Three Rivers
COMMUNITY COLLEGE

Syllabus CSC K233

Database Development I

Fall 2019

Course and Instructor Information

Course Title: Database Development I (CSC K233)
Credits: 4
Format: Hybrid
Instructor: Soumyashree Sahoo
Location: B-227
Class : Wednesdays 1:30 – 3:10 pm
Email: SSahoo@trcc.commnet.edu
Office Hours/Availability: Tuesday, Thursday & Friday at C-106

All information is subject to change at any time. Check the course **Blackboard Learn** page
for announcements and updates.

Course Materials

Online version or physical textbook should be obtained by the first week and before the first onsite meeting since it will be used throughout the semester for content, concepts, assignments, etc.

Database Systems: Design, Implementation, & Management 13th *Edition*
by Carlos Coronel & Steven Morris

ISBN-10: 1-337-62790-9

ISBN-13: 987-1-337-62790-0

Publisher: Cengage

Copyright: 2019

Additional course materials including lecture notes, links, assignments, and handouts will be
posted on this courses site within **Blackboard Learn**.

Required Software/Supplies

Unless otherwise stated, the course **Blackboard Learn** site is required for all assignment submissions. Email or hard copy submission **will not be accepted.**

Homework Assignments, Data Dictionaries and Documentation generation:

- Microsoft Office Word 2003+

Suggested Relational Database Management System (RDBMS) options:

- Microsoft SQL Server Developer Edition (https://www.microsoft.com/en-us/sql-server/sql-server-downloads)
- Microsoft SQL Server Express Edition (https://www.microsoft.com/en-us/sql-server/sql-server-downloads)
- Other (*confirm with instructor if another RDBMS will be used for your project such as MySQL, Microsoft Access etc.*)

Entity-Relationship (ER) Diagram generation:

- Microsoft Office PowerPoint 2003+
- Other drawing tool with artifacts submitted in a graphics format (*e.g.*, PNG or JPG)

Course Description

An examination of the fundamental concepts of database systems, ranging from file structures to organized models and collections of data designed for persistence and retrieval. Topics include relational theory, text and graphical design techniques, implementation strategies, selection of database management system, and tradeoffs to consider (*e.g.*, data integrity, query performance, security, *etc.*).

This course is aimed at students with no database experience but a desire to learn and apply concepts to communicate persistent data-driven solutions.

Specifically, at the course completion students will be able to describe, design and use relational database features including but not limited to the following:

Database Modeling	Database Querying
• Describe the difference between data and information, what a database is, the various types of databases, and why they are valuable assets for decision making	• Learn the basic commands and functions of SQL • Use SQL for data administration (to create tables, indexes, and views)

• Understand the importance of database design • Describe data modeling and why data models are important • Describe what business rules are and how they influence database design • Understand that relations are logical constructs composed of rows (tuples) and columns (attributes) • List the main characteristics of entity relationship components • Describe the database design process • List the characteristics of good primary keys and understand how to select them • Understand what normalization is and what role it plays in the database design process • Learn about the normal forms 1NF, 2NF, 3NF, and BCNF • Understand how normal forms can be transformed from lower normal forms to higher normal forms	• Use SQL for data manipulation (to add, modify, delete, and retrieve data) • Use SQL to query a database for useful information • Learn about the relational set operators UNION, UNION ALL, INTERSECT, and MINUS • Use the advanced SQL JOIN operator syntax • Design and use the different types of subqueries and correlated queries • Use SQL functions to manipulate dates, strings, and other data.

Course Outline/Schedule

Week	Topics/Reading Assignments
1	**Chapter 1 – Database Systems**
2	**Chapter 9 – Database Design**
3	**Chapter 2 – Data Models**
4	**Chapter 3 – Relational Database Model**
5	**Chapter 4 – Entity Relationship Modeling** **Test 1**
6	**Chapter 5 – Advanced Data Modeling**
7	**Online Materials – SQL DDL & DML Basics** **Chapter 6 – Normalization of Database Tables**
8	**Chapter 7 – Introduction to Structured Query Language (SQL)**
9	**Chapter 7 – Introduction to Structured Query Language (SQL)**
10	**Chapter 8 – Advanced SQL**

	Test 2	
11	**Chapter 8 – Advanced SQL**	
12	**Chapter 10 – Transaction Management & Concurrency Control**	
13	**Chapter 11 – Database Performance Tuning & Query Optimization**	
14	**Chapter 14 – Big Data & NoSQL**	
15	**Final Project**	

Note: The foregoing course outline is subject to change as conditions warrant.

Course Requisites

1. **Attendance**: Students are expected to be punctual and responsible for all assigned text reading materials and any additional course content posted on the course **Blackboard Learn** site.
2. **Participation:** Active and positive class and online discussion participation is expected. A large part of the learning experience will come from discussion of problems and techniques presented in the reading, notes and from the homework assignments. Onsite/in-class is not the time to check your email, browse the web for your next purchase, or to play games.
3. **Reading: All reading assignments should be completed prior to the onsite lab time.**
4. **Assignments:** All assignments are to be your own work and are due by the **date and time** posted with the assignment on the course **Blackboard Learn** site.
5. **Homework:** Homework assignments will typically be assigned on a weekly basis. Homework assignments will generally consist of the various aspects of the reading and posted content concepts and/or related research items.
   a. Homework assignments are graded on *both* the quality of the required written documentation and on the quality of the actual computer code (*e.g.*, SQL statements) ER Diagrams, code comments, *etc*.
   b. To receive full credit, assignments must meet all requirements and specifications, *and* must do so within the quality guidelines described in the assignment text and class discussions.
   c. It is recommended that individuals start working on a homework assignment as soon as it is released and ask questions several days before due if additional explanations are needed on a specific assignment.
6. **Electronic submission of assignments:** Written documentation and answers to questions pertaining to an assignment *must* be submitted using Microsoft Word 2003+ (**.doc** or **.docx**) formats unless otherwise specified.
   a. **All documentation, code, scripts, etc. shall be submitted electronically** using the appropriate course **Blackboard Learn** site assignment link.
   b. Remember, because clocks do not always match, you should be submitting your assignment at least 15 minutes before it is due. Extenuating circumstances should be discussed with the instructor **prior to the due date**.
   c. It is the student's responsibility to check before the deadline that the files they have uploaded have been effectively submitted and are not unreadable or corrupted.

Students should check that their files have been correctly submitted by downloading them and testing that they can open and/or run the files.

7. **Quizzes/Tests:** Quizzes covering the material in the reading, assignments, and/or our discussions may be unannounced, while tests will be announced and scheduled at least a week in advance.

8. **Project**: There will be a database computing project that will encompass multiple facets of the material covered. To receive full credit, multiple submission milestones must be met along with a final presentation/demonstration of your database along with SQL statements. Additional project and submission details will be provided via the course **Blackboard Learn** site.

9. The instructor reserves the right to change topics and dates accordingly as the semester progresses. All changes will be communicated in an appropriate manner (such as updates within **Blackboard Learn** site).

Course Grading

Late submissions of assignments are not accepted without penalty.

- You have up to 5 days after due date to submit with a 20% penalty for each day.
- After 5 days, 0 points will be received for the submission.
- Tests are as scheduled with no makeups.
- Final Projects are not accepted late.

Summary of Course Grading:

Course Component	Weight
Participation	10%
Assignments/Homework	30%
Quizzes/Tests	30%
Project	30%

Grading Scale:

Grade	Letter Grade
93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+

73-76	C
70-72	C-
67-69	D+
63-66	D
60-62	D-
<60	F

Student Responsibilities

Withdrawing from the Course

A student who simply stops submitting work will receive the grade earned on that work, usually a failing grade. To receive a "W" grade instead, apply for a withdrawal by May 4th. A "W" will be entered on the student transcript. An "N" (implicit withdrawal) may be entered for a student that stops submitting work before 60% of the class is completed but it will still show up as an "F" on your transcript.

Academic Integrity

Students are expected to do their own work in this class. **Working together to better understand the material is acceptable. Submitting duplicate work is not** and will adversely affect the assignment grade. Example violations include but are not limited to:

- Copying or sharing a file or any portion of a file from another student.
- Sharing or allowing another student to copy your files or any portion of a file.
- Duplicating or distributing copies of licenses for software programs and/or services.

All exams, papers or reports submitted by you and that bears your name is presumed to be your own original work that has not previously been submitted for credit in another course unless you obtain prior written approval to do so from your professor.

In all of your assignments, including homework or drafts of papers, you may use words or ideas written by other individuals in publications, web sites, or other sources but only with proper attribution. "Proper attribution" means that you have fully identified the original source and extent of your use of the words or ideas of others that you reproduce in your work for this course, usually in the form of a footnote or parenthesis.

As a general rule, if you are citing from a published source or from a web site and the quotation is short (up to a sentence or two), place it in quotation marks; if you employ a longer passage from a publication or web site, please indent it and use single spacing. In both cases, be sure to cite the original source in a footnote or in parentheses. (See http://www.plagiarism.org/plag_article_how_do_I_cite_sources.html for more information on citing.)

If you are uncertain about the expectations for completing an assignment or taking a test or examination, be sure to seek clarification from your professor beforehand.

Finally, you should keep in mind that as a member of the Three Rivers Community College community, you are expected to demonstrate integrity in all of your academic endeavors and will be evaluated on your own merits.

Be proud of your academic accomplishments and help to protect and promote academic integrity. The consequences of cheating and academic dishonesty may include a formal discipline file, possible loss of financial scholarship or employment opportunities, and denial of admission to a four-year college.

Students with Disabilities

If you are a student with a disability and believe you will need support services and/or accommodations for this class, please contact the Disabilities Support Services at TRCC. Please note that the instructor cannot provide accommodations based upon disability until the instructor has received an accommodation letter from the Disabilities Counselor.