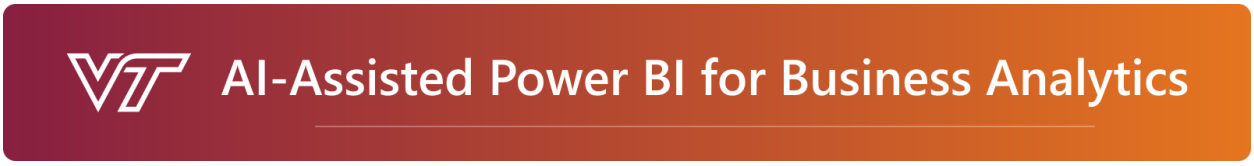

Figure 1: AI-Assisted Power BI for Business Analytics

Class Summaries and Outlines

AI-Assisted Power BI for Business Analytics (v3)

Virginia Tech MBA Program

Course Philosophy

> **"A Power BI report is not the deliverable. Insights are."**

This is the most important idea in this course. Every lab follows a complete workflow that ends not with a dashboard, but with a written executive summary that answers business questions and proposes recommendations.

Course Overview

Note on Data: All course datasets are **synthetic** and **pre-cleaned**. They simulate realistic business scenarios but do not reflect actual company data. Data cleaning is not in scope for this course.

Why Web Only? This course uses Power BI Service exclusively to ensure a consistent experience across Windows and Mac. All Copilot features we use are available in the browser.

Module	Title	Duration	Primary Focus
1	The AI-Powered Analytics Landscape	3 hours	First conversations with Copilot
2	Creating Reports with Copilot	3 hours	Prompt engineering for report generation
3	Discovering Insights with AI Visuals	3 hours	Key Influencers, Anomaly Detection, Smart Narratives
4	Data Foundations for AI Success	3 hours	Preparing data for effective AI responses
5	Visualization Design & Storytelling	3 hours	Executive dashboards and interactivity
6	Sharing, Collaboration & Governance	3 hours	Enterprise deployment and sharing
7	Capstone Presentations	3 hours	Team presentations and peer evaluation

Module 1: The AI-Powered Analytics Landscape

Summary

This opening session introduces students to the transformative impact of AI on business intelligence. Students will navigate the Power BI ecosystem and have their first "conversations" with data using Copilot's natural language interface. The focus is on building comfort with AI-assisted analytics and understanding when AI excels versus when human judgment is essential.

Learning Objectives

- Understand how AI is transforming business intelligence
- Navigate Power BI Service and Copilot interfaces
- Ask your first questions using natural language
- Interpret AI-generated summaries and insights

Class Outline

Time	Activity	Description
0:00-0:20	**Welcome & Introductions**	Course overview, instructor backgrounds, student introductions
0:20-0:45	**Lecture: The Evolution of BI**	From static reports to AI-powered conversations
0:45-1:05	**Demo: Power BI Ecosystem**	Tour of Power BI Service and Mobile experiences
1:05-1:30	**Lecture: Introduction to Copilot**	Three experiences: Standalone, Report Pane, App-Scoped
1:30-1:45	**Break**	
1:45-2:15	**Case Discussion**	"The Data-Driven Executive" - How should leaders interact with data?
2:15-2:50	**Hands-On Lab**	Your First AI Conversation with Data
2:50-3:00	**Wrap-Up & Reflection**	When did Copilot excel? When did it struggle?

Key Topics

- The evolution of BI: from reports to conversations
- Power BI ecosystem overview (Service, Mobile)
- Introduction to Copilot's three experiences
- Q&A: natural language data exploration
- Understanding AI limitations and when to verify

Prompting Patterns Introduced

```
"Summarize this report"
"What are the key insights about [topic]?"
"Why did [metric] change in [time period]?"
```

Case Discussion

"The Data-Driven Executive"

- How should executives interact with data in 2025?
- What questions should AI answer vs. humans analyze?

Lab Deliverable

Review the CloudRevenue BRD, access the pre-built sales report in course workspace, use Copilot to explore it with 10+ natural language questions aligned with BRD requirements. **Submit reflection document** noting when Copilot excelled vs. struggled.

Preparation for Next Class

- Complete Prompting Journal entry #1
- Review: Microsoft Learn - Introduction to Copilot in Power BI

Module 2: Creating Reports with Copilot

Summary

This session focuses on the revolutionary capability of generating complete reports from natural language prompts. Students learn prompt engineering strategies to get better results from Copilot and understand how data quality affects AI output. The hands-on competition format reinforces learning through friendly rivalry.

Learning Objectives

- Generate multi-page reports from natural language prompts
- Refine AI-generated reports through iterative prompting
- Understand what makes data "AI-ready"
- Apply prompt engineering best practices

Class Outline

Time	Activity	Description
0:00-0:15	**Journal Sharing**	Students share best prompts from Module 1
0:15-0:45	**Lecture: Copilot Report Creation**	How to craft effective report prompts
0:45-1:10	**Demo: Iterative Prompting**	Live refinement of AI-generated report
1:10-1:30	**Lecture: Data Preparation for AI**	Clear names, descriptions, synonyms, AI instructions
1:30-1:45	**Break**	
1:45-2:10	**Case Discussion**	"Cloud Revenue Analysis" - What report would you ask for?
2:10-2:45	**Prompting Competition**	Teams compete to create best dashboard using only prompts
2:45-3:00	**Judging & Reflection**	Class votes, discuss winning strategies

Key Topics

- Copilot report creation: "Create a report about…"
- Iterative prompting: refining AI outputs
- Understanding semantic models (conceptual)
- Data preparation for AI success
- When Copilot works well vs. when it struggles

Prompting Patterns Introduced

```
"Create a report about [topic] showing [metrics] by [dimensions]"
"Add a page focused on [specific area]"
"Make this more executive-friendly"
"Compare [period A] to [period B]"
```

Case Discussion

"Cloud Revenue Analysis"

- Given this subscription dataset, what report would you ask Copilot to create?
- How would you refine a report that's 70% of what you need?

Lab Deliverable

Review the CloudRevenue BRD and Data Dictionary, access CloudRevenue semantic model in course workspace, generate and iteratively refine a report using 3+ prompts based on BRD requirements, publish to workspace. **Submit published report + screenshot of best prompts used.**

Preparation for Next Class

- Complete Prompting Journal entry #2
- Review: Microsoft Learn - Create reports with Copilot

Module 3: Discovering Insights with AI Visuals

Summary

This session unlocks the analytical power of AI visuals. Students learn to use Key Influencers to identify what drives business outcomes, Anomaly Detection to spot unexpected patterns, and Smart Narratives to generate automated summaries. The focus is on AI-powered root cause analysis and insight discovery.

Learning Objectives

- Use Key Influencers to identify drivers of outcomes
- Apply Anomaly Detection to spot unexpected patterns
- Generate Smart Narratives for automated summaries
- Explore data with Decomposition Trees

Class Outline

Time	Activity	Description
0:00-0:15	**Journal Sharing**	Failed prompts and recovery strategies
0:15-0:45	**Lecture: Key Influencers Visual**	What drives [outcome]? Categorical and numeric analysis
0:45-1:05	**Demo: Top Segments**	AI-discovered customer groups
1:05-1:25	**Lecture: Anomaly Detection**	How the algorithm works, configuring sensitivity
1:25-1:40	**Break**	
1:40-2:00	**Lecture: Smart Narratives & Decomposition Tree**	Auto-generated summaries and guided exploration
2:00-2:25	**Case Discussion**	"Customer Satisfaction Investigation"
2:25-2:50	**Hands-On Lab**	AI-Powered Root Cause Analysis
2:50-3:00	**Insight Presentations**	Teams present findings in 3 minutes each

Key Topics

- Key Influencers: categorical and numeric analysis
- Top Segments: AI-discovered groups
- Anomaly Detection: automatic outlier identification
- Smart Narratives: natural language summaries
- Decomposition Tree: AI-guided exploration

Case Discussion

"Customer Satisfaction Investigation"

- A tech company's CSAT scores dropped and escalations increased. How would you use AI visuals to investigate?
- What factors should you explore first?

Lab Deliverable

Review SupportInsights BRD and Data Dictionary, access SupportInsights dataset in course workspace, add Key Influencers and Anomaly Detection visuals, create Smart Narrative, build Decomposition Tree, identify top 3 satisfaction drivers. **Write a 1-page executive summary** answering the BRD questions with your AI-discovered insights.

Preparation for Next Class

- Complete Prompting Journal entry #3
- Capstone: Team formation and problem statement should be complete (was due end of Module 2)

Module 4: Data Foundations for AI Success

Summary

This session addresses the critical but often overlooked topic of data preparation. Students learn why AI needs clean, well-structured data and how to prepare datasets for optimal Copilot performance. The "before and after" demonstration dramatically illustrates the impact of proper metadata.

Learning Objectives

- Understand how data structure affects Copilot effectiveness
- Prepare data for optimal AI responses
- Enhance semantic models with metadata for AI
- Apply naming conventions that improve natural language queries

Class Outline

Time	Activity	Description
0:00-0:15	**Capstone Check-In**	Teams share problem statements
0:15-0:45	**Lecture: Star Schema Concepts**	Facts vs. dimensions (conceptual, not technical)
0:45-1:10	**Demo: Data Naming Best Practices**	How column names affect Copilot accuracy
1:10-1:30	**Lecture: AI-Ready Metadata**	Descriptions, synonyms, AI instructions
1:30-1:45	**Break**	
1:45-2:10	**Case Discussion**	"The Messy Data Problem"
2:10-2:45	**Hands-On Lab**	Preparing Data for Copilot
2:45-3:00	**Before/After Demo**	See dramatic AI improvement with proper prep

Key Topics

- Why AI needs clean, well-structured data
- Star schema: facts vs. dimensions (conceptual)
- Data preparation essentials: clear column names, consistent formats
- AI-ready metadata: descriptions, synonyms, AI instructions

Case Discussion

"The Messy Data Problem"

- You receive a 50-column spreadsheet with cryptic names. How do you prepare it for Copilot?
- What's the minimum prep needed for useful AI responses?

Lab Deliverable

Review the CloudRevenue BRD, examine the pre-cleaned dataset structure, identify column naming improvements, add descriptions and synonyms to the semantic model, test Copilot before/after metadata improvements. **Submit before/after comparison document** showing how metadata improved AI responses.

Preparation for Next Class

- Complete Prompting Journal entry #4
- Capstone: Progress check - submit initial Copilot-generated report by end of this module

Module 5: Visualization Design & Storytelling

Summary

This session shifts focus to the human element of analytics: communication. Students learn visualization best practices, executive dashboard design principles, and interactive storytelling techniques. The design challenge forces students to distill complex information into clear, actionable insights.

Learning Objectives

- Choose appropriate visualizations for business questions
- Design dashboards for executive audiences
- Create interactive navigation experiences
- Apply formatting and branding

Class Outline

Time	Activity	Description
0:00-0:15	**Journal Sharing**	Best visualization insights from Copilot
0:15-0:45	**Lecture: Visualization Selection**	Matching chart type to business question
0:45-1:05	**Lecture: Executive Dashboard Design**	Less is more, color with purpose, hierarchy
1:05-1:25	**Demo: Interactive Elements**	Slicers, drill-through, bookmarks
1:25-1:40	**Break**	
1:40-2:05	**Case Discussion**	"Dashboard Critique" - Review three dashboards
2:05-2:45	**Hands-On Lab**	Executive Dashboard Design
2:45-3:00	**Design Challenge**	Transform 20-visual report to 5-visual summary

Key Topics

- Visualization selection: matching chart to question
- Executive dashboard design principles
- Design: less is more, color with purpose, hierarchy
- Interactive elements: slicers, drill-through, bookmarks
- Mobile-friendly design

Case Discussion

"Dashboard Critique"

- Review three executive dashboards (provided). What works? What doesn't?
- How would you redesign the weakest one?

Lab Deliverable

Review M365Marketing BRD, access M365Marketing dataset in course workspace, start with Copilot-generated report, redesign for C-suite, add navigation, apply professional formatting, create mobile layout. **Write a 1-2 page executive summary** with findings, recommendations, and key visuals.

Preparation for Next Class

- Complete Prompting Journal entry #5
- Capstone: Draft for peer review (due Module 6)

Module 6: Sharing, Collaboration & Governance

Summary

This session addresses the enterprise reality of Power BI deployment. Students learn about workspaces, apps, sharing, and governance - the organizational factors that determine BI success at scale. The optional panel discussion brings real-world perspectives on AI in business.

Learning Objectives

- Publish and share reports effectively
- Understand workspace and app architecture
- Recognize basic governance considerations
- Navigate licensing and deployment options

Class Outline

Time	Activity	Description
0:00-0:15	**Peer Review Debrief**	Teams share feedback received on capstone drafts
0:15-0:40	**Lecture: Workspaces & Apps**	Organize, collaborate, and distribute
0:40-1:00	**Demo: Publishing Workflow**	From development to production
1:00-1:20	**Lecture: Row-Level Security**	Brief overview (demonstration only)
1:20-1:35	**Break**	
1:35-1:55	**Lecture: Governance & Licensing**	AI governance, responsible use, Pro vs. Premium
1:55-2:20	**Case Discussion**	"Scaling Self-Service BI"
2:20-2:50	**Hands-On Lab**	Deploy Your Solution
2:50-3:00	**Panel Discussion (Optional)**	"The Future of AI in Business Analytics"

Key Topics

- Power BI Service: workspaces and apps
- Sharing options: direct sharing, workspaces, apps
- Row-Level Security (demonstration only)
- Copilot in apps: verified answers
- Governance, licensing, responsible AI use

Case Discussion

"Scaling Self-Service BI"

- Your department loves Power BI. Now leadership wants to roll it out enterprise-wide. What could go wrong?
- How do you balance democratization with governance?

Lab Deliverable

Create workspace, publish reports, create app, observe Row-Level Security demonstration, test consumer experience. **Submit screenshot of published app + brief reflection on governance considerations.**

Preparation for Next Class

- Complete Prompting Journal entry #6
- Capstone: Final submission due before Module 7
- Prepare 12-minute team presentation

Module 7: Capstone Presentations

Summary

The final session showcases student learning through team presentations. Each team presents their capstone project, demonstrating effective use of Copilot and AI visuals to solve a business problem. Socratic questioning challenges teams to defend their insights and recommendations.

Learning Objectives

- Present analytical findings effectively
- Defend insights under Socratic questioning
- Evaluate peer work constructively
- Reflect on course learnings

Class Outline

Time	Activity	Description
0:00-0:10	**Opening Remarks**	Presentation format and evaluation criteria
0:10-2:30	**Team Presentations**	12 minutes + 8 minutes Q&A per team (approx. 6 teams)
2:30-2:45	**Break**	
2:45-2:55	**Peer Evaluation**	Complete evaluation forms
2:55-3:00	**Course Wrap-Up**	Final thoughts, next steps, course evaluations

Presentation Format

Component	Duration
Team Presentation	12 minutes
Q&A with Socratic Questioning	8 minutes
Total per Team	20 minutes

Evaluation Criteria

Criterion	Weight	Description
Business Problem	20%	Clear, compelling problem definition
AI Utilization	25%	Effective use of Copilot and AI visuals
Insight Quality	25%	Meaningful, actionable discoveries
Visualization	15%	Clear, professional design
Presentation	15%	Confident, clear communication

Presentation Tips

1. **Start with the business problem**, not the data
2. **Show your Copilot journey** - include key prompts that worked
3. **Demonstrate AI visuals** live if possible
4. **Lead with insights**, not methodology
5. **Be prepared to defend** why you trust (or question) AI outputs

Post-Course

- Submit final Prompting Journal
- Complete course evaluation
- Access to course materials remains available
- Consider: How will you use these skills in your career?

Appendix: Key Prompting Patterns by Module

Module 1: Exploration

```
"Summarize this report"
"What are the key insights about [topic]?"
"Why did [metric] change in [time period]?"
```

Module 2: Report Creation

```
"Create a report about [topic] showing [metrics] by [dimensions]"
"Add a page focused on [specific area]"
"Make this more executive-friendly"
"Compare [period A] to [period B]"
```

Module 3: Insight Discovery

```
"What factors influence [outcome]?"
"Explain the anomaly in [date/period]"
"Summarize the key drivers of [metric]"
```

Module 4: Data Preparation

Module 4 focuses on metadata configuration rather than Copilot prompting. The key learning is testing the same prompts before and after adding metadata to see improvement.

```
"What is our total revenue by region?" (test before/after metadata)
"Show me customer segments by product category" (test before/after synonyms)
```

Module 5: Design Refinement

```
"Simplify this visualization"
"What story does this data tell?"
"How would an executive interpret this?"
```

Module 6: Governance

Module 6 focuses on deployment and governance. These are discussion questions rather than Copilot prompts:

- Who should have access to this data?
- What are the risks of each sharing approach?
- How do we balance self-service with governance?