CS/IS234 : Introduction to Databases and SQL

General Information

Author:	• Simon Mirzayan
Course Code (CB01) :	CS/IS234
Course Title (CB02) :	Introduction to Databases and SQL
Department:	CSIS
Proposal Start:	Fall 2024
TOP Code (CB03) :	(0707.20) Database Design and Administration
CIP Code:	(11.0802) Data Modeling/Warehousing and Database Administration.
SAM Code (CB09) :	Possibly Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000574437
Curriculum Committee Approval Date:	03/13/2024
Board of Trustees Approval Date:	04/16/2024
Last Cyclical Review Date:	03/13/2024
Course Description and Course Note:	CS/IS 234 introduces students to relational databases and Structured Query Language (SQL) query tool. This course focuses on the design and organization of a specific schema diagram and how to build SQL statements to access the data. This course also focuses on DML (Data Manipulation), DDL (Data Definition), and DCL (Data Control). Note: This course may not be taken for credit by students who have completed CS/IS 232 and/or CS/IS 233.
Justification:	Mandatory Revision
Academic Career:	• Credit
Author:	• Simon Mirzayan

Academic Senate Discipline

Primary Discipline:	• Computer Science
Alternate Discipline:	No value
Alternate Discipline:	No value

Course Development

Basic Skill Status (CB08)

Course is not a basic skills course.

☐ Allow Students to Gain Credit by Exam/Challenge

Course Special Class Status (CB13)

Course is not a special class.

Pre-Collegiate Level (CB21)

Not applicable.

Grading Basis

• Grade with Pass / No-Pass Option

Course Support Course Status (CB26)

Course is not a support course

Transferability & Gen. Ed. Options

General Education Status (CB25)

Not Applicable

Transferability

Transferable to both UC and CSU

Transferability Status

Approved

Units and Hours

Summary

Minimum Credit Units (CB07)	3
Maximum Credit Units (CB06)	3
Total Course In-Class (Contact) Hours	90
Total Course Out-of-Class Hours	72
Total Student Learning Hours	162

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Funding Agency Category (CB23)

Not Applicable.

☐ Cooperative Work Experience Education Status (CB10)

☐ Variable Credit Course

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	2	4
Laboratory Hours	3	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	54
Course In-Class (Contact) Hours	
Lecture	36
Laboratory	54
Studio	0
Total	90
Course Out-of-Class Hours	
Lecture	72
Laboratory	0
Studio	0
Total	72

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Pre-requisites, Co-requisites, Anti-requisites and Advisories

Advisory

CS/IS101 - Introduction To Computer and Information Systems

Objectives

- Use a database software package to solve common business problems; design and build a database (define fields and properties, enter records); design and build simple forms, queries and reports.

OR

Advisory

CS/IS241 - Cloud Computing - Databases Essentials (in-development)

Objectives

- Describe how SQL and noSQL database web services can be used to store data.

Entry Standards

Entry Standards

Course Limitations

Cross Listed or Equivalent Course

Specifications

Methods of Instruction

Methods of Instruction	Lecture
Methods of Instruction	Laboratory
Methods of Instruction	Discussion
Methods of Instruction	Tutorial
Methods of Instruction	Demonstrations
Methods of Instruction	Presentations

Out of Class Assignments

- Hands-on lab assignments (e.g. creating and dropping tables)

Methods of Evaluation	Rationale
Exam/Quiz/Test	Final examination
Exam/Quiz/Test	Quizzes
Exam/Quiz/Test	Midterm examination

Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN

Alan Beaulieu	Learning SQL	O'Reilly Media	April 21, 2020	978-1492057611

Other Instructional Materials (i.e. OER, handouts)

Description	Instructor provided links to Internet resources.
Author	No value
Citation	No value
Online Resource(s)	No value

Materials Fee

No value

Learning Outcomes and Objectives

Course Objectives

Explain table structures and data.

Construct basic SQL statements to query data.

Use character and number functions.

Use data and conversion functions.

Use aggregate functions.

Compose subqueries.

Use set operators.

Use complex joins.

Manage inserting, updating, and deleting data.

Create tables, alter tables, and drop tables.

Create views, indexes, and sequences.

Explain and query various data dictionary views.

Apply various levels of security to tables.

Describe basic features of the SQL programming language.

SLOs

Create, maintain, and manage SQL databases. Expected Outcome Performance: 70.0

ILOs Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.

Apply database security. Expected Outcome Performance: 70.0

ILOs Core ILOs	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.

Use SQL Language to create, manipulate, and retrieve data within a database. Expected Outcome Performance: 70.0

ILOs Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.

Course Content

Lecture Content

SQL and Data (3 hours)
- Data, databases, and the definition of SQL
- A case study schema diagram
- Referential Integrity and table relationships
- The SQL*PLUS environment

SQL Basics (3 hours)
- The anatomy of a SELECT statement
- Editing a SQL statement
- The WHERE Clause: comparison and logical Operators
- The ORDER BY Clause

Character and Number Functions (2 hours)
- Character functions
- Number functions

Date and Conversion Functions (2 hours)
- Converting from one Datatype to another
- Applying Date Format Models
- Performing date and time math

Aggregate Functions, GROUP BY, and HAVING (2 hours)
- Aggregate functions
- The GROUP BY and HAVING clauses

Equijoins (2 hours)

- The Two Table Join
- Joining more than Two Tables

Subqueries (3 hours)
- Simple subqueries
- Correlated subqueries
- ANY, SOME, and ALL operators in subqueries

Set Operators (2 hours)
- The power of UNION and UNION ALL
- The MINUS and INTERSECT set operators

Complex Joins (2 hours)
- Outer Joins
- Self-Joins

Insert, Update, and Delete and the Manipulation of Data and Transaction Control (3 hours)
Create, Alter, and Drop Tables (3 hours)
- Creating and dropping tables
- Altering tables and manipulating constraints

Views, Indexes, and Sequences (3 hours)
- Creating and modifying views
- Indexes
- Sequences

Security: Users, Privileges, Roles, and Synonyms (3 hours)
Procedural Language/Structured Query Language (SQL) (3 hours)
- Procedures vs. functions
- Basic looping techniques
- Formatting output 4

Total hours: 36

Laboratory/Studio Content

SQL and Data (4 hours)
- Data, databases, and the definition of SQL
- A case study schema diagram
- Referential Integrity and table relationships
- The SQL*PLUS environment

SQL Basics (4 hours)
- The anatomy of a SELECT statement
- Editing a SQL statement
- The WHERE Clause: comparison and logical Operators
- The ORDER BY Clause

Character and Number Functions (4 hours)
- Character functions
- Number functions

Date and Conversion Functions (3 hours)
- Converting from one Datatype to another
- Applying Date Format Models
- Performing date and time math

Aggregate Functions, GROUP BY, and HAVING (4 hours)
- Aggregate functions
- The GROUP BY and HAVING clauses

Equijoins (4 hours)
- The Two Table Join
- Joining more than Two Tables

Subqueries (4 hours)
- Simple subqueries
- Correlated subqueries
- ANY, SOME, and ALL operators in subqueries

Set Operators (3 hours)
- The power of UNION and UNION ALL
- The MINUS and INTERSECT set operators

Complex Joins (4 hours)

- Outer Joins
- Self-Joins

Insert, Update, and Delete and the Manipulation of Data and Transaction Control (4 hours)

Create, Alter, and Drop Tables (4 hours)
- Creating and dropping tables
- Altering tables and manipulating constraints

Views, Indexes, and Sequences (4 hours)
- Creating and modifying views
- Indexes
- Sequences

Security: Users, Privileges, Roles, and Synonyms (4 hours)

Procedural Language/Structured Query Language (SQL) (4 hours)
- Procedures vs. functions
- Basic looping techniques
- Formatting output 4

Total hours: 54

Additional Information

Is this course proposed for GCC Major or General Education Graduation requirement? If yes, indicate which requirement in the two areas provided below.

No

GCC Major Requirements

No Value

GCC General Education Graduation Requirements

No Value

Repeatability

Not Repeatable

Justification (if repeatable was chosen above)

No Value

Resources

Did you contact your departmental library liaison?

No

If yes, who is your departmental library liason?

No Value

Did you contact the DEIA liaison?

No

Were there any DEIA changes made to this outline?

No

If yes, in what areas were these changes made:

No Value

Will any additional resources be needed for this course? (Click all that apply)

- No

If additional resources are needed, add a brief description and cost in the box provided.

No Value