Database Systems: Concepts, Design, and Implementation
ISE 382 (4 Units)

Spring 2023

Description

Data model for industry applications. Modeling and designing robust databases. Implementing and querying databases with SQL. Innovations in database applications.

Objective

To prepare students to model and build databases. Upon completion of the course, students will be able to:

1. Create relational data models
2. Perform normalization to eliminate anomalies
3. Convert models to functioning databases
4. Use Structured Query Language (SQL) to build and query databases
5. Demonstrate effective use of MySQL DBMS and Teradata DBMS
6. Test and validate database implementation with transactions
7. Explain how database transactions are controlled in multiuser environments
8. Describe database security and maintenance
9. Describe the innovations and uses of databases in diverse applications

Prerequisites	None
Instructor	Listed on Blackboard under Contacts
Office Hours	Listed on Blackboard under Contacts
Lecture	See online schedule of classes
Discussion	See online schedule of classes

Course Structure

Topics covered during the lecture will be applied to assignments spread throughout the semester. All lab and homework assignments must be completed *individually* and outside of regularly scheduled class meetings. After the first exam, you will organize into groups of 2 or 3 to complete group projects.

Regular class meetings will feature lectures and in-class labs usually assigned on Mondays and due the following Wednesday. These "labs" must be completed *individually* and are due at the end of the next class period. These "labs" will immediately apply material from the lecture and serve as an introduction to the other programming assignments.

Lectures will feature in-class polls conducted via PollEverywhere. Students can respond to these polls via their mobile device or laptop.

There is a midterm and cumulative final exam in this course

Textbook

Database Systems, 13th Edition. Coronel and Morris. Cengage Learning, ISBN 978-1-337-627900 (optional)

Additional material can be found at Safari Books Online:
https://libproxy.usc.edu/login?url=http://proquest.safaribooksonline.com

Website

All course material will be posted on Blackboard (http://blackboard.usc.edu).
We will use Piazza (http://piazza.com/) as an online question and discussion forum.

Course Material

Do not reproduce, distribute, or post any lecture material, assignments, assignment solutions, or exams publicly without my written consent. You may take notes and make copies of course materials for your own use. You may not post course materials on sites like CourseHero. Doing so is a copyright violation and an academic integrity violation that will be dealt with accordingly.

Grading

The following percentage breakdown will be used in determining the grade for the course.

Participation	10%
Labs	10%
Homework	15%
Midterm	15%
Final	20%
Projects	30%
Total	**100%**

Grading Scale

The following shows the grading scale to be used to determine the letter grade.

93% and above	A
90% - 92%	A-
87% - 89%	B+
83% - 86%	B
80% - 82%	B-
77% - 79%	C+
73% - 76%	C
70% - 72%	C-
69%	D+
67% - 68%	D
66%	D-
65% and below	F

Policies

Participation

There will be polls hosted by PollEverywhere throughout most lectures. Participation in these polls will contribute to your overall participation grade in the course.

Lab assignments

There will be lab assignments after some lectures. These assignments will be an immediate application of the material presented in lecture. These labs will be graded as credit/no-credit. For credit on each lab you must complete the assignment before the posted due date and time. Each lab assignment will contribute to your overall grade. A lab can only be made up with either prior instructor approval or a documented emergency.

Homework assignments

Each homework assignment must be completely *individually*. Group projects are a separate assignment in this course.

The assignments will be posted on Blackboard in the "Assignments" section. Each assignment will include instructions, a due date, and a link for electronic submission. Assignments must be submitted using this link.

It is your responsibility to submit your assignments on or before the due date. Homework assignments turned in one day late will have 20% of the total points deducted from the graded score. Assignments turned in two days late will have 50% of the total points deducted from the graded score. After two days, submissions will not be accepted, and you will receive a 0.

Policies (continued)

Submitting assignments

All assignments must be digitally submitted through Blackboard except when otherwise specified by the course staff. Do not email assignments to the instructor or lab assistant. Assignment questions should be posted to the online question forum. Do not send any email to the instructor regarding assignments or ask specific assignment questions during the lecture sessions. You are encouraged to attend the instructor's office hours or lab hours facilitated by course staff for assignment related questions.

Projects

There will be three group projects this semester. Teams of 2 or 3 students each will be formed after the first exam. The group projects are separate projects although they use similar skills. The project scenarios are different. The projects are not demonstrated to the class, rather the course staff will evaluate the working databases on the Viterbi IT provisioned servers. Each project will have its own grading rubric. Part of each projects' grade is a teamwork evaluation form that students will complete individually.

Exams

Make-ups are only allowed under extraordinary circumstances. Students must provide a satisfactory reason (as determined by the instructor) along with proper documentation. There are two exams: a midterm and a final. These exams are comprehensive of all topics covered.

About Plagiarism

All submissions will be compared with current, previous, and future students' submissions using a code plagiarism identification program. If your code significantly matches another student's submission, you will be reported to SJACS with the recommended penalty of an F in the course.

You may discuss solutions to specific problems with other students, but you should not look through another's code. The code can be from an online forum or another student, the source is immaterial – all code submitted in this course must be your own. Do not share your code with anyone else in this or future sections of the course, as allowing someone to copy your code carries the same penalty as copying the code yourself.

Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, "Behavior Violating University Standards" https://policy.usc.edu/scampus-part-b/. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct.

Support Systems:

Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call
> Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. https://engemannshc.usc.edu/counseling/

National Suicide Prevention Lifeline - 1-800-273-8255
> Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. http://www.suicidepreventionlifeline.org

Relationship & Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call
> Free and confidential therapy services, workshops, and training for situations related to gender-based harm. https://engemannshc.usc.edu/rsvp/

Sexual Assault Resource Center
> For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website:http://sarc.usc.edu/

Office of Equity and Diversity (OED)/Title IX compliance – (213) 740-5086
> Works with faculty, staff, visitors, applicants, and students around issues of protected class. https://equity.usc.edu/

Bias Assessment Response and Support
> Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response.https://studentaffairs.usc.edu/bias-assessment-response-support/

Student Support & Advocacy – (213) 821-4710
> Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. https://studentaffairs.usc.edu/ssa/

Diversity at USC – https://diversity.usc.edu/
> Tabs for Events, Programs and Training, Task Force (including representatives for each school), Chronology, Participate, Resources for Students

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Course Outline
Note: Schedule subject to change

W	Topic(s)	Assignment
1	Introduction	L1
2	Data Models	HW1
3	ER Modeling (p1)	L2, HW2
4	ER Modeling (p2)	L3, HW3
5	Anomalies, Normalization	L4, L5, HW4
6	**Midterm Exam**	
7	SQL (p1)	L6, HW5
8	SQL (p2)	L7
9	SQL (p3)	L8, P1
10	SQL (p4)	L9
11	CRUD	L10, P2
12	ETL	
13	Multiuser databases	L11, P3
14	Teradata	
15	Future of DBs	
Final Exam – as according to the final exam schedule		