CS 4600 : Database Theory and Applications

Instructor:	Dr. Chen-Fu Chiang
Time:	Wed. 12:30 PM - 3:10 PM
Location:	Summit Center 146
Office Hours:	Wednesday, Thurday and Friday 9:00 AM - 11:00 AM at CSC 138 or by appointment

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Text

Database Systems Concepts, 6th Ed, by A. Silberschatz, H. F. Korth, S. Sudarshan.

Prerequisites

CS 2300 and (CS 400 or MATH 2410).

Course Description

This course is designed to introduce advanced undergraduate computer science students to database theory and to give them an opportunity to apply the theory to the design and coding of a large database. We will follow the slides from the publisher closely.

Objectives

Upon completion of this course the student should be able to:

- Use a relational model to design databases

- Employ normalization rules as needed to obtain data in normal form

- Include security and integrity rules in a database and write and test a database using SQL

- Proceed with further study in the database area

Topics

- DBMS vs. File-processing

- Relational model

    - Introduction to relational model
    - The relational algebra
    - The E-R model

- SQL

    - Introduction to SQL
    - Intermediate and advanced SQL

- Relational database design

- Application design and development

- If time allows, we will explore topics such as Query Processing/Optimization and Distributed Databases.

Grading

The lecture format will be the basic mechanism used in the course. Computer demonstrations in the classroom will be used whenever appropriate. Assessment of student performance will use a criterion-referenced model which will include written assignments (20%, might contain programming assignments), regular examinations (midterm 30%), a semester project (20%), and a comprehensive final exam (30%). Late assignment will receive 25% off the points earned for each day. All examinations are closed-book. A typical grading scale will be as follows:

Percent	Grade
90 -100	A
80 - 89	B
70 - 79	C
60 - 69	D
Below 60	F

ABET Outcomes

Outcome	Description
a	An ability to apply knowledge of computing and mathematics appropriate to the discipline.
c	An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
d	An ability to function effectively on teams to accomplish a common goal.
e	An understanding of professional, ethical, legal, security and social issues and responsibilities.
f	An ability to communicate effectively with a range of audiences.
h	Recognition of the need for and an ability to engage in continuing professional development.
i	An ability to use current techniques, skills, and tools necessary for computing practice.
j	An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
k	An ability to apply design and development principles in the construction of software systems of carrying complexity.

Academic Integrity/Policy

Plagiarism and Cheating of any kind on an examination, quiz, or assignment will result at least in an F for that assignment (and may, depending on the severity of the case, lead to an F for the entire course). See the UCM Academic Dishonesty Policy at http://www.ucmo.edu/student/documents/honest.pdf. I will assume for this course that you will adhere to the academic creed of this University and will maintain the highest standards of academic integrity. In other words, do not cheat by giving answers to others or taking them from anyone else. Make-ups are only given under extreme circumstances. I will also adhere to the highest standards of academic integrity, so please do not ask me to change (or expect me to change) your grade illegitimately or to bend or break rules for one person that will not apply to everyone.