ITMT 1071
Course Syllabus

1. Name of Course: Implementing a Microsoft SQL Server 2005 Database

2. Number of Clock Hours: 40

3. Course Description:
This course provides students with the knowledge and skills to implement a Microsoft SQL Server 2005 database. The course focuses on teaching individuals how to use SQL Server 2005 product features and tools related to implementing a database.
Prerequisites: Experience using a Microsoft Windows operating System. An understanding of basic relational database concepts.

4. Course Objectives
After completing this course, students will be able to:

- Create databases and database files.
- Create data types and tables.
- Use XML-related features in Microsoft SQL Server 2005.
- Plan, create, and optimize indexes.
- Implement data integrity in Microsoft SQL Server 2005 databases by using constraints.
- Implement data integrity in Microsoft SQL Server 2005 by using triggers.
- Implement views.
- Implement stored procedures.
- Implement functions.
- Implement managed code in the database.
- Manage transactions and locks.
- Use Service Broker to build a messaging-based solution.
- Use Notification Services to generate and send notifications.

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 2779, included.

7. Evaluation
Those who participate in class discussions, complete course lab work, and miss no more than three class meetings will be awarded 4.0 continuing education units.

8. Course Outline

MOC 2279:
Module 1: Creating Databases and Database Files

This module explains how to create databases, filegroups, schemas, and database snapshots.
Lessons

- Creating Databases
- Creating Filegroups
- Creating Schemas
- Creating Database Snapshots

Lab : Creating Databases and Database Files

- Creating a Database
- Creating Schemas
- Creating a Database Snapshot

After completing this module, students will be able to:

- Create databases.
- Create filegroups.
- Create schemas.
- Create database snapshots.

Module 2: Creating Data Types and Tables
This module explains how to create data types and tables. It also describes how to create partitioned tables.
Lessons

- Creating Data Types
- Creating Tables
- Creating Partitioned Tables

Lab : Creating Data Types and Tables

- Creating Data Types
- Creating Tables
- Creating Partitioned Tables

After completing this module, students will be able to:

- Create new data types.
- Create new tables.
- Create partitioned tables.

Module 3: Using XML

This module explains how to use the FOR XML clause and the OPENXML function. It also describes how to use the xml data type and its methods.
Lessons

- Retrieving XML by Using FOR XML
- Shredding XML by Using OPENXML
- Introducing XQuery
- Using the xml Data Type

Lab : Using XML

- Mapping Relational Data and XML
- Storing XML Natively in the Database
- Using XQuery with xml Methods

After completing this module, students will be able to:

- Retrieve XML by using the FOR XML clause.
- Shred XML by using the OPENXML function.
- Use XQuery expressions.
- Use the xml data type.

Module 4: Creating and Tuning Indexes
This module explains how to plan, create, and optimize indexes. It also describes how to create XML indexes.
Lessons

- Planning Indexes
- Creating Indexes
- Optimizing Indexes
- Creating XML Indexes

Lab : Creating and Tuning Indexes

- Creating Indexes
- Tuning Indexes
- Creating XML Indexes

After completing this module, students will be able to:

- Plan indexes.
- Create indexes.
- Optimize indexes.

- Create XML indexes.

Module 5: Implementing Data Integrity by Using Constraints
This module explains how to implement constraints and provides an overview of data integrity.
Lessons

- Data Integrity Overview
- Implementing Constraints

Lab : Implementing Data Integrity by Using Constraints

- Creating Constraints
- Disabling Constraints

After completing this module, students will be able to:

- Describe the options for enforcing data integrity in SQL Server 2005.
- Implement data integrity in SQL Server 2005 databases by using constraints.

Module 6: Implementing Data Integrity by Using Triggers and XML Schemas
This module explains how to implement triggers and XML schemas.
Lessons

- Implementing Triggers
- Implementing XML Schemas

Lab : Implementing Data Integrity by Using Triggers and XML Schemas

- Creating Triggers
- Implementing XML Schemas

After completing this module, students will be able to:

- Implement data integrity in SQL Server 2005 databases by using triggers.
- Implement data integrity in SQL Server 2005 databases by using XML schemas.

Module 7: Implementing Views
This module explains how to create views.
Lessons

- Introduction to Views
- Creating and Managing Views

- Optimizing Performance by Using Views

Lab : Implementing Views

- Creating Views
- Creating Indexed Views
- Creating Partitioned Views

After completing this module, students will be able to:

- Describe the purpose of views.
- Create and manage views.
- Explain how to optimize query performance by using views.

Module 8: Implementing Stored Procedures
This module explains how to create stored procedures and functions. It also describes execution plans, plan caching, and query compilation.
Lessons

- Implementing Stored Procedures
- Creating Parameterized Stored Procedures
- Working With Execution Plans
- Handling Errors

Lab : Implementing Stored Procedures

- Creating Stored Procedures
- Working With Execution Plans

After completing this module, students will be able to:

- Implement stored procedures.
- Create parameterized stored procedures.
- Work with execution plans.
- Handle errors in stored procedures.

Module 9: Implementing Functions
This module explains how to create functions. It also describes how to control the execution context.
Lessons

- Creating and Using Functions
- Working with Functions

- Controlling Execution Context

Lab : Implementing Functions

- Creating Functions
- Controlling Execution Context

After completing this module, students will be able to:

- Create and use functions.
- Work with functions.
- Control execution context.

Module 10: Implementing Managed Code in the Database
This module explains how to implement managed database objects.
Lessons

- Introduction to the SQL Server Common Language Runtime
- Importing and Configuring Assemblies
- Creating Managed Database Objects

Lab : Implementing Managed Code in the Database

- Importing an Assembly
- Creating Managed Database Objects

After completing this module, students will be able to:

- Identify appropriate scenarios for managed code in the database.
- Import and configure assemblies.
- Create managed database objects.

Module 11: Managing Transactions and Locks
This module explains how to use transactions and the SQL Server locking mechanisms to meet the performance and data integrity requirements of your applications.
Lessons

- Overview of Transactions and Locks
- Managing Transactions
- Understanding SQL Server Locking Architecture
- Managing Locks

Lab : Managing Transactions and Locks

- Using Transactions
- Managing Locks

After completing this module, students will be able to:

- Describe how SQL Server 2005 transactions use locks.
- Execute and cancel a transaction.
- Describe concurrency issues and SQL Server 2005 locking mechanisms.
- Manage locks.

Module 12: Using Service Broker
This module explains how to build a messaging-based solution with Service Broker.
Lessons

- Service Broker Overview
- Creating Service Broker Objects
- Sending and Receiving Messages

Lab : Using Service Broker (Optional)

- Creating Service Broker Objects
- Creating Service Broker Objects
- Implementing the Target Service

After completing this module, students will be able to:

- Describe Service Broker functionality and architecture.
- Create Service Broker objects.
- Send and receive Service Broker messages.

Module 13: Using Notification Services (Optional)
This module explains how to develop applications that generate and send timely messages to subscribers.
Lessons

- Introduction to Notification Services
- Developing Notification Services Solutions

After completing this module, students will be able to:

- Describe how Notification Services operates.

- Develop a Notification Services application.

Before attending this course, students must have:

- Basic knowledge of the Microsoft Windows operating system and its core functionality.
- Working knowledge of Transact-SQL.
- Working knowledge of relational databases.
- Some experience with database design.