

**Virginia Western Community College**  
**ITD 250**  
**Database Architecture and Administration**

**Prerequisites**

ITD 130

**Course Description**

Involves in-depth instruction about the underlying architecture of databases and the handling of database administration.

**Semester Credits: 3    Lecture Hours: 3    Lab/Clinical/Internship Hours: 0**

**Required Materials****Textbook:**

Murach's SQL Server 2019 for Developers, Joel Murach, ISBN- 978-1943872572.

**Other Required Materials:**

SQL Server current version (free download from the web)

**Course Outcomes**

**At the completion of this course, the student should be able to:**

- Understand how to use SQL Server Management Studio
- Be able to retrieve data from single and multiple tables, so summary queries, utilize "group by" and "having"
- Use subqueries to retrieve data from multiple tables
- Understand how to update and delete tables and data
- Understand data types, functions, null values
- Be able to design databases (both logical and physical) and understand modeling and normalization
- Make correct use of indexes, views and the system information
- Know how to code scripts
- Be able to create stored procedures, and user defined functions
- Be able to utilize triggers
- Understand cursors, transactions, and locking
- Be able to discuss and implement security and concurrency control
- Understand how to Performance tune a database utilizing the query optimizer
- Know the basic topics related to database backup, recovery, system availability.

- Understand the need for data replication. Be able to automate system administration tools.
- Be able to discuss the concepts of distributed processes, business intelligence, data warehousing

### Topical Description

Week	Topics	Reading Assmt Murach SQLServer
1	Introduction to Relational Databases, SQL Server	Ch 1-2
2	Review – retrieving data from single and multiple tables, Summary queries, Group By, Having	Ch 3-5
3	Subqueries	Ch 6
4	Update, delete, data types, Functions, Null values	Ch 7-9
5	Database Design (logical and physical), modeling, normalization	Ch 10-12
6	Indexes, Views and the System Information	Ch 13
7	How to Code Scripts	Ch 14
8	Stored Procedures, and user defined functions	Ch 15
9	Cursors, transactions, and locking	Ch 16
	TAKE HOME MIDTERM	
10	Security and concurrency control	Ch 17
11	Security and concurrency control	Ch 17
12	Performance tuning and Query Optimizer	Auxiliary Books
13	Performance tuning and Query Optimizer	Auxiliary Books
14	Backup, recovery, system availability.	Auxiliary Books
Thanksgiving	NO CLASS	
15	Backup, recovery, system availability.	Handout
	FINAL EXAM	

### Notes to Instructors

1. A midterm and final exam are expected.
2. Optional topics include some MySQL and Oracle database administration