

Date Adopted: _____

Date Reviewed: Aug 2015

Date Revised: Aug 2015

CIS 222 Database Management Systems

I. CIS 222 Database Management Systems – 3 Semester Hours

II. Course Description

This course will discuss database system architectures, concentrating on Structured Query Language (SQL). It will teach students how to design, normalize and use databases with SQL, and to link those to the Web.

III. Prerequisite

CIS 146 or database experience

IV. Textbook

Textbook: Database Systems: Design, Implementation, and Management

Publisher: Course Tech

Author: Rob and Coronel

V. Course Objectives

1. Database systems.
2. Database Design.
3. Structured Query Language(SQL).
4. Advanced database concepts.
5. Database Connectivity and Web Technologies.
6. Database administration.

VI. Course Outline of Topics

1. Explain the Database Management System (DBMS) models..
 - a. Explain the roles and advantages of the DBMS.
 - b. Explain the File system roots of DBMS..
 - c. Explain the use of Business Rules in defining a Data Model.
 - d. Explain the evolution of Data Models.
 - e. Explain Degrees of Abstraction Models..
2. Design a Relational database.
 - a. Explain the process of designing tables.
 - b. Explain the selection of Keys.
 - c. Explain the use of Integrity Rules.
 - d. Explain the cardinality of relationships.
 - e. Explain Entity Relationship Modeling.
 - f. Explain Data Normalization process.
3. Use of Structured Query Language(SQL).
 - a. Explain the use of Data Definition(DDL) commands.
 - b. Explain the use of Data Manipulation(DML) commands.
 - c. Explain the use of Select Queries.
 - d. Explain the process of Joining tables into Views.
 - e. Explain the use of Aggregate functions.
 - f. Explain the use of subqueries.
 - g. Explain the use of SQL functions.
 - h. Explain the importance stored procedures.
4. Advanced database concepts.
 - a. Explain the use of transactions.

- b. Explain the process of maintaining concurrency.
 - c. Explain concurrency control using locking methods.
 - d. Explain the problem of deadlock.
 - e. Explain database recovery management.
 - f. Explain database performance tuning and query optimization.
 - g. Explain the use of Distributed Database Management Systems(DDBMS).
 - h. Explain the role of Business Intelligence.
 - i. Explain the Data Warehouse concept.
5. Database Connectivity and Web Technologies..
- a. Explain Native SQL connectivity.
 - b. Explain connections using ODBC,DAO and RDO.
 - c. Explain connections using OLE-DB.
 - d. Explain connections using ADO.NET.
 - e. Explain connections using JDBC.
 - f. Explain use of web applications using databases.
 - g. Explain the use of Extensible Markup Language (XML).
6. Database administration.
- a. Explain the role of the Database Administrator(DBA).
 - b. Explain the various security approaches.
 - c. Explain the use of Database Administration Tools.
 - d. Explain the various Backup strategies.
 - e. Explain the use of replication.

VII. Evaluation and Assessment

Evaluation and assessment will be determined by the instructor and specified on the instructor's class syllabus. Grades will be based upon following scale: A = 90 – 100%, B = 80 – 89%, C = 70 – 79%, D = 60 – 69%, and F = below 60%.

VIII. Attendance

Students are expected to attend all classes for which they are registered. Students who are unable to attend class regularly, regardless of the reason or circumstance, should withdraw from that class before poor attendance interferes with the student's ability to achieve the objectives required in the course. Withdrawal from class can affect eligibility for federal financial aid.

IX. Statement on Discrimination/Harassment

The College and the Alabama State Board of Education are committed to providing both employment and educational environments free of harassment or discrimination related to an individual's race, color, gender, religion, national origin, age, or disability. Such harassment is a violation of State Board of Education policy. Any practice or behavior that constitutes harassment or discrimination will not be tolerated.

X. Americans with Disabilities

The Rehabilitation Act of 1973 (Section 504) and the Americans with Disabilities Act of 1990 state that qualified students with disabilities who meet the essential functions and academic requirements are entitled to reasonable accommodations. It is the student's responsibility to provide appropriate disability documentation to the College. The ADA Accommodations Office is in FSC 305 (205-856-7731).