CSC 520 - DATABASE MANAGEMENT SYSTEMS

CREDIT HOURS: 3
PREREQUISITES: CSC 323; CSC 321 or 331.
GRADE REMINDER: Must have a grade of C or better in each prerequisite course.
CROSS LISTING: CSC 425

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 CSC 520 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 CSC 520 are expected to perform at a higher level than undergraduates taking CSC 425. 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.

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, 6th Ed., Addison-Wesley, 2015.

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

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

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

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

Ricardo, C.M., Databases Illuminated, 2nd Ed., Jones and Bartlett, 2011.

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

Shah, Database Systems Using Oracle, 2nd Ed., Addison-Wesley, 2004.

ACM SIGMOD *Management of Data*.