Power BI Hackathon

From Beginner to Job-Ready Analyst  
in Just 3 Weekends

PROGRAM

**Module 1: Getting Started with Power BI – Introduction & Data Connections**

This foundational module introduces you to the Power BI environment and walks you through the essential connection types for working with various data sources. Through both theoretical explanation and hands-on exercises, you'll learn how to connect to local and cloud-based datasets using the most commonly used methods.

**What You’ll Learn – Theory**

* **Power BI Interface Overview**  
  Navigate the workspace with confidence. Understand key panels, menus, and workflow tools.
* **Connection Types Explained**
  + **Import Mode:** Learn how to load and store data within your Power BI file for optimal performance.
  + **DirectQuery Mode:** Understand real-time queries to source systems and when to use this method.
  + **Live Connection:** Explore seamless connections to Analysis Services and pre-built data models.
* **Exploring Connectors**  
  Get an overview of the extensive connector library Power BI offers for local, cloud, and web data sources.

**Hands-On – Practical Exercises**

* **Local Connections:**  
  Practice importing datasets from common file types such as Excel and CSV.
* **Cloud Connections:**  
  Learn how to securely connect to cloud services including:
  + Google Analytics
  + SharePoint Sites
  + Exchange Online (Office 365)

By the end of this module, you'll understand the impact of each connection type on performance and data refresh schedules—and you’ll be ready to start building your first reports.

**Module 2: Data Transformation & Model Creation**

In this module, you'll gain hands-on experience transforming raw data into clean, structured datasets using Power Query. You'll also dive into the principles of building strong data models—essential for accurate reporting and analysis in Power BI.

**Part 1: Data Transformation with Power Query**

**Theory: Understanding Power Query**

* Learn what Power Query is and how it fits into the Power BI workflow.
* Explore essential transformation tasks:
  + **Cleaning** messy or inconsistent data
  + **Transforming** structures and formats to suit analysis
  + **Creating** new fields through calculated columns and custom logic

**Practice: Applying Transformations**

Work through practical exercises to:

* Transpose rows and columns
* Change column data types
* Replace values systematically
* Use "Fill Down" and "Fill Up" to complete missing data
* Create new calculated columns

**Part 2: Building the Data Model**

**Theory: Data Modeling Fundamentals**

* **What is a Data Model?**  
  Understand how Power BI models data and why modeling is crucial.
* **Types of Models and Relationships**
  + One-to-many, many-to-one, and many-to-many relationships
  + Active vs. inactive relationships – how and when to use them
  + One-way vs. two-way filters – controlling data flow
* **Best Practices for Model Design**
  + Learn the principles of creating a clean, efficient data model
  + Why automatic relationship detection can lead to errors

**Practice: Creating Your Own Data Model**

* Build a working data model from your cleaned datasets
* Define and manage relationships between tables
* Experiment with different relationship types and configurations to understand their impact on reporting

By the end of this module, you’ll be comfortable preparing and modeling data in Power BI, setting the foundation for building insightful dashboards.

**Module 3: Analytics & Calculations**

This module introduces you to **Data Analysis Expressions (DAX)**, the language used in Power BI to create powerful calculations and dynamic reports. You’ll learn how to understand and manipulate *calculation context*—a core concept for anyone working with custom metrics.

**What You’ll Learn – Theory**

* **What is DAX?**  
  Gain a foundational understanding of DAX, Power BI’s formula language for creating measures, calculated columns, and advanced logic.
* **Understanding Calculation Contexts**
  + **Query Context** – How DAX responds to visuals, filters, and slicers
  + **Row Context** – How calculated columns evaluate data row-by-row
  + **Filter Context** – How filters affect the result of your calculations
* **The CALCULATE Function**  
  Learn how CALCULATE overrides filter context and enables complex, context-aware formulas—central to most DAX logic.

**Hands-On – Practical Exercises**

* **Date Table Creation**  
  Use CALENDAR() and CALENDARAUTO() functions to generate a dynamic date table for time intelligence.
* **Applying DAX in Real Scenarios**
  + Build measures with date functions (e.g., TODAY, DATEDIFF, YEAR)
  + Use filtering functions like FILTER and ALL to modify results
  + Apply CALCULATE to modify context and create advanced KPIs

By the end of this module, you’ll be able to write DAX formulas that adapt intelligently to user inputs and create meaningful, interactive reports with dynamic measures.

**Module 4: Visualization & Forecasting**

In this module, you’ll explore the full range of visualization tools available in Power BI. You’ll learn how to choose the right chart types for different data stories, use marketplace visuals for added flexibility, and make your reports more interactive with tooltips and bookmarks.

**What You’ll Learn – Theory**

* **Principles of Effective Visual Design**  
  Understand how to present data in a clear, engaging, and user-friendly format.
* **Standard vs. Marketplace Visuals**  
  Learn the strengths and limitations of built-in visuals, and how to explore and use custom visuals from AppSource.
* **Chart Types and Their Use Cases**  
  Gain clarity on when to use tables, bar/column charts, line charts, cards, slicers, filters, and KPI visuals for best impact.

**Hands-On – Practical Exercises**

* **Creating Visuals**  
  Practice building compelling visualizations using both standard and custom visuals from the Power BI marketplace.
* **Advanced Visual Features**
  + Apply **dynamic formatting** based on values or conditions
  + Create **custom tooltips** to give users context when they hover over visuals
  + Set up **bookmarks** to design seamless report navigation and storytelling

By the end of this module, you’ll be equipped to create intuitive, interactive dashboards that go beyond static charts—empowering your users to explore and understand insights with ease.

**Module 5: Forecasting**

This module introduces forecasting tools and techniques available within Power BI Desktop. You’ll learn how to project future values, perform simulations, and enable users to explore potential outcomes directly within reports.

**What You’ll Learn – Theory**

* **Forecasting Methods in Power BI**  
  Understand the different types of forecasting techniques supported in Power BI, including:
  + Built-in forecast lines for time series visuals
  + What-If analysis using slicers and parameters
  + Natural language queries for predictive insights
* **When to Use Each Approach**  
  Discover how to choose the right forecasting method depending on your dataset, business scenario, and desired interactivity.

**Hands-On – Practical Exercises**

* **What-If Forecasting**  
  Use What-If parameters and slicers to simulate different business scenarios and visualize possible outcomes.
* **Q&A Visual Forecasting**  
  Work with the Q&A feature to ask natural language questions and generate forecasted values based on your data model.
* **Forecasting in Visualizations**  
  Apply built-in forecasting tools within line and area charts to predict trends and project future data points.

By the end of this module, you’ll be able to integrate forecasting into your reports, making them more insightful and forward-looking for your audience.

**Module 6: Final Project & Review**

In this capstone module, you’ll bring everything together by building a professional-grade Power BI dashboard from start to finish. You’ll demonstrate your understanding of key concepts and receive personalized guidance on how to continue developing your skills as a Power BI analyst.

**What You’ll Learn – Theory**

* **Full Review of Core Concepts**  
  Revisit and reinforce major topics including:
  + Data connection types and transformation workflows
  + Modeling best practices and DAX fundamentals
  + Visualization design and forecasting techniques
* **Analyst Competency Framework**  
  Understand the essential competencies of a data analyst, and how your current skill set aligns with industry expectations.

**Hands-On – Practical Exercises**

* **Build an Interactive Dashboard from Scratch**  
  Use your own dataset or a provided business scenario to create a fully functional, visually engaging Power BI dashboard.
* **One-on-One Review Session**  
  Receive direct instructor feedback on your project, with suggestions for refinement and best practices.
* **Skill Checklist & Growth Plan**  
  Evaluate your strengths and areas for improvement using a structured competency checklist, and walk away with personalized guidance for further learning and certification readiness.

By the end of this module, you’ll have a strong portfolio piece, direct feedback from an expert, and a clear roadmap to becoming a more confident and capable Power BI analyst.

**Module 7: Team Presentations & Certificate Ceremony**

This final session marks the culmination of your Power BI journey. You'll present your group’s interactive dashboard, practice communicating data insights to a live audience, and celebrate your accomplishments with a formal certificate ceremony.

**What You’ll Learn – Theory**

* **Presentation Best Practices for Analysts**  
  Learn how to effectively communicate complex data insights to different audiences—from technical peers to business stakeholders.
* **Storytelling with Data**  
  Understand how to build a narrative using your dashboard to guide users through key findings and decisions.

**Hands-On – Practical Exercises**

* **Team Dashboard Presentations**  
  Collaborate with your team to present your final project to the class and instructors, demonstrating your technical and communication skills.
* **Interactive Feedback Session**  
  Receive constructive feedback from peers and instructors on your presentation approach and dashboard effectiveness.
* **Certificate Ceremony**  
  Conclude the program with an official certificate of completion, recognizing your new skills and readiness to take on real-world Power BI challenges.