Course Name: Introduction to Database Design and Administration

Course Number: CSC* E239

Credits: 3

Catalog description: A comprehensive study of relational database design methodology and an introduction to the basics of administering a relational database management system (RDBMS). The course focuses on the relational database model and the standard methodology for designing tables, fields, constraints, relationships, views, and other relational database elements so as to minimize data redundancy, establish data integrity, optimize performance, and facilitate the modification and retrieval of data. The course also covers the basics of implementing a relational database in a RDBMS and administering that RDBMS. Course content is continually updated to reflect the current state of the art in relational database technology.

The course requires substantial hands-on computer work in a computerized classroom environment.

Prerequisite: The ability to perform basic file management and word processing tasks on a personal computer

Corequisite or Parallel:

General Education Competencies Satisfied:

HCC General Education Requirement Designated Competency Attribute Code(s):

None

Additional CSCU General Education Requirements for CSCU Transfer Degree Programs:

None

Embedded Competency(ies):

None

Discipline-Specific Attribute Code(s):

☒ COMP   Computer Science Elective

Course objectives:

General Education Goals and Outcomes:

None

Course Specific Objectives:

1. Create relational database designs that employ properly structured data tables, linking tables, and validation tables.
2. Create relational database designs that employ properly structured one-to-many relationships, many-to-many relationships, and one-to-one relationships.
3. Create relational database designs that are normalized to eliminate data redundancy.
4. Create relational database designs that ensure multi-level data integrity.
5. Create relational database designs that incorporate properly designed views for retrieving data.
6. Create relational database designs that incorporate data validation.
7. Create relational databases that employ indexing to improve performance.
8. Implement the design of a relational database in a relational database management system (RDBMS).
9. Perform the basic database administration tasks associated with managing a relational database in a RDMS.

Course Content:

- Overview of the relational database model.
- Table design: Identifying the subject of the table and the primary key.
- Table design: Identifying the fields in a table and their data types.
- Table design: Normalizing tables by eliminating duplicate fields, calculated fields, and multi-part fields.
- Table design: Normalizing tables by eliminating multi-valued fields using linking tables.
- Creating one-to-many, many-to-many, and one-to-one multi-table and self-referential relationships.
- Using constraints to enforce referential integrity.
- Using constraints and validation tables to validate modifications to tables.
- Creating views.
- Using indexing to improve performance.
- Setting up a database server and creating a database in a relational database management system (RDMS).
- Using GUI tools to administer database tables, triggers, functions, and data relationships.
- Establishing access rules to secure all functional elements of the database system.
- Using database tools to perform backups, restores, and repair.
- Using analysis tools to monitor performance.
- Creating daily management reports.

Date Course Created: Spring 2015

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