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Business Intelligence: Integration Services & Reporting

#Syllabus MENU

#Course Information

- Course ID: CAP 2791C: Power BI - Data Preparation and Modeling
- Class Number: 7391
- Credit: 4 Credits
- Term: Spring 2025
- Term Dates: 1/6/2025 to 5/2/2025

- Room: 6355-01 Kendall Building 6

#Instructor Information

- Name: Professor C. Marquez
- Inbox: Please use "Inbox" in Canvas (Required communication tool with instructor)
- Email: xxxx@mdc.edu (Use only if experiencing technical difficulties and cannot access the course)
- Phone: 305-237-2080
- Office Hours: Monday: 9:30 AM to 10:30 AM EST or by appointment
- Response Policy: 24 hours Monday through Friday when the college is in session

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#Course Description

This course will discuss the various methods and best practices that are in line with business and technical requirements for modeling, visualizing, and analyzing data with Power BI. The course will also show how to access and process data from a range of data sources including both relational and non-relational data. This course will explore how to implement proper security standards and policies across the Power BI spectrum, including datasets and groups. Additionally, the course will discuss how to manage and deploy reports and dashboards for sharing and content distribution.

#Prerequisites

This course is designed for individuals who develop reports that visualize data from both cloud and on-premises data platforms. No prior experience with Power BI is required. However, students should have:

- A fundamental understanding of core data concepts.
- Knowledge of working with relational and non-relational data in the cloud.
- Knowledge of data analysis and visualization concepts.
- Basic familiarity with computer technology, cloud computing, and the Internet.

#Miami Dade College's Learning Outcomes

This course addresses the following MDC learning outcomes:

- Ingest, clean, and transform data.
- Model data for performance and scalability.
- Design and create reports for data analysis.
- Apply and perform advanced report analytics.
- Manage and share report assets.

#Course Competencies

##Competency 1: Get Data from Different Data Sources
The student will demonstrate the ability to:

- Identify different types of data sources (local and remote) and connect to them.
- Change data source settings, select a storage mode, and use PBIDS files.
- Use Microsoft Dataverse and describe its various benefits.
- Choose appropriate query types, use parameters, and identify query performance issues.
- Use an XMLA endpoint for third-party client applications.
- Create a dataflow and describe its various benefits.

##Competency 2: Profile Data
The student will demonstrate the ability to:

- Examine data structures.
- Identify data anomalies.
- Interrogate column properties and data statistics.

##Competency 3: Clean, Transform, and Load Data

The student will demonstrate the ability to:

- Resolve inconsistencies, unexpected or null values, and data quality issues.
- Apply user-friendly value replacements.
- Identify and create appropriate keys for joins.
- Evaluate and transform column data types.
- Apply data shape transformations to table structures.
- Combine queries.
- Apply user-friendly naming conventions to columns and queries.
- Leverage the Advanced Editor to modify Power Query M code.
- Configure data loading and resolve data import errors.

##Competency 4: Design a Data Model

The student will demonstrate the ability to:

- Define tables and configure table and column properties.
- Define quick measures.
- Flatten out a parent-child hierarchy.
- Define role-playing dimensions.
- Define relationship cardinality and cross-filter direction.
- Design the data model to meet performance requirements.
- Create a common date table.
- Define the appropriate level of data granularity.
- Apply sensitivity labels.

##Competency 5: Develop and Refine a Data Model

The student will demonstrate the ability to:

- Apply cross-filter direction and security filtering.
- Create calculated tables, hierarchies, and calculated columns.
- Implement row-level security roles and object-level security.
- Set up the Q&A feature.

##Competency 6: Use DAX
The student will demonstrate the ability to:

- Describe the benefits of the DAX library.
- Use DAX to build complex measures.
- Use CALCULATE to manipulate filters.
- Implement Time Intelligence.
- Replace numeric columns with measures.
- Use basic statistical functions to enhance data.
- Create semi-additive measures.

##Competency 7: Optimize Model Performance
The student will demonstrate the ability to:

- Remove unnecessary rows and columns.
- Identify poorly performing measures, relationships, and visuals.
- Improve cardinality levels by changing data types and using summarization.
- Create and manage aggregations.
- Use Query Diagnostics.

#Grading Scale

##Point Distribution
- Weekly Assignments: 130 Points
- Final Presentation: 50 Points

- Final Project: 100 Points
- Total: 280 Points

##Grade Scale

Grade	Percentage	Points
A	90% - 100%	252 - 280
B	80% - 89%	224 - 251
C	70% - 79%	196 - 223
D	60% - 69%	168 - 195
F	Below 60%	Below 168