



El Camino College
COURSE OUTLINE OF RECORD – Official

Course Acronym:	CIS
Course Number:	29
Descriptive Title:	Advanced Database Applications
Division:	Business
Department:	Computer Information Systems
Course Disciplines:	Computer Information Systems
Catalog Description:	This course offers advanced instruction in relational databases. Students will learn to design and develop a database from user specifications. Topics include analyzing source documents, normalizing a database, techniques of effective design, big data, data mining, and data analytics. Applications used are typical business operations such as inventory and human resources.
Prerequisite:	Computer Information Systems 28 with a minimum grade of C or equivalent experience
Co-requisite:	
Recommended Preparation:	
Enrollment Limitation:	
Hours Lecture (per week):	2
Hours Laboratory (per week):	3
Outside Study Hours:	4
Total Course Hours:	90
Course Units:	3
Grading Method:	Letter Grade only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	Prior to July 1992
Transfer UC:	No
Effective Date:	
General Education: ECC	
Term:	
Other:	
CSU GE:	
Term:	

Other:	
IGETC:	
Term:	
Other:	
Student Learning Outcomes:	<p>SLO #1 Tables</p> <p>Import and export tables for use in a database design.</p> <p>SLO #2 Queries</p> <p>Create and modify complex, multi-table and crosstab queries.</p> <p>SLO #3 Forms</p> <p>Create and customize complex forms for capturing and reporting. Use Forms as a menu system.</p> <p>SLO #4 Macros</p> <p>Create and run MACROS.</p> <p>SLO #5 Design</p> <p>Design and develop a working database using Access.</p>
Course Objectives:	<ol style="list-style-type: none"> 1. Analyze user needs from source documents. 2. Normalize a database. 3. Create a master menu and submenu system. 4. Analyze the database and table performance. 5. Create and run MACROS to facilitate operations. 6. Implement basic SQL statements.
Major Topics:	<p>I. Data Design Principles (4 hours, lecture)</p> <p>A. The relational database management system</p> <p>B. Understanding user requirements</p> <p>C. Entity definition</p> <p>D. Data models</p> <p>II. Data Design Techniques (10 hours, lecture)</p> <p>A. Table definition</p> <p>B. Primary and foreign keys</p> <p>C. Normalizing tables</p> <p>D. Redundancy</p>

E. Referential integrity

III. Application Development (10 hours, lecture)

A. Importing and exporting tables

B. Multi-table and crosstab queries

C. Creating and editing macros

D. Menu development using forms

E. Event behavior using Visual Basic by Example

IV. Performance Tuning and Management (4 hours, lecture)

A. Fine tuning design

B. De-normalization

C. Backups

V. Structured Query Language (SQL) (5 hours, lecture)

A. Syntax patterns

B. Create, retrieve, update and delete techniques

C. Complex selection criteria

D. Join techniques

VI. Data Analytics and Data Mining (3 hours, lecture)

A. Data Warehousing

B. Data Analytics

C. Data Mining

VII. Database Design (15 hours, lab)

A. User requirements

B. Creating entity-relationship models

C. Creating data models

D. Normalization to 3rd normal form

VIII. Database Development (9 hours, lab)

A. Creating tables

- B. Importing and exporting tables
- C. Defining primary and foreign keys
- D. Setting relationships
- E. Enforcing referential integrity
- F. Implementing constraints

IX. Developing a Database Application (9 hours, lab)

- A. Multi table and crosstab queries
- B. Menu design and development
- C. Creating and editing macros
- D. Responding to events
- E. Data reporting and reporting tools

X. Database Maintenance and Protection (6 hours, lab)

- A. Performance tuning
- B. Security
- C. Backup and recovery procedures

XI. Using Structured Query Language (SQL) (9 hours, lab)

- A. Selecting records
- B. Inserting records
- C. Updating records
- D. Deleting records
- E. Filtering data
- F. Sorting data
- G. Action queries
- H. Parameter queries

XII. Data Analytics and Data mining (6 hours, lab)

- A. Data Warehousing

	B. Data Analytics C. Data Mining
Total Lecture Hours:	36
Total Laboratory Hours:	54
Total Hours:	90
Primary Method of Evaluation:	2) Problem solving demonstrations (computational or non-computational)
Typical Assignment Using Primary Method of Evaluation:	The objective of this assignment is to create the fundamental navigation design of a database system. This assignment will later be the basis of our completed system. After I have approved your database design and table layout and properties, please complete the following tasks. Create a Main Menu form called YOUR NAME MENU that will navigate to 3 sub forms. Create 3 subforms with only a title and a return button. We will be completing these sub forms but at this time we are only working on navigation. The main form should call the subforms and the subforms should close with a command button, returning to the main form. Use a generic background and template. Create and run macros to maximize all forms on open. Use Startup to add a title to the menu system. Create a command button to Close the main menu but remain in Access. I will be grading these projects on screen to be sure the navigation is working. We will continue to work on this system.
Critical Thinking Assignment 1:	I am the manager of a training company that provides instructor-led courses in management techniques. We teach many courses, each of which has an id code, name and a fee. PHP and Java are two of our most popular courses. Courses vary in length from one day to four days. An instructor can teach several courses. Dick Barton and Dave Murphy are two of our best teachers. We track each instructor by name and phone number. Each course is taught by only one instructor. We create a course and then find an instructor. A student can take several courses. We track each student's name and phone number. Design this database. Create and relate all the needed tables and set referential integrity. Establish all table properties and validation. Do not enter data until I have reviewed your work. I will grade it on screen.
Critical Thinking Assignment 2:	I am the owner of a small video store. We have over 3500 DVDs that we keep track of. Each of the DVDs has an id number. For each movie, we need to know the title and category. We do have multiple copies of our popular movies. We do not have any movies that require multiple DVDs. We frequently are asked for movies starring specific actors. So, we'd like to keep track of the star actors appearing in each movie. Of course, not all movies have star actors. Customers, also like to know each actor's real name and their date of birth, odd I think. We track only the actors who appear in our movie inventory. We have lots of customers. We only rent to people who have joined our video club. For each club member we like to keep their first name, last name, address, phone number and their assigned membership number. Design this database. Include and relate all the needed tables and set referential integrity. Establish all table properties and validation. Do not enter data until I have reviewed your work. I will grade it on screen.
Other Evaluation Methods:	Homework Problems, Objective Exam, Quizzes, Written Homework
Instructional Methods:	Lab, Lecture

If other:	
Work Outside of Class:	Answer questions, Problem solving activity, Required reading, Study
If Other:	
Up-To-Date Representative Textbooks:	Michael Alexander, <u>Access 2016 Bible</u> , John Wiley & Sons, 2016. (Discipline Standard)
Alternative Textbooks:	
Required Supplementary Readings:	
Other Required Materials:	Flash Drive - Minimum one gigabyte
Requisite:	Prerequisite
Category:	sequential
Requisite course(s): List both prerequisites and corequisites in this box.	Computer Information Systems 28 with a minimum grade of C
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	<p>Create and modify simple and complex forms.</p> <p>CIS 28 - Create forms for viewing, entering, and editing data.</p> <p>Create and modify simple and complex reports from one or more tables.</p> <p>CIS 28 - Present data from tables by creating reports that summarize and group information.</p> <p>Develop simple and complex queries from one or more tables.</p> <p>CIS 28 - Create single-table and multi-table queries.</p>
Requisite Skill:	equivalent experience
Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable	
Requisite course:	
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding	

course objective under each skill(s).	
Requisite Skill:	
Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable	
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	David Miller
Date:	03/31/1986
Original Board Approval Date:	
Last Reviewed and/or Revised by:	R. Harris
Date:	10/10/2018
Last Board Approval Date:	12/19/2022