

CS 4600 : Database Theory and Applications

Instructor: Dr. Chen-Fu Chiang

Time: Wed. 12:20 PM - 3:00 PM

Section: 22282

Location: Summit Center 144

Office Hours: WRS 10:00 AM - 11:20 AM and F 3:00 PM - 4:30 PM 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
 - 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

<i>Outcome</i>	<i>Description</i>
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.

Attendance

When absence due to some circumstances, such as documented medical issues, a death in the family, or military order, a student may ask the **Office of Student Experience and Engagement** to verify the absence. If the absence is verified, the student will be provided a written electronic notice which he/she may distribute to faculty. It is the responsibility of the student to make the request with a reasonable time frame, distribute the documentation to faculty within two days of receiving it and to make arrangements with faculty to make up all missed work.

The University Health Center does not provide medical excuses and/or Time-In Time-Out slips to students for the purpose of being excused from class. When medically indicated, the health center may recommend a student not attend class. Student Experience and Engagement will be contacted by the University Health Center staff to communicate the recommended absence to the student's instructors.