

El Camino College COURSE OUTLINE OF RECORD – Approved

I. GENERAL COURSE INFORMATION Subject and Number: Computer Information Systems 80 Descriptive Title: Database Programming Course Disciplines: Computer Information Systems Division: Business

Catalog Description:

The effective and efficient use of the structured query programming language (SQL), used in Oracle, SQL Server, and many other database applications, is introduced and developed in lectures and reinforced through a series of lab projects of increasing complexity. Topics include the building and manipulation of tables, data retrieval, and data administration, as used in modern business.

Conditions of Enrollment:

Recommended preparation: Computer Information Systems 28 with a minimum grade of C or equivalent experience in database design

Course Length:	<u>X</u> Full Term Other (Specify number of weeks):
Hours Lecture:	3.00 hours per week TBA
Hours Laboratory:	3.00 hours per week TBA
Course Units:	4.00

Grading Method: Letter Credit Status: Associate Degree Credit

Transfer CSU:XEffective Date: Prior to July 1992Transfer UC:Proposed

General Education:

El Camino College: 4B – Language and Rationality – Communication and Analytical Thinking Term: Other: Approved CSU GE:

IGETC:

II. OUTCOMES AND OBJECTIVES

A. COURSE STUDENT LEARNING OUTCOMES (The course student learning outcomes are listed below, along with a representative assessment method for each. Student learning outcomes are not subject to review, revision or approval by the College Curriculum Committee)

- 1. SLO #1 Tables and Relationships Design and develop tables and relationships for common business problems
- SLO #2 Solving Common Business Problems Solve common business oriented problems by using the SQL programming language to access database for answers to common business queries.
- 3. SLO #3 Conditional Statements Develop conditional statements and multiple level "if" statements to query database tables.
- SLO #4 Program Code
 Write programming code to manipulate database tables
- 5. SLO #5 Efficient Programming Techniques Demonstrate use of efficient programming techniques.

The above SLOs were the most recent available SLOs at the time of course review. For the most current SLO statements, visit the El Camino College SLO webpage at http://www.elcamino.edu/academics/slo/.

B. Course Student Learning Objectives (The major learning objective for students enrolled in this course are listed below, along with a representative assessment method for each)

- 1. Design and develop tables and relationships for common business problems.
 - Other (specify)
 - Lab assignment
- 2. Solve common business oriented problems by using the SQL programming language to create and process tables.
 - Other (specify)
 - Lab assignment
- 3. Develop advanced data retrieval queries using conditional statements, join techniques, and row and aggregate functions.
 - Other (specify)
 - Lab assignment
- 4. Write SQL programming code to manipulate database tables, using correlated and non-correlated queries.
 - Other (specify)
 - Lab assignment
- 5. Demonstrate use of efficient SQL programming techniques.
 - Other (specify)
 - Project/Lab Assignment

II. OUTLINE OF SUBJECT MATTER (Topics are detailed enough to enable a qualified instructor to determine the major areas that should be covered as well as ensure consistency from instructor to instructor and semester to semester.)

Lecture or Lab	Approximate Hours	Topic Number	Major Topic
Lecture	3	I	 History and development of databases and the database programming languages A. Database evolution B. The Relational Database Model C. Distributed Database Management Systems D. Data Warehouses and Business Intelligence
Lecture	6	II	Database design principles and structured programming methods A. Data Flow vs. Process flow B. Data Modeling C. Process Modeling
Lecture	6	111	Methods of design verification for efficient programming techniques A. Normalization and de-normalization B. Data integrity rules C. Constraints D. Reference and check clauses E. Indexing
Lecture	6	IV	Language structure A. SQL Syntax B. Data Definition Language (DDL)
Lecture	15	V	 Tables: Creating, processing, indexing, searching, and sorting A. Relational schemas B. Create, insert, update, delete C. Primary and Foreign keys D. SQL Data Types E. Indexes F. Filters and sorts G. Data integrity rules H. Constraints I. Reference and check clauses
Lecture	15	VI	Writing SQL Programs A. Using SQL code B. Using Data Views C. Using Transactions, procedures, and triggers
Lecture	3	VII	Data verification, manipulation, and administration A. Query optimization B. Data Control Language(DCL) C. Locks, commits, and rollbacks

Lab	6	VIII	Data Modeling and Data Design A. Entity relationship modeling diagrams B. Relational schemas C. Data dictionaries
Lab	8	IX	Development of Relational Databases A. SQL language and DDL B. SQL syntax and structure
Lab	12	X	 Table Management Using SQL A. Creating and normalizing tables using DDL B. Creating keys and indexes C. Defining and implementing data integrity rules D. Managing constraints
Lab	24	XI	 Programming to produce effective user and application output A. Simple and complex queries B. Views C. Inner and outer joins D. Unions, filters, and sub-selects E. Row and aggregate functions and predicates F. SQL "truth" tables
Lab	4	XII	 Administering databases A. Privileges using Data Control Language(DCL) B. Locks, commits, and rollbacks C. Performance tuning using transactions, stored procedures, and triggers
Tota	al Lecture Hours	54	
Total La	boratory Hours	54	
	Total Hours	90	

IV. PRIMARY METHOD OF EVALUATION AND SAMPLE ASSIGNMENTS

A. PRIMARY METHOD OF EVALUATION:

Problem solving demonstrations (computational or non-computational)

B. TYPICAL ASSIGNMENT USING PRIMARY METHOD OF EVALUATION:

Write the SQL programming code to declare the following variables and assign them the given values.

Variable Name,	Data Type,	Value
Student Last Name	Character	Strier
Student First Name	Character	Zachary
Student MI	Character	S
Student Address	Character	3 Main St.
Student City	Character	Torrance
,		

Student StateCharacterMEStudent ZipCharacter00467

Write the SQL program statements to display the output; do not insert or hard-code the data values in the function. Save the file as Sample1 and run and execute it. Debug as necessary.

C. COLLEGE-LEVEL CRITICAL THINKING ASSIGNMENTS:

- 1. Write programming code to create subqueries using comparison operators Database: Violins 00 Output: Print one page of each output and the query code. Use the Correlated Subquery to solve the problem. Select the records where the Shipment date is more than 30 days in advance of the present date and the shipment method is not Federal Express. The output fields should be: Customer Number and Name, Shipping method, Shipment Date, Country the Shipment is to, and Freight charges. Sort the output data by using the Order By clause on the customer number and name within the query itself. Start by fields needed with the SELECT statement and then the FROM clause to select the table. Use the WHERE to subselect the records on ship date and on freight. Use the calculate commands to determine if ship date is more than 30 days from today's date. Use AND as the Boolean operator to retrieve only records meeting both conditions.
- 2. Write the SQL programming code to produce the following reports. Database: Violins 00 Output: Print one page of the report and print out the programming code. Create a report from the Order Processing table using the UNION and Union Join ALL operators to select data from multiple tables. Reports must contain your company logo and the date. The output design should be per company standards and be previously developed using a report generator front end. Create the report using the fields: Customer Number and Name, Shipping method, Shipment Date Country the Shipment is to, Freight charges Use the date format model element to convert the date to text. Create a Column Alias to use as the header for the field Customer Number to rename it to Account Number. Sort the output data by using the Order By clause on the customer number and name. Hierarchically format the report by the shipping method field.

D. OTHER TYPICAL ASSESSMENT AND EVALUATION METHODS:

Other exams Laboratory reports Homework Problems Multiple Choice True/False Other (specify): Write, test, and debug computer programs.

V. INSTRUCTIONAL METHODS

Group Activities Laboratory Lecture

Note: In compliance with Board Policies 1600 and 3410, Title 5 California Code of Regulations, the Rehabilitation Act of 1973, and Sections 504 and 508 of the Americans with Disabilities Act, instruction delivery shall provide access, full inclusion, and effective communication for students with disabilities.

VI. WORK OUTSIDE OF CLASS

Study Skill practice Required reading Problem solving activities Estimated Independent Study Hours per Week: 6

VII. TEXTS AND MATERIALS

A. UP-TO-DATE REPRESENTATIVE TEXTBOOKS

Murach's SQL Server 2016 for Developers by Bryan Syverson and Joel Murach June 2016, ISBN 978-1-890774-96-7

B. ALTERNATIVE TEXTBOOKS

C. REQUIRED SUPPLEMENTARY READINGS

D. OTHER REQUIRED MATERIALS

VIII. CONDITIONS OF ENROLLMENT

A. Requisites (Course and Non-Course Prerequisites and Corequisites)

Requisites	Category and Justification

B. Requisite Skills

Requisite Skills	

C. Recommended Preparations (Course and Non-Course)

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Recommended Preparation	Category and Justification
Course Prerequisite	
Computer Information Systems-28 or	Sequential
	Successful completion of this course requires a
	fundamental understanding of common
Non-Course Prerequisite	marketplace database structure and organization.

D. Recommended Skills

Define, analyze and document problems using flowcharts and programming language. CIS 28 - Use queries to perform calculations on data contained in tables. Analyze and design systems and implement solutions. CIS 28 - Design, create, and modify table structures.

E. Enrollment Limitations

Enrollment Limitations and Category	Enrollment Limitations Impact

Course created by Stanley Niemczycki on 03/01/1985. BOARD APPROVAL DATE: LAST BOARD APPROVAL DATE: 05/21/2019 Last Reviewed and/or Revised by Monica Chaban