COMS 161 - Introduction to Database Management Systems Course Outline

Approval Date: 04/08/2021
Effective Date: 08/12/2022

SECTION A

Unique ID Number	CCC000633410
Discipline(s)	Computer Information Systems
Division	Career Education and Workforce Development
Subject Area	Computer Studies
Subject Code	COMS
Course Number	161
Course Title	Introduction to Database Management Systems
TOP Code/SAM Code	0702.10 - Data Entry/Microcomputer Applications, General* / C - Occupational
Rationale for adding this course to the curriculum	Matching curriculum to meet C-ID ITIS 180.
Units	3
Cross List	*N/A*
Typical Course Weeks	18

Total Instructional Hours

	Contact Hours
Lecture	54.00
Lab	0.00
Activity	0.00
Work Experience	0.00
Outside of Class Hours	108.00

Total Contact Hours	54
Total Student Hours	162
Open Entry/Open Exit	No
Maximum Enrollment	
Grading Option	Letter Grade or P/NP

Distance Education Mode of Instruction
On-Campus
Hybrid
Entirely Online
Online with Proctored Exams

SECTION B

General Education Information:

SECTION C

Course Description

Repeatability May be repeated 0 times

Catalog Description This course provides the students with an introduction to the core concepts in data and information management. It is centered around the core skills of identifying organizational information requirements, modeling them using conceptual data modeling techniques, converting the conceptual data models into relational data models and verifying its structural characteristics with normalization techniques, and implementing and utilizing a relational database using an industrial-strength database management system. The course will also include coverage of basic database administration tasks and key concepts of data quality and data security. In addition to developing database applications, the course helps the students understand how large-scale packaged systems are highly dependent on the use of Database Management Systems (DBMSs). Building on the transactional database understanding, the course provides an introduction to data and information management technologies that provide decision support capabilities under the broad business intelligence umbrella.

Schedule Description

SECTION D

Condition on Enrollment

1a. Prerequisite(s): *None*

1b. Corequisite(s): *None*

1c. Recommended: *None*

1d. Limitation on Enrollment: *None*

SECTION E

Course Outline Information

1. Student Learning Outcomes:

A. Create a functional database and generate reports.

2. Course Objectives: Upon completion of this course, the student will be able to:

A. Define the role of databases and database management systems in managing organizational data and information.
B. Understand the fundamentals of basic file organization techniques.
C. Design a relational database so that it is at least in 3rd Normal Form.
D. Implement a relational database design using an industrial-strength database management system, including the principles of data type selection and indexing.
E. 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.

F. Describe the role of databases and database management systems in the context of enterprise systems.
G. Describe the key principles of data security and identify data security risks and violations in data management system design.
H. 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.
I.

3. Course Content

A. Database approach
B. Types of database management systems
C. Basic file processing concepts
D. Physical data storage concepts
E. File organizations techniques
F. Conceptual data model
    a. Entity-relationship model
    b. Object-oriented data model
    c. Specific modeling grammars
G. Logical data model
    a. Hierarchical data model
    b. Network data model
    c. Relational data model
        a. Relations and relational structures
        b. Relational database design
H. Mapping conceptual schema to a relational schema
I. Normalization
J. Physical data model
    a. Indexing
    b. Data types
K. Database languages
    a. SQL, Data Definition Language (DDL), Data Manipulation Language (DML), and Data Control Language (DCL)
L. Data and database administration
M. Transaction processing
N. Using a database management system from an application development environment
O. Use of database management systems in an enterprise system context
P. Data / information architecture
Q. Data security management
    a. Basic data security principles
    b. Data security implementation
R. Data quality management
    a. Data quality principles
    b. Data quality audits
    c. Data quality improvement
S. Business intelligence
    a. On-line analytic processing
    b. Data warehousing
    c. Data mining
    d. Enterprise search
    e.

4. Methods of Instruction:

Lecture:
Observation and Demonstration:
Projects:
Online Adaptation: Lecture
Explain how the online adaptation of the methods of instruction aligns with the course outcomes: Computer-based instruction

1. Methods of Evaluation: Describe the general types of evaluations for this course and provide at least two, specific examples.

Typical classroom assessment techniques

Exams/Tests --
Quizzes --

Additional assessment information:

Evaluation will include hands-on projects and a combination of examinations, presentations, discussions, or problem-solving assignments.

Letter Grade or P/NP

2. Assignments: State the general types of assignments for this course under the following categories and provide at least two specific examples for each section.

A. Reading Assignments
   Group work: Students actively participate in pairs and/or groups to complete exercises.
B. Writing Assignments
   Practice: Students actively engage in interactive exercises to practice the material.
C. Other Assignments
   Practical: Students apply the learned concepts and skills through a variety of hands-on and audio exercises.

3. Required Materials

A. EXAMPLES of typical college-level textbooks (for degree-applicable courses) or other print materials.

Book #1:

Author:	Elmasri, R. & Navathe, S.
Title:	Fundamentals of Database Systems
Publisher:	Pearson
Date of Publication:	2016
Edition:	7

Book #2:

Author:	Kroenke, D. M. & Auer, D.
Title:	Database Concepts
Publisher:	Pearson
Date of Publication:	2020
Edition:	9th

B. Other required materials/supplies.