

## **CSC 425 - DATABASE MANAGEMENT SYSTEMS**

**CREDIT HOURS:** 3

**PREREQUISITES:** CSC 302; CSC 321 or 331; CSC 323 or 333 or 341 or 342

**GRADE REMINDER:** Must have a grade of C or better in each prerequisite course.

### **CATALOG DESCRIPTION**

Study of database management systems. Design and implementation of applications using database management systems.

### **PURPOSE OF COURSE**

The purpose of this course is to provide a broad knowledge of the fundamental concepts of database processing. This knowledge should enable the student to know enough of the current technology to evaluate the applications of database management systems (DBMS) in given situations, to participate in the design of databases, to understand how application programs interface with processing, recovery, and security. Students should acquire a knowledge of relational database models and the usage of relational languages.

### **EDUCATIONAL OBJECTIVES**

Upon successful completion of the course, students should be able to:

1. Demonstrate a broad knowledge of the fundamental concepts of database technology.
2. Evaluate the applications of database management systems, and to participate in the design of databases.
3. Describe the main issues of database administration and control.
4. Identify current trends of database management systems.
5. Design and implement a functional limited-aspect database management system.

### **COURSE CALENDAR**

This course meets for a minimum of 37.5 lecture contact hours during the semester, including the final exam. Students have significant weekly reading assignments. Students are expected to complete 5-6 homework assignments, 2-3 in-class assignments, a major project and make 1-3 major class presentations during the phases of the project, and 2-3 periodic exams in addition to the final exam. Students are expected to prepare for any class assignments or quizzes over the material covered in class or in the reading material. Successful completion of these activities requires at a minimum six additional hours of outside of classroom work each week.

### **CONTENT**

### **Hours**

Databases, Files Overview .....	4
The Relational model.....	13
Architecture, DDL, DML	
Normalization .....	3

Database design .....	12
Conceptual, Logical, Physical, Security Project	
Database administration and control.....	4
Current topics.....	6
Distributed databases	
Client-server databases	
Data warehouses	
Object-oriented databases	
Exams (plus final) .....	3
	TOTAL     45

## REFERENCES

Connolly, T. and Begg, C., Database Systems: A Practical Approach to Design, Implementation, and Management, 6<sup>th</sup> Ed., Addison-Wesley, 2015.

Date, C. J., An Introduction to Database Systems, 8<sup>th</sup> Ed., Addison-Wesley, 2004.

Elmasri, R. and Navayhe, S. B., Fundamentals of Database Systems, 7<sup>th</sup> Ed., Addison-Wesley, 2016.

Kifer, Bernstein, and Lewis, Database Systems: An Application-Oriented Approach, 2<sup>nd</sup> Ed., Addison-Wesley, 2005.

Kroenke, D. M. Auer, D.J. , Database Processing: Fundamentals, Design, and Implementation, 14<sup>th</sup> Ed., Prentice Hall, 2016.

Ricardo, C.M., Databases Illuminated, 2<sup>nd</sup> Ed., Jones and Bartlett, 2011.

Coronel, C., Morris, C., Database Systems: Design, Implementation, and Management, 11<sup>th</sup> Ed., Course Technology, 2015.