

# Database Fundamentals

Courseware 8364-1

Exam 98-364

**Microsoft**

*Technology Associate*

## Course Description

*Database Administration Fundamentals* provides students with fundamental database development and administration concepts. Students who complete this course will have reviewed all of the exam objectives and be on their way to preparing for Microsoft Technology Associate Exam #98-364. It can also serve as a stepping stone to the Microsoft Certified Technology Specialist exams.

Suggested Timings					
20-Hours		12-Week		16-Week	
Instruction	Lab	Instruction	Lab	Instruction	Lab
13	7	22	13	51	29
20		36		80	

## Course Series

This *Database Administration Fundamentals* courseware is one of seven courses in the Microsoft Technology Associate Series. Other courses available in the series include:

- Software Development Fundamentals
- Windows Development Fundamentals
- Web Development Fundamentals
- Networking Fundamentals
- Security Fundamentals
- Windows Server Administration Fundamentals

The Microsoft Technology Associate Series contains exercises that students can use to learn each of the features discussed. Additional resources to practice and apply the skill sets are available from the CCI Technology Associate Microsite. Students are encouraged to register at <http://mta.ccilearning.com> in order access these additional activities both during and after completing the course.

Instructor Resources are available and are produced specifically to help and assist an instructor in preparing to deliver the course using the CCI materials. Contact your coordinator or administrator, or call your CCI Account Manager for information on how to access these resources.

## Course Prerequisites

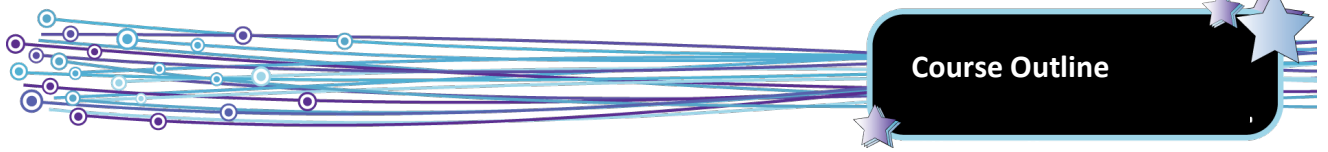
Prior to taking this course, students must possess the following basic computer literacy and Windows skills.

- Start and run Windows
- Use Minimize, Restore Down/Maximize, or Close
- Use the left and right mouse buttons appropriately
- Understand file management techniques
- Navigate between files, folders, or drives

### Course Objectives

After completing this course, you will be able to:

- ☞ Identify what a database can do.
- ☞ Understand why good design is vital to a database's usefulness.
- ☞ Identify various types of databases.
- ☞ Identify the features, advantages and disadvantages of relational database management systems (RDBMS).
- ☞ Describe how data is stored.
- ☞ Identify the foundations of a modern database.
- ☞ Define tables, rows and columns.
- ☞ Understand the role of keys in guaranteeing record uniqueness.
- ☞ Identify relationship types.
- ☞ Define relational integrity.
- ☞ Understand the role of constraints in preserving data integrity.
- ☞ Determine data relationships.
- ☞ Diagram a database.
- ☞ Identify the normal forms and normalize data to 3NF.
- ☞ Understand Structured Query Language (SQL) including history, syntax and differing implementations.
- ☞ Understand why choosing the correct data type is important.
- ☞ Understand how data types affect storage requirements.
- ☞ Recognize different data types and when to use them.
- ☞ Identify commonly supported SQL data types.
- ☞ Identify the data types supported in MS SQL Server 2008.
- ☞ Connect to a server instance.
- ☞ Understand how SQL Server creates schemas and data dictionaries.
- ☞ Understand the function and commands of Data Definition Language (DDL).
- ☞ Create a database using the SSMS New Database wizard.
- ☞ Use the CREATE DATABASE, DROP DATABASE and ALTER DATABASE statements.
- ☞ Create tables using the CREATE TABLE statement.
- ☞ Add primary key constraints.
- ☞ Set a field to auto-increment.
- ☞ Use the ALTER TABLE statement.
- ☞ Add foreign key constraints.
- ☞ Create tables in SQL Server Management Studio.
- ☞ Drop tables.
- ☞ Understand the purpose and function of Data Manipulation Language (DML).
- ☞ Perform data entry tasks using the SSMS GUI.
- ☞ Create a database diagram.
- ☞ Insert data using the INSERT statement.
- ☞ Insert data using INSERT scripts.
- ☞ Select data using the SELECT statement.
- ☞ Update data using the UPDATE statement.
- ☞ Delete data using the DELETE statement.
- ☞ Select data from multiple tables using a WHERE clause.
- ☞ Understand aliases.
- ☞ Use different join types.
- ☞ Use SQL UNION and INTERSECT.
- ☞ Use subqueries.
- ☞ Use the INSERT with SELECT statement.



## Course Outline

- ⇒ Use aggregate functions.
- ⇒ Use scalar functions.
- ⇒ Create and use views.
- ⇒ Work with functions and stored procedures.
- ⇒ Create user-defined functions.
- ⇒ Create stored procedures.
- ⇒ Modify and delete functions and procedures.
- ⇒ Understand and create indexes.
- ⇒ Use transactions.
- ⇒ Understand database security concepts.
- ⇒ Understand how to back up and restore databases.



## Course Outline

### About This Courseware

Courseware Description  
Course Design  
Course Objectives  
Conventions and Graphics

### Lesson 1: Introduction to Databases

Lesson Objectives  
What Should a Database Provide?  
Database Types  
Relational Database Management Systems (RDBMS)  
Good Design is Vital  
The Basics of Tables  
Foundations of the Modern Database  
Record Uniqueness and Keys  
Relationship Types  
Entities and Relationships  
Maintaining Data Integrity  
Understanding Normalization  
Lesson Summary  
Review Questions

### Lesson 2: Creating Database Objects

Lesson Objectives  
A Review of the Design Process  
Structured Query Language (SQL)  
Data Types  
Database Products and Server Instances  
SQL Server 2008 Express  
Data Definition Language (DDL)  
Introducing HomeGrown Gardening Supplies  
Creating Tables  
Dropping Tables  
Lesson Summary  
Review Questions

### Lesson 3: Manipulating Data

Lesson Objectives  
Data Manipulation Language (DML)  
Re-creating the HomeGrown Database  
The INSERT Statement  
Selecting Data  
Updating Data  
Deleting Data  
Lesson Summary  
Review Questions

### Lesson 4: Using Advanced SQL Commands

Lesson Objectives  
A Review of the Basic SELECT Statement  
Selecting Data from Multiple Tables using a WHERE clause  
Using Joins  
SQL Union and Intersect  
SQL Subqueries  
Using INSERT INTO with SELECT  
Using Aggregate Functions  
Using Scalar Functions  
Using Database Views  
Functions and Stored Procedures  
User-Defined Functions  
Using Stored Procedures  
Modifying and deleting functions and stored procedures  
Lesson Summary  
Review Questions

### Lesson 5: Database Performance and Security

Lesson Objectives  
Understanding Indexes  
Using Transactions to Ensure Integrity  
Database Security  
Backing Up and Restoring  
Lesson Summary  
Review Questions

### Appendices

Appendix A: Courseware Mapping  
Appendix B: Glossary of Terms  
Appendix C: Index