Course Outline

De Anza College

General Information

COURSE ID (CB01A AND CB01B)

CIS 64B

COURSE TITLE (CB02)

Introduction to SQL

COURSE CREDIT STATUS

Credit - Degree Applicable

EFFECTIVE TERM

Fall 2024

COURSE DESCRIPTION

Introduction to Oracle SQL (Structured Query Language), DML (Data Manipulation Language) processing techniques, DDL (Data Definition Language) techniques, selecting and sorting data, joins, SQL functions, Oracle objects, Oracle data processing concepts to maintain large database systems.

FACULTY REQUIREMENTS

COURSE FAMILY

Not Applicable

Course Justification

This course is transferable to all California State University campuses and is required as part of the Database Design for Developers (Oracle) Certificate of Achievement. SQL stands today as the standard computer database language. It introduces learners with language to access relational databases for creating and managing a database. It is beneficial for those with careers in IT, including Database Architects, Database Administrators, and Database Designers, to hold certification for a specific database software program.

Foothill Equivalency

DOES THE COURSE HAVE A FOOTHILL EQUIVALENT?

No

FOOTHILL COURSE ID

Formerly Statement

Course Development Options

BASIC SKILL STATUS (CB08)

Course is not a basic skills course.

GRADE OPTIONS

- Letter Grade
- Pass/No Pass

REPEAT LIMIT

0

Transferability & Gen. Ed. Options

Information below is subject to change. For the official listing of courses, their approval dates, and transfer credit limitations, check the De Anza catalog (by academic year), ASSIST.ORG (https://assist.org/) and C-ID.NET (https://c-id.net/).

TRANSFERABILITY

Transferable to CSU only

Units and Hours

Summary

MINIMUM CREDIT UNITS	4.5
MAXIMUM CREDIT UNITS	4.5

Weekly Student Hours

Type	In Class	Out of Class
Lecture Hours	4.0	8.0
Laboratory Hours	1.5	0.0

Course Student Hours

COURSE DURATION (WEEKS)

12.0

HOURS PER UNIT DIVISOR

36.0

Course In-Class (Contact) Hours

LECTURE

48.0

LABORATORY

18.0

TOTAL

66.0

Course Out-of-Class Hours

LECTURE

96.0

LABORATORY

0.0

NA

0.0

TOTAL

96.0

Prerequisite(s)

Corequisite(s)

Advisory(ies)

ESL 272 and ESL 273, or ESL 472 and ESL 473, or eligibility for EWRT 1A or EWRT 1AH or ESL 5
CIS 44A

Limitation(s) on Enrollment

Entrance Skill(s)

General Course Statement(s)

Methods of Instruction

Lecture and visual aids
Discussion of assigned reading Discussion and problem solving performed in class Quiz and examination review performed in class Homework and extended projects Collaborative learning and small group exercises Collaborative projects Other: Laboratory discussion sessions Other: Laboratory experiences which involve students in designing, coding, and testing SQL programs.

Assignments

A. Reading from text
B. Documenting, coding, testing and debugging six to ten programs guided with clearly documented design, covering the Lab Topics specified in X. below, half completed in the computer lab, half completed as homework

Methods of Evaluation

A. Successful completion of programming assignments with output verifying program correctness; use of SQL, documentation, programming style, efficiency, and testing methods.
B. One or more examinations requiring programming demonstrating ability to develop a design and/or write code using specific SQL constructs.
C. A final examination requiring some programming demonstrating ability to develop an algorithm and write code. The code will involve select, insert, update, delete, create and alter statements.

Essential Student Materials/Essential College Facilities

Essential Student Materials:

- None

Essential College Facilities:

- Access to a computer system with Oracle SQL Plus

Examples of Primary Texts and References

Author	Title	Publisher	Date/Edition	ISBN
Walter Shields, Clyde	SQL QuickStart Guide: The Simplified Beginner's Guide to Managing, Analyzing, and Manipulating Data With SQL	Bank Media LLC	Illustrated edition (November 18, 2019)	978-1945051753
Steve O'Hearn	OCA Oracle Database SQL Exam Guide (Exam 1Z0-071)	McGraw-Hill Education	1st edition (August 23, 2017)	978-1259585494

Examples of Supporting Texts and References

Author	Title	Publisher
Pratt, Philip J. "A Guide to SQL, 9th Edition." Course Technology, 2014.		

Learning Outcomes and Objectives

Course Objectives

- Review the basic features of databases.
- Demonstrate usage of basic SQL statements to restrict and sort data.
- Demonstrate usage of single-row functions for retrieving from database.
- Illustrate usage of joins to get data from multiple tables.
- Explain and apply data aggregation and sub-queries to fetch data from database.
- Demonstrate how formatting output works to produce readable reports.
- Create Database Objects using a database schema.
- Define database security policy and create different levels of user access and variables in database schema.
- Use Control Structures to implement decision making constructs in RDBMS.
- Describe how cursors are implemented in databases.
- Demonstrate usage of database utilities used for importing and exporting data from databases.

CSLOs

- Design solutions for introductory level problems using appropriate design methodology incorporating interpreted database constructs.
- Create algorithms, code, document, debug, and test introductory level SQL programs.

Outline

A. Review the basic features of databases.
    1. Introduction to DBMS
    2. Types of databases
    3. Introduction to RDBMS
    4. Relational database theory
    5. Normalization theory
    6. Designing relational databases
    7. Introduction to object relational databases
B. Demonstrate usage of basic SQL statements to restrict and sort data.
    1. SQL Plus
    2. Select statements
    3. Data types in SQL

4. Operators
    a. Arithmetic operators
    b. Comparison operators
    c. Character operators
    d. Concatenation operators
    e. Logical operators
    f. IN and BETWEEN operators
5. Clauses in SQL
    a. WHERE
    b. STARTING WITH
    c. ORDER BY
    d. GROUP BY

C. Demonstrate usage of single-row functions for retrieving from database.
1. Character
2. Number
3. Date
4. Conversion
5. General

D. Illustrate usage of joins to get data from multiple tables.
1. Equijoins
2. Non-Equijoins
3. Outer joins
4. Self joins

E. Explain and apply data aggregation and sub-queries to fetch data from database.
1. Group functions
    a. COUNT
    b. AVG
    c. SUM
    d. MAX/MIN
    e. Nesting of Group functions
2. Sub queries
    a. Single-row sub query
    b. Multiple-column sub query

F. Demonstrate how formatting output works to produce readable reports.
1. Using Aliases
2. INSERT statements
3. UDATE statement
4. DELETE statement

G. Create Database Objects using a database schema.
1. CREATE TABLE
2. ALTER TABLE
3. DROP statement
4. RENAME statement
5. TRUNCATE statement

H. Define database security policy and create different levels of user access and variables in database schema.
1. Create User and Privileges
2. Grant Option and Revoke

I. Use Control Structures to implement decision making constructs in RDBMS.
1. Usage of DECODE
2. Introduction to temporary tables and records

J. Describe how cursors are implemented in databases.
1. Implicit Cursor concepts
2. Integration of cursors with DML and DDL operations

K. Demonstrate usage of database utilities used for importing and exporting data from databases.
1. SQL Loader
2. DB import/export utility.

Lab Topics

A. Write code using SQL implementing simple queries to work with one table.
B. Write code using SQL implementing simple queries to work with more than one table.
C. Write code using SQL implementing data grouping and analysis
D. Write code using SQL implementing transaction concepts with usage in Insert, Update and Delete statements.
E. Write code using SQL implementing a database schema using Create and Alter statements
F. Design database security model for multi-user access