CS 81.62 Course Outline as of Fall 2016

CATALOG INFORMATION

Dept and Nbr: CS 81.62 Title: SQL/RELATIONAL DATABASES
Full Title: Relational Database Concepts and Structured Query Language
Last Reviewed: 2/28/2022

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	4	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
This course introduces relational database concepts, design and administration. Students will learn the syntax and use of Structured Query Language (SQL) and how to install and run a relational database server such as MySQL and how to design relational database for applications.

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Schedule of Classes Information:
Description: This course introduces relational database concepts, design and administration. Students will learn the syntax and use of Structured Query Language (SQL) and how to install and run a relational database server such as MySQL and how to design relational database for applications. (Grade or P/NP)
Prerequisites/Corequisites:
Recommended: Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:
Transfer Credit: CSU;
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**			Effective:	Inactive:
CSU GE:	**Transfer Area**			Effective:	Inactive:
IGETC:	**Transfer Area**			Effective:	Inactive:
CSU Transfer:	Transferable	Effective:	Fall 2011	Inactive:	
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Write Structured Query Language (SQL) statements, including Data Definition Language (DDL) queries and Data Manipulation Language (DML)
2. Design and develop a relational database

Objectives:
Upon completion of the course, students will be able to:
1. Describe a relational database
2. Install and configure a database server environment
3. Implement SQL statements using data design, definition, and manipulation techniques
4. Implement stored procedures
5. Develop complex data analysis queries in SQL
6. Apply transaction and database administration concepts
7. Define and manage access controls for relational databases

Topics and Scope:

1. Definition of "relational database"
   a. Contrast relational database and file-based databases
   b. History of relational database theory
   c. Client/server computing
   d. History and current options in the database market
   e. MySQL, the SQL language, and understanding tables
2. Database server set-up
   a. Installing and configuring MySQL
   b. Storage engines Index Sequential Access Method (ISAM) and Inno Database (InnoDB)
3. SQL basics: Syntax, Data Manipulation Language (DML), Data Definition Language (DDL), tables, select, distinct, where, and/or, order by, query and reporting in SQL

4. Data design
   a. Data normalization theory
   b. Primary key and foreign keys
   c. Entity and relationship diagramming
5. Data definition
   a. Create database, create table and create index
   b. Synonyms, views, stored procedures
6. Data manipulation: insert, update and delete
7. Stored procedures: programming in the database
8. Data analysis: SQL functions, unions, group by, and complex joins
9. Web data analysis: creating data analysis web applications using Python
10. Transactions: theory and practice for simple and distributed transactions using SQL
11. Database administration: partitioning, replication, enterprise management tools, backup and recovery
12. Security concepts of relational databases
    a. User management
    b. Access controls
    c. Data integrity

Assignment:

1. 8 - 12 SQL problem solving projects
2. 3 - 5 exams
3. Approximately 25 pages per week of reading

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

SQL problem solving projects	Problem solving 50 - 70%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Objective examinations (multiple choice, true false, matching, completion, etc.)	Exams 30 - 50%

Other: Includes any assessment tools that do not logically fit into the above categories.

Participation and attendance	Other Category 0 - 10%

Representative Textbooks and Materials:
Database Systems: A Practical Approach to Design, Implementation, and Management (6th). Connolly, Thomas and Begg, Carolyn. Pearson: 2015