



## COURSE OUTLINE

**IST 260**

**SQL Server Design**

**4 Credits**

**Hours:  
lecture/Lab/Other**

**Co- or Pre-requisite**

**Implementation  
sem/year**

**3/2**

**None**

**2021**

### **Catalog description:**

This course presents the essential SQL statements for retrieving and updating the data in a database. Students will master these to work effectively with database data in applications. Then, students learn how to design and create a database, because application developers often end up in the role of database designer and DBA. Students also learn how to work with views, Management Studio, XML, BLOBs and CLR integration.

### **Course Goals:**

#### **The student will be able to:**

- Explain relational databases and SQL.
- Use the Management Studio.
- Retrieve data from a single table.
- Retrieve data from two or more tables.
- Code summary queries.
- Code subqueries.
- Insert, update, and delete data.
- Work with data types.
- Use functions.
- Design a database.
- Create and maintain databases, tables, and sequences with SQL statements.
- Use the Management Studio for database design.
- Work with views, XML, BLOBs and discuss CLR integration.

## **Unit I: An introduction to relational databases and SQL**

### **Student will be able to:**

- Discuss the SQL Server System Hardware and Software components.
- Explain Relational Database Model; SQL and SQL based System. Transact-SQL statements.
- Explain how to work with other database objects.
- Explain how to use SQL from application program

## **Unit II: How to use the Management Studio**

### **Student will be able to:**

- Discuss SQL Server 2016.
- Explain the Management Studio.
- Discuss the management of the database files.
- View and modify the database.
- Work with queries
- View the documentation for SQL Server.

## **Unit III: How to retrieve data from a single table**

### **Student will be able to:**

- Explain basic concepts of SELECT statement.
- Code the SELECT clause.
- Code the WHERE clause and Order By clause.
- Retrieve data from two or more tables.
- Work with inner joins, outer joins, cross joins and unions.

## **Unit IV: How to code summary queries**

### **Student will be able to:**

- Explain How to work with aggregate functions
- Group and summarize data using grouped by, having clause and where clause.
- Summarize data using SQL Server extensions using ROLLUP Operator, CUBE operator, GROUPING SETS operator.
- Work with OVER clause.

## **Unit V: How to code subqueries**

### **Student will be able to:**

- Explain subqueries.
- Code subqueries in search conditions using IN operator, ALL keyword, ANY, EXISTS and SOME.
- Explain Other ways to use subqueries using FROM and SELECT.
- Explain guidelines for working with complex queries.
- Work with common table expressions using CTE and recursive CTE.

**Unit VI: How to insert, update, and delete data**

**Student will be able to:**

- Work with data types and work with functions.
- Design and implement database.
- Create a database and its tables with SQL Statements.
- Explain DDL How to create databases, tables, and indexes.
- Work with constraints and show how to change databases and tables.
- Work with sequences and use script to create the AP database.

**Unit VII: How to create a database and its tables with the Management Studio**

**Student will be able to:**

- Work with a database, Tables and generate scripts.
- Work with Advanced SQL.
- Create, manage, update views.
- Use view designer to create, modify and delete views.
- Code scripts and work with scripts

**Unit VII: How to code stored procedures, functions, and triggers**

**Student will be able to:**

- Code stored procedures, functions, and triggers.
- Manage transactions and locking.
- Manage database security and work with XML.
- Work with BLOBs.
- Explain CLR integration and use SQL to work with CLR objects.

**Specific methods for evaluating student progress through the course are up to the discretion of the instructor. Below is an example of grade breakdown:**

The final grade is based on the following values:	
Attendance and class participation	10%
Tests	20%
Laboratory & Project Assignments	40%
Midterm Exam	15%
Final Exam	15%
Total	100%

## Course Policies:

**Missed Classes:** The student is responsible for obtaining material distributed on class days when he/she was absent. This can be done through contacting a classmate who was present or by contacting the instructor during his office hours or other times. Missed or late quizzes cannot be made up under any circumstances but with good cause and adequate notice, an early quiz may be given. One quiz (lowest score) will be dropped at the end of the semester.

**Assignments:** All assignments are due at the beginning of class on the date due. Late submission of assignments will be assessed a penalty of 10% per day. No exceptions are made.

**Academic Dishonesty:** Plagiarism and cheating are serious offenses and may be punished by failure on exam, paper or project; failure in course; and or expulsion from the University. For more information, refer to the "Academic Dishonesty" policy in the University Undergraduate Catalog. For this class, it is permissible to assist classmates in general discussions of computing techniques. General advice and interaction are encouraged. Each person, however, must develop his or her own solutions to the assigned projects, assignments, and tasks. In other words, students may not "work together" on graded assignments.

**Need for Assistance:** If you have any condition, such as a physical or learning disability, which will make it difficult for you to carry out the work as I have outlined it, or which will require academic accommodations, please notify me as soon as possible.

**Incomplete Policy:** Students will not be given an incomplete grade in the course without sound reason and documented evidence as described in the Student Handbook. In any case, for a student to receive an incomplete, he or she must be passing and must have completed a significant portion of the course.



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