COURSE SYLLABUS

SQL Server 2005
Implementation and Maintenance
MS Certified Technology Specialist: (MCDBA Exam 70-431)

MCDBA
Showcase Your Talents with Microsoft SQL Server

50 Cragwood Rd, Suite 350
South Plainfield, NJ 07080

Victoria Commons, 613 Hope Rd Building #5,
Eatontown, NJ 07724

130 Clinton Rd,
Fairfield, NJ 07004

Avtech Institute of Technology Course

Instructor:
Course Duration: 25 hours Course #2779
Date/Time:
Training Location:

Course: Microsoft Certified Technology Specialist:
Microsoft SQL Server 2005 — Implementation and Maintenance
(MCTS/MCDBA Exam 70-431)

Text / Lab Books

Recommended: http://www.microsoft.com/learning/mcp/mcts/sql/default.mspx

Programming Microsoft® SQL Server™ 2005
Essential reference guide to understanding fundamentals of programming SQL Server

Microsoft® SQL Server™ 2005: Database Essentials Step by Step
Your hands-on, step-by-step guide to learning the fundamentals of SQL Server 2005
programming

MCTS Self-Paced Training Kit (Exam 70-431) Microsoft SQL Server 2005
Implementation and Maintenance

Microsoft® SQL Server™ 2005: Applied Techniques Step by Step
Take your database skills to the next level with this hands-on, step-by-step guide

Course Description

This training course contains two parts:
Course 2779: Implementing a Microsoft SQL Server 2005 Database (three days)
Course 2780: Maintaining a Microsoft SQL Server 2005 Database (two days)

This course is training the professionals for the purpose to pass Microsoft Certified Technology
Specialist (MCTS) and Microsoft Certifies IT Professional (MCITP) exam. Exam 70-431: TS:
Microsoft SQL Server 2005 - Implementation and Maintenance became available January 30,
2006. This is a Microsoft Certified Technology Specialist (MCTS) certification exam. When you
pass Exam 431: TS: Microsoft SQL Server 2005 - Implementation and Maintenance, you

complete the requirements for the following certification; Microsoft Certified Technology Specialist: SQL Server 2005.

Database professionals using Microsoft SQL Server 2005 should consider the new Microsoft Certified Technology Specialist (MCTS) and Microsoft Certified IT Professional (MCITP) credentials. They provide IT Professionals with a simpler and more targeted framework to showcase their technical and on-the-job skills. Passing Microsoft Certified Database Administrators (MCDBAs) on Microsoft SQL Server 2000 (effective January 1, 2000), receive the benefit as the Industry recognition of your knowledge and proficiency with Microsoft products and technologies

Candidates for this exam are professionals who typically pursue careers as database administrators, database developers, or business intelligence developers. Additionally, they can be people who do not work with Microsoft SQL Server as a part of their primary job functions but who want to show their breadth of technology experience, such as developers, systems administrators, and others. Candidates have sought out knowledge and experience with Microsoft SQL Server 2005 to enhance their technical expertise, and they can implement and maintain databases by using specific instructions and specifications.

This course will train the candidates for this exam to be experts in following areas: Tools usage, UI navigation, Wizards usage, Writing code in the appropriate language (Transact-SQL, CLR language, and other scripting languages), Code debugging or syntactic issue resolution, Troubleshooting, Accomplishing specific focused tasks by using code or UI navigation

Learning Objectives

1. **Installing and Configuring SQL Server 2005**
   1.1. Verify prerequisites
   1.2. Upgrade from an earlier version of SQL Server
   1.3. Create an instance

2. **Configure SQL Server 2005 instances and databases**
   2.1. Configure log files and data files
   2.2. Configure the SQL Server Database Mail subsystem for an instance
   2.3. Choose a recovery model for the database

3. **Configure SQL Server security**
   3.1. Configure server security principals
   3.2. Configure database securables
   3.3. Configure encryption

4. **Configure linked servers by using SQL Server Management Studio (SSMS)**
   4.1. Identify the external data source
   4.2. Identify the characteristics of the data source
   4.3. Identify the security model of the data source

5. Implementing High Availability and Disaster Recovery
    5.1. Implement database mirroring
        5.1.1. Prepare databases for database mirroring
        5.1.2. Create endpoints
        5.1.3. Specify database partners
        5.1.4. Specify a witness server
        5.1.5. Configure an operating mode
    5.2. Implement log shipping
        5.2.1. Initialize a secondary database
        5.2.2. Configure log shipping options
        5.2.3. Configure a log shipping mode
        5.2.4. Configure monitoring.
    5.3. Manage database snapshots
        5.3.1. Create a snapshot
        5.3.2. Revert a database from a snapshot

6. Supporting Data Consumers
    6.1. Retrieve data to support ad hoc and recurring queries
        6.1.1. Construct SQL queries to return data
        6.1.2. Format the results of SQL queries
        6.1.3. Identify collation details
    6.2. Manipulate relational data
        6.2.1. Insert, update, and delete data
        6.2.2. Handle exceptions and errors
        6.2.3. Manage transactions
    6.3. Manage XML data
        6.3.1. Identify the specific structure needed by a consumer
        6.3.2. Retrieve XML data
        6.3.3. Modify XML data
        6.3.4. Convert between XML data and relational data
        6.3.5. Create an XML index
        6.3.6. Load an XML schema
    6.4. Implement an HTTP endpoint
        6.4.1. Create an HTTP endpoint
        6.4.2. Secure an HTTP endpoint
    6.5. Implement Service Broker components
        6.5.1. Create services
        6.5.2. Create queues
        6.5.3. Create contracts
        6.5.4. Create conversations
        6.5.5. Create message types
        6.5.6. Send messages to a service
        6.5.7. Route a message to a service
        6.5.8. Receive messages from a service
    6.6. Import and export data from a file
        6.6.1. Set a database to the bulk-logged recovery model to avoid inflating the transaction
             log

6.6.2. Run the bcp utility

6.6.3. Perform a Bulk Insert task

6.6.4. Import bulk XML data by using the OPENROWSET function

6.6.5. Copy data from one table to another by using the SQL Server 2005 Integration Services (SSIS) Import and Export Wizard

6.7. Manage replication

6.7.1. Distinguish between replication types

6.7.2. Configure a publisher, a distributor, and a subscriber

6.7.3. Configure replication security

6.7.4. Configure conflict resolution settings for merge replication

6.7.5. Monitor replication

6.7.6. Improve replication performance

6.7.7. Plan for, stop, and restart recovery procedures

7. Maintaining Databases

7.1. Implement and maintain SQL Server Agent jobs

7.1.1. Set a job owner

7.1.2. Create a job schedule

7.1.3. Create job steps

7.1.4. Configure job steps

7.1.5. Disable a job

7.1.6. Create a maintenance job

7.1.7. Set up alerts

7.1.8. Configure operators

7.1.9. Modify a job

7.1.10. Delete a job

7.1.11. Manage a job

7.2. Manage databases by using Transact-SQL

7.2.1. Manage index fragmentation

7.2.2. Manage statistics

7.2.3. Shrink files

7.2.4. Perform database integrity checks by using DBCC CHECKDB

7.3. Back up a database

7.3.1. Perform a full backup

7.3.2. Perform a differential backup

7.3.3. Perform a transaction log backup

7.3.4. Initialize a media set by using the FORMAT option

7.3.5. Append or overwrite an existing media set

7.3.6. Create a backup device

7.3.7. Back up file groups

7.4. Restore a database

7.4.1. Identify which files are needed from the backup strategy

7.4.2. Restore a database from a single file and from multiple files

7.4.3. Choose an appropriate restore method

7.5. Move a database between servers

7.5.1. Choose an appropriate method for moving a database

8. Monitoring and Troubleshooting SQL Server Performance
- 8.1. Gather performance and optimization data by using the SQL Server Profiler
    - 8.1.1. Start a new trace
    - 8.1.2. Save the trace logs
    - 8.1.3. Configure SQL Server Profiler trace properties
    - 8.1.4. Configure a System Monitor counter log
    - 8.1.5. Correlate a SQL Server Profiler trace with System Monitor log data
- 8.2. Gather performance and optimization data by using the Database Engine Tuning Advisor.
    - 8.2.1. Build a workload file by using the SQL Server Profiler
    - 8.2.2. Tune a workload file by using the Database Engine Tuning Advisor
    - 8.2.3. Save recommended indexes
- 8.3. Monitor and resolve blocks and deadlocks
    - 8.3.1. Identify the cause of a block by using the sys.dm_exec_requests system view
    - 8.3.2. Terminate an errant process
    - 8.3.3. Configure SQL Server Profiler trace properties
    - 8.3.4. Identify transaction blocks
- 8.4. Diagnose and resolve database server errors
    - 8.4.1. Connect to a non-responsive server by using the dedicated administrator connection (DAC)
    - 8.4.2. Review SQL Server startup logs
    - 8.4.3. Review error messages in event logs
- 8.5. Monitor SQL Server Agent job history
    - 8.5.1. Identify the cause of a failure
    - 8.5.2. Identify outcome details
    - 8.5.3. Find out when a job last ran
- 8.6. Gather performance and optimization data by using DMVs

9. Creating and Implementing Database Objects
- 9.1. Implement a table
    - 9.1.1. Specify column details
    - 9.1.2. Specify the filegroup
    - 9.1.3. Assign permissions to a role for tables
    - 9.1.4. Specify a partition scheme when creating a table
    - 9.1.5. Specify a transaction
- 9.2. Implement a view
    - 9.2.1. Create an indexed view
    - 9.2.2. Create an updateable view
    - 9.2.3. Assign permissions to a role or schema for a view
- 9.3. Implement triggers
    - 9.3.1. Create a trigger
    - 9.3.2. Create DDL triggers for responding to database structure changes
    - 9.3.3. Identify recursive triggers
    - 9.3.4. Identify nested triggers
    - 9.3.5. Identify transaction triggers
- 9.4. Implement functions

      9.4.1. Create a function
      9.4.2. Identify deterministic versus nondeterministic functions
    9.5. Implement stored procedures
      9.5.1. Create a stored procedure
      9.5.2. Recompile a stored procedure
      9.5.3. Assign permissions to a role for a stored procedure
    9.6. Implement constraints
      9.6.1. Specify the scope of a constraint
      9.6.2. Create a new constraint
    9.7. Implement indexes
      9.7.1. Specify the filegroup
      9.7.2. Specify the index type
      9.7.3. Specify relational index options
      9.7.4. Specify columns
      9.7.5. Specify a partition scheme when creating an index
      9.7.6. Disable an index
      9.7.7. Create an online index by using an ONLINE argu
    9.8. Create user-defined types
      9.8.1. Create a Transact-SQL user-defined type
      9.8.2. Specify details of the data type
      9.8.3. Create a CLR user-defined type
    9.9. Implement a full-text search
      9.9.1. Create a catalog
      9.9.2. Create an index
      9.9.3. Specify a full-text population method
    9.10. Implement partitions

Prerequisite

Familiarity with PC & Windows OS

General understanding of the principles of computer programming

Contact Hours

_____ Contact Hours   (Lecture ___ Hours / Lab ____ Hours)

Semester Credit Hours

_____ semester credit hours

Teaching Strategies

A variety of teaching strategies may be utilized in this course, including but not limited to, lecture, discussion, written classroom exercises, written lab exercises, performance based lab exercises, demonstrations, quizzes and examinations. Some quizzes may be entirely or contain lab based components. A mid-course and end course examination will be given.

Method of Evaluating Students

Grade Distribution

Class Attendance	10
Mid Term	30
Finals	50
Special Projects Makeup projects	10
Total	**100%**

Grading Policy

At the end of each course, each student is assigned a final grade as follows:

Point Range	Interpretation	Grade	Quality Points
90 – 100	Excellent	A	4.0
80 – 89	Very Good	B	3.0 – 3.9
70 – 79	Average	C	2.0 – 2.9
60 – 69	Poor	D	1.0 – 1.9
Below 60	Failure	F	0
N/A	Withdrawal	W	0
N/A	Pass	P	0
N/A	Incomplete	I	0

A student earning a grade of D or above is considered to have passed the course and is eligible to pursue further studies. A student receiving a grade of F has failed the course. A failed course must be repeated and passed to meet Avtech Institute's graduation requirements, in addition to an overall program GPA of 2.0.

Requirements for Successful Completion of the Course

At a minimum, students must achieve the following:

- A passing grade of **D** or above
- Completion of all required examinations
- Submission of all required lab exercises and projects and;
- Adherence to the school attendance policy.

Equipment Needed

Industry standard desktop computer for lab exercises.

Equipment Breakdown Lab room

Videos and Projector

Library Assignments

To be determined by the instructor.

Portfolio Assignment

Student program outcome portfolios are required to demonstrate student competencies. In conjunction with your course structure, please select a project/paper that best demonstrates what you have learned in this course and add it to your program portfolio.

Course Policies

Disruptive Behavior

Disruptive behavior is an activity that interferes with learning and teaching. Inappropriate talking during class, surfing inappropriate website, tardiness, cheating, alcohol or drug use, use of cell phone, playing lout music during class, etc. all disrupt the learning process.

Copyright Infringement

Specific exemptions to copyright infringement are made for student use in the context of learning activities. Graphic design students often download images from the Internet, or scan images from publications. As long as this work is for educational purpose, and subject to faculty permission, this is not a problem.

Plagiarism

Faculty cannot tolerate the *misrepresentation of work as the student's own*. This often involves the use by one student or another student's design, whether voluntarily or involuntarily. In the event that plagiarism is evident and documented, all students involved in the conscious decision to misrepresent work must receive an F as the grade for the project. A second occurrence may result in suspension for the rest of the quarter, and return to the school only after a review by the Academic Standards Committee.

Attendance

Attendance and Lateness

In education and the workplace, regular attendance is necessary if individuals are to excel. There is a direct correlation between attendance and academic success. Attendance is mandatory. All students must arrive on time and prepared to learn at each class session. At the faculty member's discretion, students may be marked absent if they arrive more than 15 minutes late to any class. More that five absences in a class that meets twice per week or more that two absences in a class that meets once per week may result in a failure.

Make-Up Work

Late Projects and Homework

All projects and homework must be handed in on time. Homework should be emailed to your instructor if you are going to miss a class. Work that is submitted one week late will result in the loss of one full grade; and work that is submitted two weeks late will result in the loss of two full grades; more than two weeks late you will receive a failing grade on the project.