

COURSE SYLLABUS

LAST REVIEW	Spring 2021
COURSE TITLE	Structured Query Language (SQL)
COURSE NUMBER	CIST-0151
DIVISION	Career and Technical Education
DEPARTMENT	CIST
CIP CODE	11.0901
CREDIT HOURS	3
CONTACT HOURS/WEEK	Class: 3 Lab: 0
PREREQUISITES	CIST 0137 HTML Web Page Development
COREQUISITES	None

COURSE DESCRIPTION

Structured Query Language (SQL) is a current computer language that is used by diverse individuals such as home computer owners, owners of small businesses, end users in large organizations and programmers. This introductory course will teach the theoretical and practical foundation concepts of databases and SQL. Upon completion of the course, students will be able to define database structure, construct database tables, set up constraints, make queries, manipulate and access data from a database. Students will acquire an extensive knowledge of building database tables and using SQL commands to manipulate data for report generation. New features from Oracle and Microsoft SQL Server database programs will also be discussed. Students will use a Client/Server Laboratory to practice the theory discussed in class.

PROGRAM ALIGNMENT

This course is part of a program aligned through the Kansas Board of Regents and Technical Education Authority. For more information, please visit:

https://kansasregents.org/workforce_development/program-alignment

PROGRAM LEARNING OUTCOMES

1. Servers Administration: Administrate an SQL server.

INSTITUTIONAL LEARNING OUTCOMES

- Communication
- Computation and Financial Literacy
- Critical Reasoning
- Technology and Information Literacy
- Community and Civic Responsibility
- Personal and Interpersonal Skills

TEXTBOOKS

<http://kckccbookstore.com/>

METHOD OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

- I. Introduction
 - A. Prerequisites
 - B. Course Materials
 - C. Terminology.
- II. Introduction to Database Design Fundamentals
 - A. Database Concepts
 - B. Relational Databases
 - C. Entities, Attributes and relationships
 - D. Functional Dependencies
 - E. Primary Keys
 - F. Database Design:
 1. Methods
 2. Design Requirements
 3. Process Examples
 - G. Normalization
 - H. Diagrams for Database Design.
- III. An introduction to SQL and PL/SQL using MySQL
 - A. Starting the SQL engine
 - B. Obtaining Help
 - C. Creating a Database
 - D. Changing the Default Database
 - E. Creating a Table
 - F. Running MySQL Commands
 - G. Editing SQL Commands
 - H. Data types
 - I. Adding Rows to a Table
 - J. Viewing Table Data
 - K. Correcting Errors in a Database
 - L. Saving SQL commands
 - M. Describing a Table
- IV. Single Table Queries

- A. Constructing Simple Queries
 - B. Retrieving Data
 - C. Sorting Data
 - D. Using Functions
 - E. Nesting Queries
 - F. Grouping
 - G. Summary of SQL Clauses, Functions, and Operators.
- V. Multiple-Table Queries
- A. Querying multiple tables
 - B. Comparing JOIN, IN and EXISTS
 - C. Set Operations
 - D. Special Operators.
- VI. Updating Data
- A. Creating a New Table from an Existing Table
 - B. Changing Existing Data in a Table
 - C. Adding New Rows to a Table
 - D. Deleting Existing Rows from a Table
 - E. Changing a Table Structure
 - F. Transactions
 - G. Dropping a Table.
- VII. Importing and Exporting Data
- A. Importing Data into a Database
 - B. Exporting Data from a Table
 - C. Optimizing Tables in a Database
 - D. Optimizing Queries in a Database.

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon completion of the course, the student will:

- A. Identify course materials and define terminology related to ANSI and Oracle SQL (PL/SQL).
 1. Identify course materials for Oracle and ANSI SQL.
 2. Identify terminology as related to Oracle and ANSI SQL.
- B. Understand how to manipulate a database before working with SQL.
 3. Define terminology and best practices of Database Design.
- C. Understand how to manipulate a database using SQL statements.
 4. Write Basic SQL Select Statements.
 5. List the capabilities of SQL SELECT statements.
 6. Differentiate between SQL statements and ISQL*Plus commands.
 7. Restricting and Sorting Data.
 8. Limit the rows retrieved by a query.
 9. Sort the rows retrieved by a query.

10. Describe various types of functions available in SQL.
- D. Explain concepts associated with relational databases, functional dependence and primary keys.
 11. Use character, number, and date functions in Select statements.
 12. Use conversion functions.
 13. Display data from Single and Multiple tables.
 14. Write single-row and multiple-row sub-queries.
 15. Produce readable output with SQL *Plus.
 16. Write queries that require a substitution variable.
 17. Know how to manipulate data.
 18. Create and execute script files.
 - E. Create and update Tables.
 19. Create Tables.
 20. Update rows into a Table.
 21. Delete rows into a Table.
 22. Merge rows in a Table.
 - F. Understand and implement VIEWS.
 23. Describe VIEWS.
 24. Create VIEWS.
 25. Retrieve data.
 26. Insert, update and delete data through a View.
 - G. Understand and implement Sequences.
 27. Create Sequences.
 28. Maintain Sequences.
 29. Use Sequences.
 - H. Maintain a database.
 30. Create Indexes.
 31. Maintain Indexes.
 32. Maintain a database.
 - I. Use employability skills.
 33. Demonstrate an ability to meet deadlines.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

Student progress is evaluated through both formative and summative assessment methods. Specific details may be found in the instructor's course information document.

COLLEGE POLICIES AND PROCEDURES

Student Handbook

<https://www.kckcc.edu/files/docs/student-resources/student-handbook-and-code-of-conduct.pdf>

College Catalog

<https://www.kckcc.edu/academics/catalog/index.html>

College Policies and Statements

<https://www.kckcc.edu/about/policies-statements/index.html>

Accessibility and Accommodations

<https://www.kckcc.edu/academics/resources/student-accessibility-support-services/index.html>.