

## **ITMT 2076 Course Syllabus**

**1. Name of Course:** Design Analysis Solutions for Microsoft SQL Server 2005

**2. Number of Clock Hours:** 24

### **3. Course Description:**

The purpose of this course is to teach business intelligence (BI) professionals working in enterprise environments how to design a multidimensional solution architecture that supports their BI solution. Students will go through the entire process—from capturing business and technical requirements, to deploying a multidimensional solution, to production. Students will also be taught to develop custom functionality and optimize a multidimensional solution. MOC 2796.

**Prerequisites:** ITMT 2075 Design Business ETL Solutions for Microsoft SQL Server 2005.

### **4. Course Objectives**

At the end of the course, students will be able to:

- Capture the business and technical requirements for an analysis solution.
- Design and implement a logical Online Analytical Processing (OLAP) solution architecture.
- Design physical storage for a multidimensional solution.
- Create calculated members and named sets.
- Implement Key Performance Indicators (KPIs), actions, and stored procedures.
- Design the infrastructure for an OLAP solution.
- Deploy and secure an Analysis Services solution in a production environment.
- Monitor and optimize an Analysis Services solution.
- Implement a data mining solution.

### **5. Rationale:**

Upon completion of this course, students will have a better understanding of Microsoft SQL Server 2005, a power database system.

### **6. Required Materials:**

Microsoft Official Curriculum, MOC 2796, included.

### **7. Evaluation**

Those who participate in class discussions, complete course lab work, and miss no more than three class meetings will be awarded 2.4 continuing education units.

### **8. Course Outline**

#### **Module 1: Capturing Business and Technical Requirements**

In this module, students will first learn about key design principles that they should consider when defining the scope of a BI project. They will then learn how to identify the

business and technical requirements to ensure that their solution meets the needs of its users.

### **Lessons**

- Planning an Analysis Solution
- Identifying Requirements and Constraints

### **Lab 1: Capturing Business and Technical Requirements**

- Reviewing Solution Requirements
- Identifying Further Information Requirements

After completing this module, students will be able to:

- Plan an analysis solution.
- Identify requirements and constraints when designing an analysis solution.

### **Module 2: Designing and Implementing a Logical OLAP Solution Architecture**

This module describes considerations and guidelines for designing an OLAP solution, including a relational data warehouse and an Analysis Services cube.

### **Lessons**

- Planning an OLAP Solution
- Designing and Implementing Fact and Dimension Tables
- Designing and Implementing Cubes

### **Lab 2: Designing and Implementing an OLAP Solution**

- Designing and Implementing a Relational Database Schema
- Designing and Implementing a Cube
- Designing and Implementing Perspectives

After completing this module, students will be able to:

- Describe design considerations for an OLAP solution.
- Describe design considerations for the relational schema of an OLAP solution.
- Describe considerations for designing and implementing OLAP cubes.

### **Module 3: Designing Physical Storage for a Multidimensional Solution**

In this module, students will learn how to design an effective physical storage solution for a multidimensional application.

### **Lessons**

- Designing Physical Storage

- Partitioning Relational Data
- Partitioning Multidimensional Data

### **Lab 3: Designing and Implementing Physical Storage**

- Designing and Implementing a Storage Solution
- Designing and Implementing Relational Partitioning
- Designing and Implementing Multidimensional Partitioning
- Testing the Solution

After completing this module, students will be able to:

- Design an effective physical storage solution for dimensions and measures.
- Partition relational data.
- Partition multidimensional data.

### **Module 4: Creating Calculations**

In this module, students will learn how to create Multidimensional Expression (MDX) calculations. The module describes how to create calculated members, named sets, and scoped assignments.

#### **Lessons**

- Implementing Calculated Members
- Implementing Named Sets
- Implementing Scoped MDX Scripts

### **Lab 4: Implementing Calculations**

- Creating Calculated Members
- Creating Named Sets
- Creating a Scoped MDX Script

After completing this module, students will be able to:

- Create calculated members.
- Create named sets.
- Create scoped assignments.

### **Module 5: Extending Cube Functionality**

In this module, students will learn about the benefits of KPIs, actions, and stored procedures. They will also learn how to implement KPIs, actions, and stored procedures in an Analysis Services cube.

#### **Lessons**

- Key Performance Indicators

- Actions
- Stored Procedures

### **Lab 5: Implementing Advanced Functionality**

- Creating KPIs
- Creating Actions
- Creating Stored Procedures

After completing this module, students will be able to:

- Create KPIs.
- Create actions.
- Create stored procedures.

### **Module 6: Designing an Analysis Services Infrastructure**

In this module, students will learn how to design an appropriate infrastructure for an OLAP application.

#### **Lessons**

- Considerations for Analysis Services Resource Requirements
- Considerations for Analysis Services Scalability
- Considerations for Analysis Services Availability

### **Lab 6: Designing and Implementing Analysis Services Infrastructure**

- Planning Production System Infrastructure
- Installing Analysis Services in a Cluster

After completing this module, students will be able to:

- Specify appropriate hardware and software resources for an Analysis Services solution.
- Design an Analysis Services infrastructure that supports high scalability.
- Design an Analysis Services infrastructure that supports high availability.

### **Module 7: Deploying a Multidimensional Solution into Production**

In this module, students will learn about and compare the different deployment methods available in SQL Server 2005 Analysis Services. They will also learn about how security in Analysis Services functions and how to protect their company's critical business information.

#### **Lessons**

- Deploying an Analysis Services Database
- Managing Analysis Services Security

## **Lab 7: Deploying Analysis Services into Production**

- Deploying an Analysis Services Database
- Enabling User Access

After completing this module, students will be able to:

- Deploy an Analysis Services solution.
- Secure an Analysis Services solution.

## **Module 8: Optimizing an OLAP Solution**

In this module, students will learn how to monitor Analysis Services and how to optimize performance of their Analysis Services solutions.

### **Lessons**

- Monitoring Analysis Services
- Optimizing Performance

## **Lab 8: Optimizing Analysis Services**

- Monitoring Analysis Services
- Optimizing Queries

After completing this module, students will be able to:

- Monitor Analysis Services.
- Optimize the performance of Analysis Services.

## **Module 9: Implementing Data Mining**

In this module, students will learn what a data mining solution is and how to design and implement data mining functionality with SQL Server Analysis Services.

### **Lessons**

- Introduction to Data Mining
- Implementing a Data Mining Solution
- Using Data Mining in a BI Solution

## **Lab 9: Implementing Data Mining**

- Creating a Data Mining Structure
- Validating a Data Mining Structure

After completing this module, students will be able to:

- Plan a data mining solution.

- Implement a data mining solution.
- Use data mining in a BI solution