Lassen Community College Course Outline

CIS 80 Introduction to Datasystems 3.0 Units

I. Catalog Description

This course teaches the core concepts in data management centered on modeling organizational information requirements, normalization techniques, and implementation using Structured Query Language (SQL) with an industry recognized relational database management system. Includes database administration, data quality, security, programming language interfaces, and the role of data in business. This course has been approved for online delivery.

Prerequisite(s): Recommended CIS 50 IT Essentials

Does Not Transfer to UC/CSU
C-ID ITIS 180
51 Hours Lecture, 102 Expected Outside Class Hours, 153 Total Student Learning Hours
Scheduled: Spring

II. Coding Information

Repeatability: Not Repeatable, Take 1 Time
Grading Option: Graded
Credit Type: Credit
TOP Code: 0708.20
Scheduling: Spring

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

1. Implement and analyze databases
2. Maintain database management systems and data

B. Course Objectives

Upon completion of this course the student will be able to:

1. Define the role of databases and database management systems in managing organizational data and information.
2. Understand the fundamentals of the basic file organization techniques.
3. Design a relational database so that it is at least in 3rd Normal Form.
4. Implement a relational database design using an industrial-strength database management system, including the principles of data type selection and indexing.
5. Use the data definition, data manipulation, and data control language components of Structured Query Language (SQL) in the context of one widely used implementation of the language.
6. Describe the role of databases and database management systems in the context of enterprise systems.

7. Describe the key principles of data security and identify data security risk and violations in data management system design.
8. Compare the difference between online transaction processing (OLTP) and online analytic processing (OLAP), and the relationship between these concepts and business intelligence, data warehousing, and data mining.

IV. Course Content

1. Database approach
2. Types of database management systems
3. Basic file processing concepts
4. Physical data storage concepts
5. File organizations techniques
6. Conceptual data model
    a. Entity-relationship model
    b. Object-oriented data model
    c. Specific modeling grammars
7. Logical data model
    a. Hierarchical data model
    b. Network data model
    c. Relational data model
        i. Relations and relational structures
        ii. Relational database design
8. Mapping conceptual schema to a relational schema
9. Normalization
10. Physical data model
    a. Indexing
    b.Data types
11. Database languages
    a. SQL, Data Definition Language (DDL), Data Manipulation Language (DML), and Data Control Language (DCL)
12. Data and database administration
13. Transaction processing
14. Use a database management system from an application development environment
15. Use of database management systems in an enterprise system context
16. Data / information architecture
17. Data security management
    a. Basic data security principles
    b. Data security implementation
18. Data quality management
    a. Data quality principles
    b. Data quality audits
    c. Data quality improvement
19. Business intelligence
    a. Online analytic processing

b. Data warehousing
c. Data mining
d. Enterprise search

V. Assignments

A. Reading Assignments

1. Read the Microsoft white paper, "Application and Multi-Server Management," available at Microsoft TechNet online. Be prepared to discuss the major features of SQL Server Management Studio in class.
2. Read the curriculum text regarding server and database roles. Write a brief description of each of the following: server roles, fixed database roles, user-defined database roles. Be prepared to discuss these roles in class

B. Writing Assignments

1. Design a database application (on paper) based upon the concepts of business process, objects, and rules
2. Normalize a set of data for a prospective database application on paper
3. Create the normalized database for a database application on paper.
4. Write the appropriate SQL statements for specified retrieval or manipulation of data

C. Quizzes

1. Weekly online quizzes

D. Virtual labs

1. NDG activities to simulate detecting, troubleshooting and fixing network connectivity problem

VI. Methods of Evaluation

Traditional Classroom Evaluation

A. Exams/Tests
B. Quizzes
C. Lab Projects
D. Essays and research papers

Online Evaluation A.
Exams/Tests
B. Quizzes
C. Virtual Lab Projects
D. Essays and research papers
E. Online Forum participation

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

X Traditional Classroom Delivery ☐ Correspondence Delivery
☐ Hybrid Delivery **X** Online Delivery

Traditional Classroom Delivery
Lecture, discussion, group work, problem analysis, and interactive exercises
Online Delivery
Participation in forum based discussions. Online exercises/assignments contained on website. Web based video vignettes with discussion paper, email communications, postings to forums, online lecture notes and web links will compromise the method of instruction.

VIII. Representative Texts and Supplies

Cisco Networking Academy Skills for All/Netacad Cisco learning management system. (www.netacad.com) *Students will be provided with individual account access to the Cisco LMS. The complete curriculum for this course is available online for student use 24x7 through internet access and supports a range of computers for access*

Google Data Analytics, Coursera LMS *Students will be provided with individual account access to the Coursera LMS. The complete curriculum for this course is available online for student use 24x7 through internet access and supports a range of computers for access*

IX. Discipline/s Assignment

Computer Information Systems

X. Course Status

Current Status:
Original Approval Date: 11/16/2021
Board Approval Date: 12/14/2021
Revised By: Melinda Duerksen
Curriculum/Academic Standards Committee Revision Date: 03/21/2023