

Texas Tech University
Department of Computer Science

Course Name: Concepts of Database System
Course Number: CS4354

Lecturer: Victor Sheng, Associate Professor, Department of Computer Science
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Class: TR 09:30-10:50 am, IMSE121

Textbook: Fundamentals of Database Systems 7th edition, Ramez Elmasri and Shamkant B. Navathe, Pearson, 2015, ISBN: 9780133970777

References: Database Systems: A Practical Approach to Design, Implementation, and Management (6th Edition) by Thomas Connolly, Carolyn Begg. ISBN-13: 978-0132943260; ISBN-10: 0132943263.

Catalogue Listing: Overview of a database system and its components; physical organization of data; data models; relational databases; and query processing.

Course objectives:

Understanding of data modeling concepts
Relational model for storage and retrieval of information
Formal query languages
Current database technologies such as SQL
Group project team work

Key Topics:

Relational databases; relational algebra; queries; database technologies such as; database design; information management

Course Prerequisites: CS 3364

Expected Prior Knowledge and Skills: logic, programming proficiency

***Note:** This course is one of the courses used as a primary measure of outcomes 1 and 6*

Learning Outcomes: Students who have completed this course should be able to

1. Understand the fundamental principles of the relational data model (1, 6)
2. Formulate an Entity-Relationship (ER) diagram as conceptual design of database requirements (2)
3. Map ER diagrams to relational schemas (2)
4. Formulate a correct relational algebra expression to answer a query using a query language such as SQL that involves select-project-join, negation, union, intersection, minimum/ maximum, and a limited form of counting (6)
5. Apply database theory to practice by creating a database application using a commercial database product (1,2)

Assessment methods of all of the above: quizzes, exams, assignments, and/or projects

Ethical Conduct: Exam, assignments, quizzes, and projects are subject to the university academic integrity (See attached and Student Handbook:

http://www.studentaffairs.ttu.edu/publications/student_handbook0405.pdf) and the statement of academic conduct for engineering students (included in the last page of the syllabus). Plagiarism and academic irregularities will not be tolerated. Cheating on homework or quizzes will result in a zero on the corresponding assignment/quiz and an F in the course for repeated cheating. Cheating on an exam or project will result in an F for the course. All incidents of academic dishonesty will be reported to the Office of Student Conduct which may add additional consequences. Consequences of dishonesty can be severe and may include expulsion from the university

Grade Policy: Your course grade shall be based on the weights specified in the following table.

Component	FINAL Grade
Assignments	10%
Exam1	10%
Exam2	10%
Final Exam	40%
Course Project	30%

Your numeric score will be translated to a letter grade at the end of the semester according to the table below at the discretion of the instructor.

Numeric Score	Letter Grade
90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
0 - 59	F

Assignments, quizzes, exams and course project grade:

Assignments (10%): There are several assignments assigned on a regular basis. It is the responsibility of students to submit the assignments on time. No late submissions are accepted.

Course projects (30%) There shall be programming projects designed to apply the knowledge attained through classroom instruction. The programming projects shall be team work with the help on its solution only, from the classroom or lab instructor.

Two semester exams (10% each): Scheduled approximately around the 5th and the 10th week. They will test your knowledge and skills on problem solving, solution design and implementation up to that point in the course.

Final (40%): The final exam will test your ability of applying the knowledge learned in this course this semester for problem analysis, solution design, and appropriate computer implementation.

Course Schedule: This schedule is tentative and subject to change.

All changes will be announced in class or on the course website (Blackboard). Students are responsible for making sure they are informed about announcements.

Wk	Topics/Events	Reading
1	Database and Database Users	Ch1
2	Database System Concepts and Architecture	Ch 2
3	Data Modeling Using the ER Model	Ch7
4	EER Model	Ch8
5	Review + Exam 1	
6	The Relational Model and Relational Database Constrains	Ch3
7	The Relational Algebra and Relational Calculus	Ch6
8-10	SQL + Oracle	Ch4, Ch5 and handouts
11	Review + Exam 2	
12	Relational Database Design by ER- and EER-to-Relational Mapping	Ch9
13	Working with tables	
14-15	Data Mining and Data Warehouse	Ch 28 29
16	Project Presentation and Report	

NOTE: This syllabus represents a general plan for the course and deviations from this plan may be necessary during the duration of the course.

Classroom Civility

All violations of classroom civility will be reported to the Student Judicial Programs. The Texas Tech University Catalog states: "Students are expected to assist in maintaining a classroom environment that is conducive to learning." In order to ensure that all students gain from time spent in class, **students are prohibited from engaging in any form of distraction**, e.g., reading newspapers (or other articles), working on other courses, and using cell-phones or laptops for calls or messages. If you indulge in any such inappropriate behavior (without explicit consent of the instructor), you will (at the very least) be asked to leave the classroom.

Student with Disabilities

Any student who, because of a disability, may require special arrangements in order to meet course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note that instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services Office in 335 West Hall or 806-742-2405.

Illness Based Absence Policy

If at any time during this semester you feel ill, in the interest of your own health and safety as well as the health and safety of your instructors and classmates, you are encouraged *not* to attend face-to-face class meetings or events. Please review the steps outlined below that you should follow to ensure your absence for illness will be excused. These steps also apply to not participating in synchronous online class meetings if you feel too ill to do so and missing specified assignment due dates in asynchronous online classes because of illness.

1. If you are ill and think the symptoms might be COVID-19-related:
 - a. Call Student Health Services at 806.743.2848 or your health care provider.

- b. Self-report as soon as possible using the Office of the Dean of Students website. This website has specific directions about how to upload documentation from a medical provider and what will happen if your illness renders you unable to participate in classes for more than one week.
 - c. If your illness is determined to be COVID-19-related, all remaining documentation and communication will be handled through the Office of the Dean of Students, including notification of your instructors of the period of time you may be absent from and may return to classes.
 - d. If your illness is determined not to be COVID-19-related, please follow steps 2.ad below.
2. If you are ill and can attribute your symptoms to something other than COVID-19:
- a. If your illness renders you unable to attend face-to-face classes, participate in synchronous online classes, or miss specified assignment due dates in asynchronous online classes, you are encouraged to visit with either Student Health Services at 806.743.2848 or your health care provider. Note that Student Health Services and your own and other health care providers may arrange virtual visits.
 - b. During the health provider visit, request a "return to school" note;
 - c. E-mail the instructor a picture of that note;
 - d. Return to class by the next class period after the date indicated on your note.

Following the steps outlined above helps to keep your instructors informed about your absences and ensures your absence or missing an assignment due date because of illness will be marked excused. You will still be responsible to complete within a week of returning to class any assignments, quizzes, or exams you miss because of illness.

Statement of Academic Conduct for Engineering Students

College of Engineering, Texas Tech University

Preamble

The College's primary goal is to educate students to fill leadership roles as professionals aware of technology and its economic and political role in the world. Therefore, we strive to produce technically competent graduates who solve problems, are able to communicate and work well with others; are sensitive to the needs of society, are well-educated in the humanities as well as in the engineering disciplines, and maintain a high-level of ethical and professional conduct.

Policy

The College of Engineering fully subscribes to the Code of Student Conduct as published in the Texas Tech University's "Student Affairs Handbook." The Handbook states the following:

"The University is strongly committed to upholding standards of academic integrity. These standards require that students never present the work of others as their own.

Any student found to have committed the following academic misconduct is subject to the disciplinary sanctions outlined in Part IX, Section D "Disciplinary Sanctions":

1. Cheating

This violation includes, but is not limited to: (1) use of any unauthorized assistance or assisting others in taking quizzes, tests, or examinations; (2) dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignment(s); (3) the acquisition, without permission, of tests or other academic material belonging to a member of the University faculty or staff; (4) alteration of grade records; (5) bribing or attempting to bribe a faculty member to alter a grade.

2. Plagiarism

This violation includes, but is not limited to, the use, by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgment. It also included the unacknowledged use of materials prepared by another person or agency engaged in the selling of term

papers or other academic materials.

3. Instructor Responsibilities

The instructor in a course is responsible for initiating action in cases where there is an admitted act or convincing evidence of academic misconduct. Before taking such action, the instructor should attempt to discuss the matter with the student(s). If the suspected misconduct involved a final exam, the instructor should submit a grade of X until a reasonable attempt can be made to contact the student(s), after the end of the semester.

4. Instructor Sanctions

If academic misconduct is determined by the instructor, a failing grade shall be assigned to either the assignment in question or to the course grade. When a student is given a failing grade in a course as a result of academic misconduct, the instructor shall report in writing to the instructor's department chairperson the facts of the case and the action to be taken against the student. The chairperson shall provide a copy to the student, to his or her Academic Dean and to the Dean of Students Office.

5. Grade Appeal Procedure

The Grade Appeal Procedure (Part V, Section A) may be used to appeal a failing course grade, but not a failing grade given for a class assignment. The disciplinary penalty or grade of F shall not be implemented until the disciplinary procedures or grade appeal process has been exhausted. A student may continue the academic class and course work until a final decision is made."

6. Repeated Academic Dishonesty

In cases of repeated violations, either the instructor (through his or her department chairperson and/or Academic Dean's Office) or the Academic Dean may refer the case to the Dean of Students Office for further disciplinary action.