

- **Overview of Power BI Service**
  - Navigating the Power BI Service Interface
  - Managing Datasets and Data Refresh
  - Workspaces and Collaboration
- **Power BI Q&A**
  - Introduction to Power BI Q&A
  - Using Natural Language Queries
- **Data Security and Governance**

- o Understanding Row-Level Security (RLS)
- o Setting Up RLS in Power BI
- o Best Practices for Data Governance

Module 7: Introduction to Advanced Topics (Optional)

- **Introduction to Power BI Embedded**
  - o Overview and Use Cases
  - o Basic Setup and Configuration
- **Introduction to Power BI Paginated Reports**
  - o What are Paginated Reports?
  - o When to Use Paginated Reports
- **Introduction to Power BI Premium**
  - o Premium Features Overview
  - o Understanding Capacity and Licensing

Module 8: Hands-On Projects and Q&A

- **Sample Dashboard exercise**
- **Final Assessment (Optional)**

Additional Resources

- **Power BI Community and Resources**
  - o Overview of Power BI Community Forums, Blogs, and Documentation
- **Learning Paths and Certifications**
  - o Overview of Microsoft Certifications related to Power BI
  - o Suggested Learning Paths for Continued Learning

Advanced Power BI Concepts:

- **Deep Dive into DAX (Data Analysis Expressions)**
    - Advanced DAX Functions (e.g., CALCULATE, FILTER, ALL, ALLEXCEPT)
    - Time Intelligence Functions (e.g., DATEADD, DATESBETWEEN, SAMEPERIODLASTYEAR)
    - Using Variables in DAX
    - Performance Optimization in DAX
- **Complex Relationships and Modeling Techniques**
    - Many-to-Many Relationships
    - Bidirectional Filtering
    - Role-Playing Dimensions
    - Handling Slowly Changing Dimensions (SCD)
- **Composite Models**
    - Understanding and Creating Composite Models
    - Using DirectQuery and Import Modes Together
    - Implementing Aggregations for Performance

Module 2: Advanced Data Transformation with Power Query

- **Advanced Power Query Techniques**
    - Advanced M Functions and Custom Columns
    - Parameterization and Dynamic Data Loading
    - Using Functions and Invoking Custom Functions
    - Advanced Data Shaping (Pivot, Unpivot, Group By)
- **Optimizing Data Load Performance**
    - Query Folding Concepts and Diagnostics
    - Managing Large Data Volumes
    - Using Dataflows and Linked Entities for Efficient Data Preparation

- **Handling Complex Data Sources**
  - Working with APIs, Web Services, and JSON/XML Data
  - Advanced SQL Queries in Power Query
  - Merging and Appending Complex Data Sources

Module 3: Advanced Visualizations

- **Custom Visualizations**
  - Creating and Using Custom Visuals from AppSource
  - Developing Custom Visuals with Power BI Developer Tools (Optional)
  - Advanced Formatting and Conditional Formatting Techniques
- **Advanced Analytics with Visuals**
  - Using Analytics Pane Features (e.g., Forecast, Clustering, Trend Lines)
  - Creating Custom Tooltips and Report Page Tooltips
  - Drillthrough, Bookmarking, and Navigation Techniques
- **Advanced Reporting Techniques**
  - Building Interactive Reports with Bookmarks and Selection Pane
  - Designing for Performance: Optimizing Visuals and Reports
  - Using Themes, Custom Colors, and Branding in Reports

Module 4: Advanced Power BI Service Features

- **Data Security and Row-Level Security (RLS)**
  - Implementing Dynamic Row-Level Security
  - Managing and Testing RLS in Power BI Service
  - Combining RLS with Organizational Hierarchies
- **Power BI Service Administration**
  - Managing Workspaces, Apps, and Permissions
  - Monitoring and Managing Data Refreshes
  - Auditing and Usage Metrics in Power BI
- **Power BI Premium Features**
  - Understanding Premium Capacities and Features
  - Using XMLA Endpoints and Large Models
  - Optimizing and Scaling Reports with Power BI Premium

Module 5: Advanced Data Connectivity

- **Using Power BI with Big Data and Data Lakes**

- o   Connecting to Azure Data Lake, Azure Synapse, and BigQuery
- o   Implementing and Optimizing DirectQuery with Big Data Sources
- o   Using Aggregations in Big Data Scenarios
- **Integration with Azure and Other Microsoft Services**
  - o   Using Azure Data Factory with Power BI
  - o   Integration with Azure ML and Cognitive Services for Advanced Analytics
  - o   Power BI with Azure Analysis Services and SQL Managed Instances

Module 6: Power BI Embedded and Developer APIs

- **Introduction to Power BI Embedded**
  - o   Embedding Power BI Reports in Custom Applications
  - o   Understanding Power BI REST API and Embedding Scenarios
- **Power BI Automation with PowerShell and REST API**
  - o   Automating Deployment and Management of Power BI Assets
  - o   Using PowerShell Scripts with Power BI REST API
  - o   Embedding and Automating Reports using Power Automate

Module 7: Advanced Analytics and AI in Power BI

- **Using AI Capabilities in Power BI**
  - o   Leveraging AI Visuals: Key Influencers, Decomposition Tree, Q&A Visual
  - o   Integrating Python and R for Advanced Analytics in Power BI
  - o   Using Cognitive Services for Text Analytics and Sentiment Analysis
- **Advanced Statistical Analysis**
  - o   Implementing Advanced Statistical Models using R or Python
  - o   Scenario Analysis and What-If Parameters
  - o   Using Anomaly Detection and Predictive Analytics

Module 8: Real-Time Dashboards and Streaming Data

- **Creating Real-Time Dashboards**
  - o   Working with Streaming Data Sources in Power BI
  - o   Using Power BI with Azure Stream Analytics and IoT Hub
  - o   Implementing Push Datasets and Live Data Feeds
- **Handling Real-Time Data in Power BI Service**
  - o   Designing Dashboards for Real-Time Monitoring
  - o   Performance Considerations with Real-Time Data

Module 9: Case Studies and Capstone Project

- **Case Studies**
  - Analysis of Complex Business Scenarios
  - End-to-End Solutions Design using Power BI
- **Capstone Project**
  - Implementing a Full Power BI Solution from Data Modeling to Visualization
  - Applying Advanced Techniques Learned in the Course
  - Presentation and Peer Review