

ITD250

Database Architecture and Administration

COURSE OUTLINE

Prerequisites:

ITD130

Course Description:

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

The goal of this course is to cover how organizational information requirements can be supported by proper design and implementation of database systems. Today's managers need to understand the critical role databases play in supporting organizational decision-making. The course will cover installation, design, and a quick review of SQL statements. Transitions and locking will be addressed as will views and indexes. Stored procedures and triggers will be studied. Optimization of queries, indexes, schemas, and applications will be approached through performance tuning and monitoring. Security, backup, and recovery topics will be considered.

Semester Credits: 4 Lecture Hours: 4 Lab/Recitation Hours: 0

VIRGINIA WESTERN COMMUNITY COLLEGE
PO Box 14007
Roanoke, VA 24038
(540)-857-7273



ITD250 Database Architecture and Administration

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
- Understand the basics of Sharepoint

VIRGINIA WESTERN COMMUNITY COLLEGE
PO Box 14007
Roanoke, VA 24038
(540)-857-7273



ITD250 Database Architecture and Administration

Required Materials:

Textbook:

Murach's SQL Server 2016 for Developers, Bryan Syverson and Joel Murach, ISBN-TBA

ITD250 Database Architecture and Administration

VIRGINIA WESTERN COMMUNITY COLLEGE
PO Box 14007
Roanoke, VA 24038
(540)-857-7273



Topical Description: (Outline chapters and sections to be covered in the book – may include timeline)

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	
	TAKE HOME MIDTERM	
10	Security and concurrency control	
11	Security and concurrency control	
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	

VIRGINIA WESTERN COMMUNITY COLLEGE
 PO Box 14007
 Roanoke, VA 24038
 (540)-857-7273



ITD250 Database Architecture and Administration

Notes to Instructors

(List information about optional topics, departmental exams, etc)

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

VIRGINIA WESTERN COMMUNITY COLLEGE
PO Box 14007
Roanoke, VA 24038
(540)-857-7273

