

COSC 5360 Database Design
Spring 2026

General Course Information

Schedule	Online Asynchronous Mode (7-week schedule)
Course Description	The course introduces concepts, techniques and applications related to database analytics (DA). Conceptual and technical topics include relational database concepts, data modeling, database design, development, and implementation, database administration, and big data technologies. Students will acquire technical and managerial skills in planning, analysis, logical design, physical design, implementation, and application of DA. Topics include database system architecture, the relational model, relational database design, the SQL database language, data normalization, and big data technologies. Emphasis is placed on the conceptual design and practical application database analytics solutions. (The weekly workload may span 15 to 20 hours approximately and depends on individual students' background.)
Required Textbook	<ul style="list-style-type: none"> ▪ <i>Fundamentals of Database Systems</i>, by Ramez Elmasri and Shamkant B. Navathe, 2016 (7th edition). ISBN-13: 978-0133970777. ISBN-10: 0133970779 ▪ Additional readings, handouts, and videos will be posted on Canvas.
Pre-requisites	There is no prerequisite for this course. However, prior knowledge in computer programming, spreadsheet software, probability and statistics is helpful.
Instructor	Dr. Yi Li Email: yli@uttyler.edu
Office Hour	Wednesday 12:00 PM – 3:00 PM at COB 315.03 or by appointment
Learning Outcomes	<ol style="list-style-type: none"> 1. List and describe the fundamental elements of relational database management systems 2. Explain the basic concepts of relational data model, entity-relationship model, relational database design and SQL. 3. Analyze database requirements and determine the entities involved in the system and their relationship to one another. 4. Design ER(EER)-models to represent database application scenarios.

	<ol style="list-style-type: none"> 5. Develop the logical design of the database by converting the ER(EER)-model to relational tables. 6. Improve the database design by normalization. 7. Create and manipulate database using SQL as both DDL and DML. 	
Grading Policy	Midterm Exam Final Exam Assignments Quizzes/Exercises	25% 25% 40% 10%
Grading Rubric	Weighted Total 90.0 - 100% 80.0 - 89.99% 70.0 - 79.99% 60.0 - 69.99% Below 60%	Letter Grade A B C D F
Topics	<ol style="list-style-type: none"> 1. Database System Concepts 2. Conceptual Modeling 3. ER/EER Model 4. Relational Data Model 5. Normalization 6. SQL as DDL and DML 7. NoSQL and Big Data 	

Class Arrangement:

This course will use an asynchronous online modality to support teaching and learning. The instructor will post course materials on Canvas. And will send out weekly reminders (via university email) to students to inform the current progress and upcoming course activities. The materials include course handouts (e.g., slides, notes, exercises), prerecorded lecture videos, discussion forums, among others. Students are expected to read / watch the materials and to make progress in their learning accordingly. Students are required to submit (via Canvas) assessment items that have specific due dates as listed in Class Schedule Page (on Canvas). The assessment items are intended to ensure that students are making satisfactorily progress toward the learning goals. The directions for submitting the assessment items will be provided on the Canvas. While all required learning materials are provided in an asynchronous mode, students are welcome to schedule 15-minute appointments to meet with the instructor (online via Zoom), who will be available during office hours posted on the Canvas. Other times may be considered upon request. Students who want to set up an appointment with the instructor should email the instructor with several proposed meeting times.

Assessment

For each of the assessment categories listed below, students are required to submit the assessment items by their due dates and times listed on Canvas.

A. Quizzes/Exercises

Quizzes and exercises will be assigned as individual, untimed, open-book tests to help students review course materials and to prepare for exams. Each quiz contains objective-type questions (e.g., multiple choice, T/F, multiple selections, matching, etc.) designed to support retention of knowledge. Students may pause and resume a quiz (once started) and must complete the quiz submission by the due time. Each quiz/exercise is open for submission one week prior to the due date and is closed for submission 3 days after the scheduled due date. Each quiz/exercise must be submitted to Canvas by the due date (before 11:59:00 pm US Central Time) to receive a grade. All quizzes will be graded automatically.

B. Assignments

Individual assignments will be given to reinforce the topics learned. The assignments may include short questions, case studies, and software applications. Each assignment will be graded based on its accuracy, clarity, timely and proper submission, and overall quality. Students may submit the assignment any time before the due time. The latest submission is used for grading. Each assignment is open for submission one week prior to the due date and is closed for submission on scheduled due date. Each assignment must be submitted to Canvas by the due date (before 11:59:00 pm US Central Time) to receive a grade. Assignments will be graded and returned within a 10-day period.

C. Examinations

There will be two individual, one-sitting, closed-book, closed-note, limited-time exams (midterm and final) in this course. Each exam will be available on scheduled date and time, as indicated in the Course Schedule. Students must complete the exam within a single sitting, as no pause-and-resume option is available, and submit it before the due date. Online proctoring tools (Lockdown Browser with Webcam) will be used during the exam. Lockdown Browser instructions will be provided on Canvas. Objective-type questions (e.g., multiple choice, vocabularies, multiple selections, matching, short answer, programming) may appear in the exam.

Course Policies

A. Late Submission Policy

- Late submissions are not accepted. Assignments must be submitted by the posted due date and time to receive credit. If an unexpected or serious situation arises that may

affect your ability to submit on time, you must email the instructor as early as possible and before the deadline. Extensions or accommodations, if any, will be considered only in advance and at the instructor's discretion. Requests made after the deadline or after the assignment is due will generally not be approved.

- Tests must be taken when scheduled. Make-up exams will be granted at the discretion of the instructor. Make-ups will be given only under *extremely unusual* circumstances, will be different from exams given during the regular exam time and may be discounted by up to 50% of the grade. Permission for a makeup exam must be obtained *PRIOR* to the regular exam and must include written documentation of the student's absence.

B. Attendance and Participation:

- Students are expected to follow the course schedule, and the instructions provided through the learning management system, and check their university email account on a regular basis for all course materials and assignments. A stable, high-speed Internet connection is required to access course materials. By enrolling in this class, a student is bound by the requirements stated in this syllabus and given by the instructor. Students must operate with integrity in their dealings with faculty and other students; engage the learning materials with appropriate attention and dedication; complete assignments on time; maintain their engagement when challenged by difficult learning activities contribute to the learning of others; and perform to the standards set by the instructor.
- Each student is expected to participate by making regular forum posts on the discussion board under Canvas, either asking a question or responding to an existing topic.

C. Plagiarism

Unless otherwise specified, all work submitted for a grade must be completed by yourself. While students are encouraged to form study groups and to discuss course materials, students are required to submit only their own original work done exclusively for each assignment. You are not allowed to submit another person's work and claim it as your own. Plagiarism will result in disciplinary actions. To spare yourself accusations of plagiarism

1. Do not show another student a copy of your work before it has been graded. The penalties for permitting your work to be copied are the same as the penalties for copying someone else's work.
2. Do not leave printouts of your work where other students may pick them up.
3. Do not copy answers from a solution manual or answers found online.

Any indication of cheating and/or plagiarism on an exam/assignment/project will be an automatic 0 (zero) for the exam/assignment/project for all students involved. Solutions copied from the internet, instructor's manual, etc. will also be given zero credit. If you have questions about the line between assistance and cheating, discuss it with the instructor. For examples of Scholastic Dishonesty, please visit Section 8-802 of the [Manual of Policy and Procedures](#).

D. Copyright Infringement

All materials are copyright-protected. Copying, reproduction, or re-distribution of the materials without written permission of copyright holders is a violation of the copyright law and is prohibited.

E. Academic Calendar

<https://www.uttyler.edu/academics/academic-calendar/>

Course Tentative Schedule

Week	Dates	Lecture Topics	Chapter	Items Due (Day)
01	1/12 - 1/18	1A. Introduction to CSCI 5364 1B. Introduction to Databases 1C. Database System Concepts	Syllabus Chapter 1 Chapter 2.1-2.3	Syllabus Discussion forum, Quiz 1 (Sunday 1/18)
02	1/19 - 1/25	2A. Entity Relationship Model 2B. Enhanced ER Model	Chapter 3 Chapter 4.1 - 4.3	Assignment 1, Quiz 2 (Sunday 1/25)
03	1/26 - 2/1	3A. Relational Data Model 3B. EER-to-Relational Mapping	Chapter 5 Chapter 9	Assignment 2, Quiz 3 (Sunday 2/1)
04	2/2 - 2/8	4A. Normalization 4B. Introduction to SQL	Chapter 14 Chapter 6.1 - 6.2	Midterm Exam (1.5hr, Saturday 2/7)
05	2/9 - 2/15	5A. SQL as DDL 5B. SQL as DML (1)	Chapters 6.4, 7.4 Chapter 6.3	Assignment 3, Quiz 4 (Sunday 2/15)
06	2/16 - 2/22	6A. SQL as DML (2) 6B. SQL as DML (3)	Chapter 7	Assignment 4, Quiz 5 (Sunday 2/22)
07	2/23 - 3/1	7A. Introduction to NoSQL 7B. Big Data Technology	Chapter 24 Chapter 25	Final Exam (2hr, Saturday 2/28)

*Note that the schedule is subject to change as the course progresses.

Student Resources:

Resources to assist you in the course

- [UT Tyler Student Accessibility and Resource \(SAR\) Office](#) (provides needed accommodations to students with document needs related to access and learning)
- [UT Tyler Writing Center](#)
- [The Mathematics Learning Center](#)
- [UT Tyler PASS Tutoring Center](#)
- [UT Tyler Supplemental Instruction](#)
- [Upswing \(24/7 online tutoring\) - covers nearly all undergraduate course areas](#)
- [Knack Tutoring](#) – in-person and virtual options
- [Robert Muntz Library](#) and [Staff/Library Liaisons](#)
- [Canvas 101](#) (learn to use Canvas, proctoring, and other software)
- Digital Support Toolkit (for supported courses only. Students are automatically enrolled in the toolkit for supported courses)
- [The Career Success Center](#)
- [UT Tyler Testing Center](#)
- [Office of Research & Scholarship Design and Data Analysis Lab](#)

Resources available to UT Tyler Students

- [UT Tyler Counseling Center](#) (available to all students)
- [TimelyCare](#) (24/7 access to Student Support Program counseling through phone or chat and online wellness resources available in a variety of languages)
- [Military and Veterans Affairs](#) (supports for our military-affiliated students)
- [UT Tyler Patriot Food Pantry](#)
- [UT Tyler Financial Aid and Scholarships](#)
- [UT Tyler Student Business Services](#) (pay or set up payment plans, etc.)
- [UT Tyler Registrar's Office](#) (academic information, forms library, policies, etc.)
- [Office of International Programs](#)
- [Title IX Reporting](#)
- [Patriots Engage](#) (available to all students. Get engaged at UT Tyler.)

University Policies and Information

Withdrawing from Class

Students may [withdraw](#) (drop) from this course using the [Withdrawal Portal](#). Withdrawing (dropping) this course can impact your Financial Aid, Scholarships, Veteran Benefits, Exemptions, Waivers, International Student Status, housing, and degree progress. Please speak with your instructors, consider your options, speak with your advisor, and visit the One-Stop Service Center (STE 230) or email enroll@uttyler.edu to get a complete review of your student account and the possible impacts to withdrawing. We want you to make an informed decision. UT Tyler faculty and staff are here for you and often can provide additional support options or assistance. Make sure to carefully [read the implications for withdrawing from a course and the instructions](#) on using the [Withdrawal portal](#).

Texas law prohibits students from dropping more than six courses during their entire undergraduate career*. The six courses dropped includes those from other 2-year or 4-year Texas public colleges and

universities. Consider the impact withdrawing from this class has on your academic progress and other areas, such as financial implications. We encourage you to consult your advisor(s) and Enrollment Services for additional guidance. **CAUTION #1:** Withdrawing before census day does not mean you get a full refund. Please see the [Tuition and Fee Refund Schedule](#). **CAUTION #2:** All international students must check with the [Office of International Programs](#) before withdrawing. All international students are required to enroll full-time for fall and spring terms. **CAUTION #3:** All UT Tyler Athletes must check with the Athletic Academic Coordinator before withdrawing from a course. **CAUTION #4:** All veterans or military-affiliated students should consult with [Military and Veterans Affairs](#).

* Students who began college for the first time before 2007 are exempt from this law.

Artificial Intelligence Statement

UT Tyler is committed to exploring and using artificial intelligence (AI) tools as appropriate for the discipline and task undertaken. We encourage discussing AI tools' ethical, societal, philosophical, and disciplinary implications. All uses of AI should be acknowledged as this aligns with our commitment to honor and integrity, as noted in UT Tyler's Honor Code. Faculty and students must not use protected information, data, or copyrighted materials when using any AI tool. Additionally, users should be aware that AI tools rely on predictive models to generate content that may appear correct but is sometimes shown to be incomplete, inaccurate, taken without attribution from other sources, and/or biased. Consequently, an AI tool should not be considered a substitute for traditional approaches to research. You are ultimately responsible for the quality and content of the information you submit. Misusing AI tools that violate the guidelines specified for this course is considered a breach of academic integrity. The student will be subject to disciplinary actions as outlined in UT Tyler's Academic Integrity Policy. [Refer to the About This Course section of the UT Tyler Syllabus Module for specific information on appropriate use of AI in your course\(s\).](#)

Final Exam Policy

Final examinations are administered as scheduled. If unusual circumstances require that special arrangements be made for an individual student or class, the Dean of the appropriate college, after consultation with the faculty member involved, may authorize an exception to the schedule. Faculty members must maintain student final examination papers for a minimum of three months following the examination date.

Incomplete Grade Policy

If a student, because of extenuating circumstances, is unable to complete all of the requirements for a course by the end of the semester, then the instructor may recommend an Incomplete (I) for the course. The "I" may be assigned in place of a grade *only when all of the following conditions are met:* (a) the student has been making satisfactory progress in the course; (b) the student is unable to complete all coursework or final exam due to unusual circumstances that are beyond personal control and are acceptable to the instructor, and (c) the student presents these reasons before the time that the final grade roster is due. The semester credit hours for an Incomplete will not be used to calculate the grade point average.

The student and the instructor must submit an Incomplete Form detailing the work required and the time by which the work must be completed to their respective department chair or college dean for approval. The time limit established must not exceed one year. Should the student fail to meet all of the work for the course within the time limit, then the instructor may assign zeros to the unfinished work, compute the course average for the student, and assign the appropriate grade. If a grade has yet to be assigned within

one year, then the Incomplete will be changed to an F, or NC. If the course was initially taken under the CR/NC grading basis, this may adversely affect the student's academic standing.

Grade Appeal Policy

Disputes regarding grades must be initiated within sixty (60) days from the date of receiving the final course grade by filing a Grade Appeal Form with the instructor who assigned the grade. A grade appeal should be used when the student thinks the final course grade awarded does not reflect the grades earned on assessments or follow the grading scale as documented in the syllabus. The student should provide the rationale for the grade appeal and attach supporting document about the grades earned. The form should be sent via email to the faculty member who assigned the grade. The faculty member reviews the rationale and supporting documentation and completes the instruction section of the form. The instructor should return the form to the student, even if a grade change is made at this level. If the student is not satisfied with the decision, the student may appeal in writing to the Chairperson of the department from which the grade was issued. In situations where there is an allegation of capricious grading, discrimination, or unlawful actions, appeals may go beyond the Chairperson to the Dean or the Dean's designee of the college from which the grade was issued, with that decision being final. The Grade Appeal form is found in the [Registrar's Form Library](#).

NOTE: The Grade Appeal Form is different from the Application for Appeal form submitted to the Student Appeals Committee, which does not rule on grade disputes as described in this policy.

Disability/Accessibility Services

In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA), the University of Texas at Tyler offers accommodations to students with learning, physical, and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or a history of modifications or accommodations in a previous educational environment, you are encouraged to visit <https://hood.accessiblelearning.com/UTTyler/> and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with the Assistant Director Student Accessibility and Resources/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at <https://www.uttyler.edu/disability-services>, the SAR office located in the Robert Muntz Library, LIB 460, email saroffice@uttyler.edu, or call 903.566.7079."

Military and Veterans

UT Tyler honors the service and sacrifices of our military-affiliated and veterans students. If you are a student who is a veteran, on active duty, in the reserves or National Guard, or a military spouse or dependent, please stay in contact with your faculty member if any aspect of your present or prior service or family situation makes it difficult for you to fulfill the requirements of a course or creates disruption in your academic progress. It is important to make your faculty member aware of any complications as far in advance as possible. Your faculty member is willing to work with you and, if needed, put you in contact with university staff who are trained to assist you. The [Military and Veterans Affairs](#) has campus resources for military-affiliated students. The MVSC can be reached at MVSC@uttyler.edu or via phone at 903.565.5972.

Students on an F-1 Visa

To remain in compliance with Federal Regulations requirements you must do the following:

- Traditional face-to-face classes: Attend classes on the regular meeting days/times.
- Hybrid Classes: Attend all face-to-face classes convened by the instructor according to the schedule set for your specific course.
- Online course: Only one online course can count toward your full-time enrollment. Students are expected to be fully engaged and meet all requirements for the online course.

Academic Honesty and Academic Misconduct

The UT Tyler community comes together to pledge that "Honor and integrity will not allow me to lie, cheat, or steal, nor to accept the actions of those who do." Therefore, we enforce the [Student Conduct and Discipline policy](#) in the Student Manual Of Operating Procedures (Section 8).

FERPA

UT Tyler follows the Family Educational Rights and Privacy Act (FERPA) as noted in [UT Tyler's Policy 7.01: Family Educational Rights and Privacy Act](#). The course instructor will follow all requirements to protect your confidential information.

Absence for Official University Events or Activities

This course follows the practices related to [Excused Absences for University Events or Activities](#) as noted in the Catalog.

Absence for Religious Holidays

This course follows the practices related to UT Tyler's [Excused Absence for Religious Holy Days](#) as noted in the Catalog.

Absence for Pregnant Students

This course follows the requirements of Texas Laws SB 412, SB 459, SB 597/HB 1361 to meet the needs of pregnant and parenting students. Part of the supports afforded pregnant students includes excused absences. Faculty who are informed by a student of needing this support should make a referral to the Parenting Student Liaison. NOTE: Students must work with the Parenting Student Liaison in order to receive these supports. Students should reach out to the Parenting Student Liaison at parents@uttyler.edu and also complete the [Pregnant and Parenting Self-Reporting Form](#).

Campus Carry

We respect the right and privacy of students who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at <http://www.uttyler.edu/about/campus-carry/index.php>.