College of Engineering and Computer Science
Department of Computer Science

CSC 134-02 Database Management Systems

Spring 2022 Syllabus

Part 1: Course Information

Instructor Information

Instructor: Dr. Haiquan Chen
Office: Riverside Hall 5018
Office Telephone: (916)-278-6087
E-mail: haiquan.chen@csus.edu (please do not use Canvas emails)

Office Hours: Thur 10:00 am -1:00 pm OR by Appointment

Class Time: MWF 11:00 pm - 11:50 pm (see course structure for details)
Class Location: Online

Course Description

Entity-Relationship (ER) model; relational model; relational database design by ER-to-relational mapping; design of applications using database technology; SQL: schema definition, constraints, and queries; relational algebra; data normalization; access methods such as indexing and hash structures; introduction to transaction processing.

Prerequisite

- CSC 130.
- Prerequisite Proof: The Department of Computer Science has a policy that each instructor needs to verify the student transcript and ascertain that the student has the prerequisites. Once requested, you can log on to My Sac State go to "Student Center" and select "Unofficial Transcripts" to print. You also can select and print "Transfer Credit Report" if you have transferred from another institution. Once requested, you must submit your transcript for verification. Any student who has completed one or more prerequisites at another school must provide similar verification to the instructor. Any student who has not submitted their transcript for verification by the end of the second week will be dropped from the class.

Textbook & Course Materials

Required Text

- No required textbook. Lecture slides and in-class worksheets are available through Canvas.

Recommended Texts & Other Readings

- Fundamentals of Database Systems, 7th Edition, by Elmasri and Navathe. Publisher: Prentice Hall (Pearson). Previous editions are fine.

Course Requirements

- **Mid-term exam (45 minute) and final exam (90-minute) will be conducted synchronously on Canvas**. Students can access the test paper at the time when the exams begin, hand-write responses on a blank paper (by correlating your answers to each question), and then scan/upload the paper as a single PDF for the instructor to view.
- **To finish the exams, students will have to have a scanner** or use some scanning apps on smartphones, such as CamScanner, Abode Scan. Some apps requires you to sign up before use.

Course Structure

This course will be delivered synchronously using zoom meetings. It is required that you attend each live zoom meeting, including in-class practice sessions. Exams will be based on lectures and class discussions.

I reserve the right NOT to provide all lecture recordings

Important Note: This syllabus, along with course assignments and due dates, are subject to change. It is the student's responsibility to check Canvas for corrections or updates to the syllabus. Any changes will be posted in Canvas.

Part 2: Course Objectives

Students completing this course will be able to

- Use Entity-Relationship (ER) model for conceptual design
- Design a relational database by ER-to-relational mapping
- Compose queries using relational algebra expressions
- Demonstrate competence in using SQL
- Examine a relational database design using Normal Forms
- Differentiate different types of index structures

Part 3: Topic Outline/Schedule

Important Dates

- First Day of Class: M, January 24, 2022
- Spring Recess (Holiday, Campus Closed): March 21-27, 2022
- Last Day of Class: F, May 13, 2022
- Final Exam: M, May 16, 2022, 10:15am - 11:45pm

Tentative Schedule (subject to change)

WEEK	TOPICS	Text Reading and References	Notes
1	Database system concepts and architecture	Note 1, 2	
2	Entity-Relationship model	Note 3	W1, A1
3	Relational data model	Note 4	
4	SQL	Note 5	W2, A2
5	Complex SQL	Note 6	W3, A3
6	Relational algebra	Note 7	W4
7	**Assign mini-project 1** ER to relational mapping	Note 8	W5, A4
8	Midterm review **Midterm exam**		
9	Spring break (no class)		
10	Normalization	Note 9	W6
11	Normalization Semi-structured data (XML/JSON), **Assign mini-project 2**	Note 9, 10	**Mini-project 1 due**
12	Disk storage, file structures, RAID, SSD	Note 11	
13	Disk storage and file structures, RAID, SSD	Note 11	W7, A5
14	Indexing for files, Performance tuning	Note 12, 13	
15	Transaction processing, NoSQL Database security	Note 14, 15, 16	**Mini-project 2 due**
16	Final review		
	Final Exam		

Part 4: Grading Policy

Grading Breakdown

Visit the **Assignments** link in Canvas for details about each assignment listed below. Click on **Quizzes** to access exams.

Mid-term Exam	Final Exam	Projects	Assignments	In-class Worksheets
30%	**40%**	**10%**	**15%**	**5%**

A student's final letter grade is based on the total weighted numeric score, on a 0-100 scale, obtained by the students, and rounded to the nearest integer to match the scale below. The letter grade is assigned according to the following policy:

A = 93-100	C = 73-76
A- = 90-92	C- = 70-72
B+ = 87-89	D+ = 67-69
B = 83-86	D = 63-66
B- = 80-82	D- = 60-62
C+ = 77-79	F = 59 or below

Please note that final score is not negotiable. Students are required to keep backup copies of all submitted work, and all graded work (if returned), until after final grades are posted.

Viewing Grades in Canvas

When any grades are returned to you on Canvas, unless otherwise instructed, you have 7 days to email/meet with the instructor for grade changes if there is a disagreement on your grades. Issues and/or disagreements concerning your grade must be resolved in such 7 days window. After 7 days, the grades are written in stone and can't be changed after that point, for whatever reason.

Part 5: Course Policies

Participation

This course will be delivered synchronously using zoom meetings. It is required that you attend each live zoom meeting. Exams will be based upon lectures and class discussions. I reserve the right NOT to provide all lecture recordings.

Instructor Announcements

The instructor will post announcements on the "Instructor Announcements" page in Canvas throughout the semester. Students are expected to read ALL instructor announcements and will be held responsible for the content of those announcements.

Submission rules

All submission must be submitted through Canvas unless otherwise instructed. It is the student's responsibility to ensure the assignment submission has gone through successfully. **Submissions in the ways other than Canvas, such as by email, will NOT be graded and will get a ZERO**. Double check the correctness and the format of files before your submission. For the each submission, on the first page, state your name, your id, course title, assignment id, and date clearly. Email attachments with a new version with an explanation such as "I forgot to include file xxx in my submission, please do grading based on this attachment" or "please grade this attachment because I accidentally attached a wrong file format in my submission" will NOT be accepted.

Make-up assignments

There will be no make-up assignments. All assignments must be completed and submitted before the due date. Late submissions are unacceptable. However, if a student cannot submit an assignment within the due date due to some unforeseen incident, he/she must provide a written documentation stating the proper reason of missing it. Otherwise a 0 will be assigned.

Exams

The mid-term exam (45 minute) and final exam (90-minute) will be conducted synchronously on Canvas. You can access the test paper at the time when exam begins, hand-write your responses on a blank paper (by correlating your answers to each question), and then scan/upload your paper as a single PDF for the instructor to view.

Some scanning apps on smartphones you can use include CamScanner, Abode Scan. **You will be given additional 15 minutes after each exam to finish file uploading.**

Taking photos of your answer sheets using smartphones <u>does NOT</u> work due to its resulting poor readability, which will affect your grade negatively. So please use a scanner or the scanning apps.

Make-up Exams

There will be no make-up exams, except under EXTREME circumstances. In case of medical emergency, 1) the student must inform the instructor BEFORE the exam by email (haiquan.chen@csus.edu), 2) the student must bring a doctor's note that excuses the student from the activity of taking an exam in the given day; and 3) the notes must be submitted to the instructor's department mailbox within the same week that the exam is scheduled. The instructor reserves the right to reject make-up requests.

Ethics/Academic Honesty

Absolutely no plagiarism and cheating. The instructor reserves the right to compare work **using both automated and manual methods**. Students must be able to defend overly-similar work. **Cheating and plagiarism will result in F grade in the course.**

Any work submitted is a contractual obligation that the work is the student's and for which he/she could be quizzed in detail. Discussion among students in assignments and projects is part of the educational process and is encouraged. No discussion among students is allowed in any exams/quizzes. However, each student must make an effort to do his/her own work in all assignments and exams. No type of plagiarism will be tolerated except in the case of group work. In that case each student should indicate the part of the work, which was their major responsibility in their final joint submission. Nevertheless, I emphasize any work submitted is a contractual obligation that the work is the student's and for which he/she could be quizzed in detail. **The minimum penalty for even a single incident of cheating brought to the attention of the instructor in this course is automatic failure of the course**; additional more severe penalties may also be applied. Note that cheating is grounds for dismissal from the University.

Please refer to the Computer Science Dept. document entitled "Policy on Academic Integrity" and to the University Policy Manual section on Academic Honesty for additional information. **IT IS THE RESPONSIBILITY OF EACH STUDENT TO BE FAMILIAR WITH, AND TO COMPLY WITH, THE POLICIES STATED IN THESE DOCUMENTS.** In addition, unless otherwise stated, the use of the

following devices during exams/quizzes is prohibited: cell phones, pagers, laptops, and PDAs.

Any form of academic dishonesty, including cheating and plagiarism, may be reported to the office of student affairs.

University or Department Policies

Repeat Policy*:* The department has a policy specifying that students may not repeat a computer science course more than once. Any student who wishes to repeat a course more than once (that is, take a course for a third time) must submit a petition requesting the permission to do so. Student records will be reviewed to determine whether a student is taking this course for three or more times. Any such student must return an approved petition to the instructor within the first two weeks of class. Any student who does not submit an approved petition will be dropped from the class. Petitions are available in the department office (RVR 3018) and require the signature of both the instructor and the department chair.

Drop Policy: If you plan to drop this course, please make sure you understand the following information.

- There is no such thing as an "automatic drop". The instructor can drop you from the course, but this does not happen automatically. If you plan to drop the course, make sure to use MySacState.
- After the 2nd week, you cannot drop the course through MySacState. At this point, you must provide written verification of a compelling reason. Both the instructor and the Department Chair must approve.
- After the 4th week, you must fill out a "Petition to Drop after Deadline" form and collect all the necessary signatures. This must be turned into Admission and Records in Lassen Hall.

Students with Disabilities

If you have a documented disability and verification from the Office of Services for Students with Disabilities (SSWD), and wish to discuss academic accommodations, please contact your instructor as soon as possible. It is the student's responsibility to provide documentation of disability to SSWD and meet with a SSWD counselor to request special accommodation *before* classes start.

Sacramento State is committed to ensuring an accessible learning environment where course or instructional content are usable by all students and faculty. If you believe that you require disability-related

academic adjustments for this class (including pregnancy-related disabilities), please immediately contact Services for Students with Disabilities (SSWD) to discuss eligibility. A current accommodation letter from SSWD is required before any modifications, above and beyond what is otherwise available for all other students in this class will be provided. Please be advised that disability-related academic adjustments are not retroactive. SSWD is located on the first floor of Lassen Hall 1008. Phone is 916-278-6955 and e-mail is sswd@csus.edu. For a complete listing of services and current business hours visit https://www.csus.edu/student-affairs/centers-programs/services-students-disabilities/

Title IX Statement

The California State University does not discriminate on the basis of sex, gender, or sexual orientation in its education programs or activities. Title IX of the Education Amendments of 1972, and certain other federal and state laws, prohibit discrimination on the basis of sex in all education programs and activities operated by the university (both on and off campus). Title IX protects all people regardless of their gender or gender identity from sex discrimination, which includes sexual harassment and violence.

Part 6: Others

Seeking Help

- **Virtual (Zoom) Office Hours: Thur 10:00 am -1:00 pm (by appointment only to minimize waiting time):**

  https://csus.zoom.us/j/98756973141

  I will admit students one at a time, which allows individual students to have privacy when speaking with me. Therefore, **you must email me in advance to reserve a time slot during office hours (by default 15 minutes)**.

- For help outside the office hours, please email me first. I will respond to your e-mail as quickly as I can, often within a few hours. However, please allow up to 48 hours for me to respond.

- **All emails should go to haiquan.chen@csus.edu** and
  - have a subject like this: CSCXXX-SecX – your subject
  - be signed with your full name in the body of the message

- **Do not use emails within Canvas!**

How to Get the Most out of this class

- Hard work is the only way to succeed.
- Before each chapter, the instructor will upload lecture slides to Canvas. Download the lecture slides and examine them carefully. **Bring your questions to each lecture.**
- Participate in class discussion.
- **Attend each live lecture (including in-class worksheet sessions).**
- **Finish each in-class worksheet during class time,** which will prepare you for the assignments, project, and exams.

Hands-on Components

- **Multiple in-class practice sessions** will be scheduled throughout the semester.
- **Mini-Project 1**: Use SQL + MySQL to implement the backend of an online bookstore (see https://www.barnesandnoble.com/ for an example) with basic query functionalities.
- **Mini-Project 2:** Design and implement a relational database using Yelp open dataset (JSON) (https://www.yelp.com/dataset/)

Part 7: COVID-19 Related

- In the event a faculty member is not available during the semester for whatever reason, students will be contacted and advised how the course will proceed. This may include a change in instructor and/or modality.
- For students who receive a positive COVID-19 test result, contact Student Health & Counseling Services (SHCS) at 916-278-6461 to receive guidance and/or medical care. You are asked to report any possible COVID related illnesses/exposures to SHCS. Expect a call from SHCS within 24 hours.