

## **CSCI 5320 - DATABASE MANAGEMENT SYSTEMS**

**CREDIT HOURS:** 3  
**PREREQUISITES:** CSCI 3302  
**GRADE REMINDER:** Must have a grade of C or better in each prerequisite course.  
**CROSS LISTING:** CSCI 4325

### **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.

NOTE: Students taking CSCI 5320 will be expected to complete additional requirements, including but not limited to special projects, class presentations, relevant research including literature review and current research topics from professional journals, and supplemental evaluation (i.e., additional questions, quizzes, tests). Students taking CSCI 5320 are expected to perform at a higher level than undergraduates taking CSCI 4325. Students should contact the course instructor early in the semester (i.e., before the end of the add/drop period) to determine the specific additional requirements.

### **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.
6. Demonstrate an understanding of database systems and database system management issues through programs and projects.
7. Develop skills in research literature reviews and research presentations.

### **COURSE CALENDAR**

This course meets for a minimum of 37.5 lecture contact hours during the semester. Students have significant weekly reading assignments and readings from the primary literature. 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.

<b>CONTENT</b>	<b>Hours</b>
Databases, Files Overview .....	4
The Relational model..... Architecture, DDL, DML	13
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
	<b>TOTAL 45</b>

## **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.
- Shah, Database Systems Using Oracle, 2<sup>nd</sup> Ed., Addison-Wesley, 2004.

ACM SIGMOD *Management of Data*.