COMP 440: Database Design
Summer 2021

Instructor: Mahdi Ebrahimi (mahdi.ebrahimi@csun.edu)

Office: Online via Zoom

Class Details:

Section	Class Title	Days & Times	Room	Class Dates
COMP 440-01 (10857)	DATABASE DESIGN (Lecture)	MoTuWeTh 3:00PM - 4:35PM	Online via Zoom	Jul 14, 2021- Aug 24, 2021

Communication:

Please use email rather than telephone voice mail for messages. Please keep emails short and focused, and use a clear subject line beginning with “COMP 440 Question”. Many technical questions are better handled in person during lecture and lab rather than email, since the class as a whole might benefit from the discussion.

You may email me (mahdi.ebrahimi@csun.edu) at any time; I will generally respond within 24 hours (during the academic days). Always include your name, course, and CSUN e-mail address in your messages to me; an email address like meqwik@love.com leaves me clueless about who you are**!**

Course Description (from the catalog):

Database structure including: structure definition, data models, semantics of relations, operation on data models. Database schemas: element definition, use and manipulation of the schema. Elements of implementation. Algebra of relations on a database. Hierarchical data bases. Discussion of information retrieval, reliability, protection and integrity of databases.

Goals:

The goal of the course is to present a basic introduction to database management systems, with an emphasis on database design methodologies (ER diagrams and normalization theory) and database query languages (relational algebra and SQL). Students will design and implement a simple database system to deepen their understanding of the basic database concepts and theories. After taking this course, you will have the capability of developing various database applications such as enterprise information systems, e-commerce systems, business management systems.

Course Objectives:

The students will apply the ER diagram approach to data modeling, the normalization theory for database design, and relational algebra and indexing for query optimization. The students will also perform SQL programming at various levels and develop stand-alone database application using relational database management systems.

Upon successful completion of this class, the student will be able to:

#	Course Learning Outcomes
1	Describe clearly the basic concepts of relational database design and development.
2	Apply the ER diagram methodology to database design.
3	Perform SQL programming at the basic level, intermediate level and advanced levels.
4	Apply normalization theory to database design refinement.
5	Develop stand-alone database application using relational database management systems.

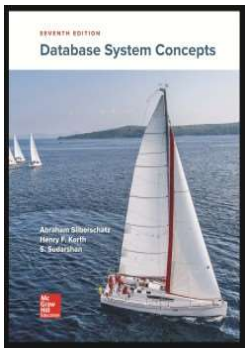
Course contents:

- Overview of Databases and Transactions
- Database Design I: the Entity-Relationship Model
- Relational Algebra and SQL
- Database Design with the Relational Normalization Theory
- Physical Data Organization and Indexing
- The Basics of Query Processing

Prerequisites: COMP 380/L; attempted upper-division writing exam.

Course Material:
Course material is available on Canvas (https://canvas.csun.edu)
Grades will be posted on canvas (https://canvas.csun.edu)
Any questions about a homework/Exam grade should be addressed within two days of posting. After two days, all grades are final.

Textbook:
[1] **Database System Concepts**, 7th Edition
Abraham Silberschatz, Henry F. Korth, S. Sudarshan
ISBN-13: 978-0073523323
ISBN-10: 0073523321



[2] Book website: http://db-book.com/

[3] Class Hand-Outs

Grading:
Course grades will be determined based on the following:

Component	Weight
Project and Homeworks	**60%**
Midterm Exam	**20%**
Final Exam	**20%**
Total:	**100%**

Exams:
Exam dates are posted in the class schedule on Canvas; any changes to the scheduled exam dates will be announced in class and also posted on Canvas in class schedule revisions.

Unless otherwise indicated, all exams are Closed-Book, Individual efforts; in other words referencing book, notes, electronic equipment, other peoples' work, or communication with other persons (verbally or non-verbally) is expressly forbidden unless specifically approved by the instructor. Referencing unauthorized resources during an exam constitutes a violation of the CSUN Academic Honor Code. Make-up exams will **NOT** be granted without following proper university procedure. Inform the instructor BEFORE the exam scheduled exam date/time.

Homework:

Note: All assignments submitted in "digital file" format (.zip, .rar, .pdf, .docx, etc.) must be submitted using Canvas. An "Assignment" area will be created for each assignment.

Assignments submitted via e-mail **will not be accepted unless explicitly approved by the instructor prior to e-mail submission.**

Homework/Projects will be assigned with due dates. Students are expected to:

a) Complete the assignments on time to the best of their ability (as if for an employer or customer).
   - **Students are expected to submit their own original work.**

b) **ASK QUESTIONS** if problems are encountered or if more information is required (**BEFORE** the due date!).

c) If team organization is required, the team members will coordinate their team activities and honor their commitments to attend meetings and deliver "products" (i.e.: documentation, source code, test results, etc.).

Team Projects:

For Team projects, team reports (i.e.: one single report for all team members) will be expected:

- All team members **must** be named in the project report.
- All team members named **must** have participated in the project.
- All team members named will receive the same score for the project.
- EACH team member is responsible for understanding the contents of the project.
- EACH team member is responsible for assuring that the project is complete.
- EACH team member is responsible for assuring that the project is submitted on-time.
- Team members should take turns authoring team project; it is the team members' responsibility to coordinate this.
- The instructor is NOT responsible for inspiring a "deadbeat" team member to submit a team project when it is their turn.

Points will be assigned based on project report write-up, documentation, and project methodology.

In the event that there is a problem with Canvas, you may email your assignments and projects to me (mahdi.ebrahimi@csun.edu), though this should be considered a last resort.

Grading Policy: Exam questions will relate to the contents of both the textbooks **and** *material discussed in class*. To do well, you should attend class regularly, participate in discussions, do all assignments and project, and take notes. If you miss a class, please arrange with someone to get notes and go over the important points with them. Total category grade is calculated based on the sum of all grades for the category.

Plus/minus grading is used, according to the scale below. The left column shows the minimal score necessary to receive the grade in the right column. The highest letter grade possible given the score is

chosen; e.g., if you receive an 88.2, you'd receive a 'B+' for the course, which corresponds to being >= 86.5.

If your score is >=...	...you will receive...
92.5	A
89.5	A-
86.5	B+
82.5	B
79.5	B-
76.5	C+
72.5	C
69.5	C-
66.5	D+
62.5	D
59.5	D-
0	F

- **NOTE: Failure to take the Final Exam will result in a grade of "WU" which is equivalent to a grade of "F"**
- An important part of this course is the Database terminology, concepts, and definitions; therefore, I do not answer questions during examinations.
- In fairness to all, I don't give make-up for any missed projects, homework, or exams.
- An incomplete (I) grade is given for genuine medical and other certified emergencies only; it is never given to catch up with missed assignments. Furthermore, to receive an Incomplete grade, you must have successfully completed at least two-thirds of the semester with a passing grade.

Plagiarism and Academic Honesty:

Plagiarism in any assignment or cheating in the examinations will result in a grade of F in the entire course.

On an exam, you are expected to submit only your own work. On a programming project, it is permissible to discuss solution approaches in a general sense with other students. But when submitting a project for a grade, the project must represent your own work. It cannot be a copy of another teams' project. **Penalties for academic dishonesty on a single exam or programming project may result in a grade of "F" for the entire course.** A report will also be made to the department. Students who repeatedly violate this policy across multiple courses may be suspended or even expelled.

If you have any doubts about what is considered dishonest, please ask the instructors for guidance before taking such a serious risk. In general, **full disclosure is the best policy** on any submission. In other words, if a friend helped you to complete a project, **state this fact in writing at the beginning of the submission.** Such submission may not earn full points.

Makeup or Extra Credit:

No makeup assignments are given to compensate for poor performance in regularly assigned work. The pressure of work, academic workload from other classes, and schedule extracurricular activities during the semester (e.g., getting married, travel) are unacceptable excuses for missing classes or not submitting the assignments by the due dates. You get no credit by telling me that you already know the stuff; the only way to earn points is by completing the coursework on time. If you know the course material, then please drop this class and enroll in a class that is useful.

Late Policy / Exam Scheduling:

Late assignments will be accepted without penalty if prior arrangements have been made or there is some sort of legitimate emergency (at my discretion). If you must be absent from an exam, contact me ASAP to see if alternative accommodations can be made. Note that all exams have been scheduled ahead of time (see the Class Schedule and List of Topics).
If an assignment is otherwise submitted late, it will be penalized according to the following scale:

If your assignment is late by <= this many days…	...it will be deducted by...
1	**10%**
2	**30%**
3	**60%**
4+	**100%**

To be clear, assignments which are submitted four or more days beyond the deadline will not receive credit.

Class Schedule and List of Topics (subject to change)

Exactly which topics are covered and when is subject to change.

Week	Dates	Topics
1	7/14 - 7/15	Course overview Introduction to databases
2	7/19 - 7/20	SQL
	7/21 - 7/22	Advanced SQL and Practice
3	7/26 - 7/27	Additional topics in SQL
	7/28 - 7/29	Project Assigment
4	8/2 – 8/3	Database Design - ER Diagram ER Practice
	8/4 - 8/5	Introduction to the Relational Model Normalization
5	8/9 - 8/10	**8/9 Exam 3:00 PM - 4:35 PM, Online via Canvas** Indexing
	8/11 - 8/12	Transaction, Query Optimization
6	8/16 - 8/17	No SQL Databases
	8/18 - 8/19	**Project Demos**
7	8/23 - 8/24	**Project Demos**