Miami Dade College

Course Description
CAP2791C | Power BI: Data Preparation and Modeling | 4.00 credits
This is one of two introductory courses aimed at preparing students for the Microsoft Power BI certification exam. Students will learn how to get data from different sources, clean and transform the data, and design a data model that will be used in analysis and reports. Prerequisites: CAP188 and CGS1540C.

Course Competencies:
Competency 1: The student will demonstrate the ability to get data from different data sources by:
1. Identifying different types of data sources (both local and remote) and connecting to them
2. Changing data source settings, selecting a storage mode, and using PBIDS files
3. Using Microsoft Dataverse and describing its various benefits
4. Choosing an appropriate query type, using parameters, and identifying query performance issues
5. Using an XMLA endpoint for third-party client applications
6. Creating a dataflow and describing its various benefits

Competency 2: The student will demonstrate the ability to profile data by:
1. Examining data structures
2. Identifying data anomalies
3. Interrogating column properties and data statistics

Competency 3: The student will demonstrate the ability to clean, transform, and load data by:
1. Resolving inconsistencies, unexpected or null values, and data quality issues
2. Applying user-friendly value replacements
3. Identifying and creating appropriate keys for joins
4. Evaluating and transforming column data types
5. Applying data shape transformations to table structures
6. Combining queries
7. Applying user-friendly naming conventions to columns and queries
8. Leveraging the Advanced Editor to modify Power Query M code
9. Configuring data loading and resolving data import errors

Competency 4: The student will demonstrate the ability to design a data model by:
1. Defining the tables and configuring table and column properties
2. Defining quick measures
3. Flattening out a parent-child hierarchy
4. Defining role-playing dimensions
5. Defining a relationship's cardinality and cross-filter direction and resolving many-to-many relationships.
6. Designing the data model to meet performance requirements
7. Creating a common date table
8. Defining the appropriate level of data granularity
9. Applying sensitivity labels

Competency 5: The student will demonstrate the ability to develop and refine a data model by:
1. Applying cross-filter direction and security filtering
2. Creating calculated tables, hierarchies, and calculated columns
3. Implementing row-level security roles and object-level security
4. Setting up the Q&A feature

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Competency 6: The student will demonstrate the ability to use DAX by:
1. Describing the benefits of the DAX library
2. Using DAX to build complex measures
3. Using CALCULATE to manipulate filters
4. Implementing Time Intelligence
5. Replacing numeric columns with measures
6. Using basic statistical functions to enhance data
7. Creating semi-additive measures

Competency 7: The student will demonstrate the ability to optimize model performance by:
1. Removing unnecessary rows and columns
2. Identifying poorly performing measures, relationships, and visuals
3. Improving cardinality levels by changing data types and using summarization
4. Creating and managing aggregations
5. Using Query Diagnostics

<u>Learning Outcomes:</u>
- Use quantitative analytical skills to evaluate and process numerical data
- Solve problems using critical and creative thinking and scientific reasoning
- Use computer and emerging technologies effectively