

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

COMPUTER AND INFORMATION SCIENCE 140 – DATABASES

2 hours lecture, 3 hours laboratory, 3 units

Catalog Description

Beginning course in database software that provides a solid background in database applications and operation. Students will create, update and retrieve information using a computer and database software. Beneficial for those who wish to use the computer to file, organize, retrieve and create reports from data.

Recommended Preparation

“C” grade or higher or “Pass” in CIS 110 or equivalent

Entrance Skills

Without the following skills, competencies and/or knowledge, students entering this course will be highly unlikely to succeed:

- 1) Launch applications software.
- 2) Save, print, retrieve and rename files.
- 3) General understanding of the components in a computer hardware system.
- 4) Explain how data are represented within a computer.
- 5) Define remote and local area networks and other characteristics of data communication.
- 6) Explain the data structures within the computer (field, file, etc.).
- 7) Use application software packages.
- 8) Prepare, edit and print documents using a word processing software package.

Course Content

- 1) Basic database terminology and related entities including fields and field types, records, tables, relationships, queries and forms
- 2) Develop a database by designing simple database tables and inputting data into the tables
- 3) Data normalization to the third normal form
- 4) Create primary and foreign key fields in a database to uniquely identify records and establish referential integrity
- 5) Modify table design including field types and sizes to change the structure of a database
- 6) Edit a database to change and update contents of tables
- 7) Create queries using the query design grid and save for future use
- 8) Design and use database forms to update database records
- 9) Design and use reports from data in database tables and queries
- 10) Use lookup fields, input masks and data validation rules in tables, queries and forms
- 11) Use the logical operators of AND, NOT and OR in advanced queries
- 12) Use one-to-one, one-to-many and many-to-many relationships between multiple tables in a database
- 13) Use action queries to create tables, append data, delete data and update data
- 14) Design a graphical user interface for a database using tools such as the database switchboard or unbound forms
- 15) Automate database operations by using macros
- 16) Use VBA to create functions and event procedures used in a database

Course Objectives

- 1) Database terminology
- 2) Common design principles including normalization, appropriate primary and foreign keys in table relationships, lookup fields, input masks, and data validation rules

- 3) Table design including field types and sizes to change the structure of a database
- 4) Queries including calculated fields with mathematical and logical operators and action queries
- 5) Reports based on tables or queries
- 6) Forms based on tables or queries
- 7) Program flow and control using macros and VBA
- 8) Data filing, updating and retrieving data

Method of Evaluation

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

- 1) Projects, skills demonstration, and/or practical exams which measure students' ability to create, update and retrieve information using database software.
- 2) Objective exams which measure students' ability to demonstrate a solid background in relational database theory, applications and operation including use of the computer to file, organize, retrieve, and create reports from data.

Special Materials Required of Student

Electronic storage media

Minimum Instructional Facilities

Computer lab with Internet access, database software

Method of Instruction

- 1) Lecture and demonstration
- 2) Assignments
- 3) Electronic training and assessment for Microsoft Office User skills

Out-of-Class Assignments

- 1) Text reading assignments
- 2) Practical application labs and projects
- 3) Exams and quizzes
- 4) Topical discussions on pertinent industry case studies and current events

Texts and References

- 1) Required (representative example): Alexander, et al. *Access 2013 Bible*. Wiley. 2013.
- 2) Supplemental: None

Exit Skills

Students having successfully complete this course exit with the following skills, competencies and/or knowledge:

- 1) Basic database terminology and related entities.
- 2) Logical and physical database design concepts.
- 3) Create, edit and print database tables, forms and reports.
- 4) Describe and use data integrity in a database.
- 5) Create and use relationships between tables and columns in a database.
- 6) Describe how data are stored in database tables.
- 7) Create and use of database queries.
- 8) Database query techniques using both simple and complex techniques.
- 9) Develop a database solution for a specific need including a graphical user interface, macros and VBA code.
- 10) Use a database program to create/maintain a database; extract data from the database and create useful reports.

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- 1) Apply database terminology.
- 2) Develop a database following common design principles including normalization, appropriate primary and foreign keys in table relationships, lookup fields, input masks, and data validation rules.
- 3) Modify table design including field types and sizes to change the structure of a database.
- 4) Modify and insert table data.
- 5) Create, run and save queries including calculated fields with mathematical and logical operators and action queries.
- 6) Design, run and save reports based on tables or queries.
- 7) Design and save database forms based on tables or queries.
- 8) Create database program flow and control using macros and VBA.
- 9) Utilize database systems for filing, updating and retrieving data.