

## **CMSI 486 INTRODUCTION TO DATABASE SYSTEMS**

Fall 2007 -- 3.0 units

Tuesday, Thursday, 10:50 a.m. - 12:05 PM -- Doolan Hall 219

Dr. Stephanie E. August -- saugust@lmu.edu

### **Course Description**

#### **Objectives**

The primary objective of this course is to introduce the essential principles that guide the design, implementation, and management of systems capable of managing large amounts of data efficiently. Topics include: database system structure, semantic data modeling, relational databases, formal query languages, integrity and security, physical design of databases, indexing and hashing. Query processing and optimization, transaction processing, concurrency, and crash recovery are introduced. The secondary objective of this course is to give students hands-on experience with a widely used DBMS, which is accomplished by designing and implementing a database using PostgreSQL and/or Oracle DBMS during the course of the term. New directions in the field, including object-oriented databases, distributed databases, client-server models, and knowledge bases are surveyed. The close relationship of the fields of logic, databases, and artificial intelligence, and their contributions to one another are explored.

#### **Prerequisites**

CMSI 386 (Programming Languages); mastery of a high-level programming language such as Java, C++, or another language that allows for user-defined data types or "structures"; some knowledge of computer systems and elementary logic; willingness to participate actively in class discussions and workshops.

#### **Expected Work**

Readings prior to lectures, and participation in class discussions and workshops.

Written and oral homework assignments and programming assignments to reinforce lectures and readings.

Term project involving the description and definition of a DBMS for a business enterprise using Oracle DBMS or PostgreSQL (to be specified at a later date); possible poster and poster presentation of completed project.

Blackboard will be used to distribute course updates, assignments, and documents. Students are expected to check the course Blackboard twice a week and make certain they receive email from the email address listed for them on Blackboard.

#### **Notebooks**

I expect each student to store all documents related to the term project neatly organized in a 3-ring binder. The project binder must be complete, up-to-date, and available on each project due date. At the end of the term, students turn in the notebook for final grading. Students can pick up their graded project notebooks at the beginning of the following term.

#### **Exams**

Five quizzes, 30 minutes each, open book and open note, with questions on lectures to date, including that day's class. The best four of the five quizzes will be used in calculating the final grade.

One final exam.

#### **Text**

Silberschatz, Abraham, Korth, Henry F. and Sudarshan, S. *Database System Concepts*. 5th ed. Mc Graw-Hill, 2006.

**Additional References**

- Connolly, Thomas, Begg, Carolyn E., and Begg, Carolyn. *Database Systems: A practical approach to design, implementation and management*. 4th ed. Addison-Wesley, Harlow, England, 2004. ISBN 978-0321210258
- Date, C. J. *An Introduction to Database Systems*. 8th edition. Addison-Wesley Publishing Company, Reading MA, 2003.
- Date, C.J and Darwin, Hugh. *A Guide to the SQL Standard: A user's guide to the standard relational language SQL*. 4th ed. Addison-Wesley, Reading MA, 1997.
- Elmasri, Ramez and Navathe, Shamkant B. *Fundamentals of Database Systems*. 5th ed. Addison-Wesley, Reading MA, 2006.
- Shah, Nilesh. *Database Systems Using Oracle: A Simplified Guide to SQL and PL/SQL*. Prentice Hall, 2004.
- Garcia-Molina, Hector; Ullman, Jeffrey D; and Widom, Jennifer D. *Database Systems: The Complete Book*. Prentice Hall, 2001.

**Grading**

Your final grade will be weighted as follows:

Assignments .....	25%
Project .....	25%
Quizzes .....	25%
Final .....	25%

Each homework assignment is worth 10 points. Some assignments will be completed in class, some outside of class. Some will be individual assignments, some will be group assignments. As time permits, homework will be reviewed in class on the due date. Assignments and project components are due at the beginning of class. Assignments turned in *after class will not be accepted for credit, but will be corrected and returned with the other students' assignments*.

Refer to the *Teaching Philosophy and Course Policies* handout for additional information.

**Office Hours/Contact Points**

*Office Hours:* Wednesday, 8 a.m. - noon

Tuesday and Wednesday, 5:20 - 6:20 p.m.

and *by appointment*.

*Office:* Doolan 108

*Phone:* (310) 338-5973

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