University of North Texas
Department of Computer Science and Engineering

CSCE 5350 – Fundamentals of Database Systems

Session: Spring/2026

Class:

CSCE 5350-002 (7588) - Th 5:30PM - 8:20PM - **NTDP E264**
CSCE 5350-600 (14254) - Th 5:30PM - 8:20PM - **NTDP E264**

Instructor:
Dr. Moawia Eldow
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Office hours: Tu/Th 12:30 – 2:30 PM

TAs/IAs:

Name: Md Ariful Hasan
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Office hours: TBA

(**Important statement**: *We reserve the right to modify course policies, the course outline, assignment or project point values, and due dates*.)

Description:
Introduction to the design and use of database systems. Topics include data models, database query languages, logical database design & dependency theory, application development & security, storage management & indexing, and query processing & optimization. The course covers fundamental concepts necessary for designing, using, and implementing database systems and applications, including database modeling and design, the languages and models provided by database management systems, and implementation techniques.

Prerequisites: None. Good backgrounds in **programming languages**, **discrete math** and **data structures** can help overcome many fundamentals covered in the class.

Learning Outcomes:
By the end of the course, students will

1. Be familiar with database technology.
2. Be familiar with the relational data model.
3. Be able to apply conceptual modeling of databases using Entity-Relationship (ER) Diagram.
4. Be able to master relational algebra and Structured Query Language (SQL).
5. Be familiar with database design and normalization theory.
6. Be familiar with database storage organization and indexing.
7. Be familiar with query processing and optimization algorithms.
8. Be familiar with database application development and security.
9. Be familiar with Big Data Analytics and NoSQL.

Primary Text (required):

Database System Concepts, 7th Edition,
Avi Silberschatz, Henry F. Korth and S. Sudarshan,
McGraw-Hill, 2021. ISBN: 9780078022159 (print), 9781265001360 (digital).
https://www.mheducation.com/highered/product/Database-System-Concepts-Silberschatz.html

Assessment Components:

Class Participation:
Student participation in this class can be counted from the attendance, the Canvas contribution (the volume of student work/activity on Canvas) and the discussion participation in the class.

Quizzes:
Generally, quizzes will be given based on the readings and topics covered in classes. Quizzes will test students' knowledge on the most important aspects of the readings and understanding of the topics covered in some modules. ***Quizzes will be available only on Fridays.***

Homework Assignments:
Written homework assignments/exercises Assignments may be turned in using the dropbox on canvas. Please use a high resolution black and white scan for handwritten exercises. ***Homework assignments will be due at 11:59 pm on Wednesdays.***

Project:
Each group of 2 to 4 students need to work in one project through the term. Components of the project may include a proposal, application description and ER diagram, relational design and development plan, final report, and presentation & demo. Projects may be turned in using the dropbox on canvas before the due date in each step.

Exams:
There will be one **midterm exam** during the semester at the normal lecture time, which will cover the first half of the class topics. There will also be a **final exam** during finals week, which will cover the second half of the class topics.

Grading:

Participation	**5%**
Quizzes	**10%**
Homework Assignments	**30%**
Project	**15%**
Midterm Exam	**20%**
Final Exam	**20%**

Grading Scale:

for score x in 90 _ x	**A**
80 _ x < 90	**B**
70 _ x < 80	**C**
60 _ x < 70	**D**
x < 60	**F**

Late Submission Policy:
Assignments may be turned in late, but not more than two weeks. All the late submissions may lose a percentage of their graded point values according to the following schedule:

On time : **0%,** 1-3 days : **10%,** 4-7 days : **20%,** 8-14 days : **40%,** > 14 days : **100%**

CSCE 5350 - Course Outline (*Tentative Schedule*):

Weeks	**Reading chapters and Topics**	**Quiz (Q) & Homework (H), (on/due date)**
Jan 12-16	Overview of Class **Ch1** – Introduction to Databases (M1)	
Jan 19-23	**Ch2** – The Relational Data Model (M2)	**H1 (Ch1 & 2) (01/28)**
Jan 26-30	**Ch6** – Database Design Using the E-R Model (M3)	**Q1 (01/30), H2 (Ch6) (02/04),** ***Project (Step 1): Group formation & Application domain due on (01/30)***
Feb 2-6	**Ch3** – Introduction to SQL (M4)	
Feb 9-13	**Ch4 & 5** – Intermediate & Advanced SQL (M4, cont.)	**Q2 (02/13), H3 (Ch3 & 4) (02/18)** **Project (Step 2): Application description and ER diagram due on (02/13)**
Feb 16-20	SQL practices	
Feb 23-27	SQL practices	**H4 (SQL practices) (03/04)**
Mar 2-6	**Mid-Term Exam (*Thursday 03/05/26)***	
Mar 9-13	***Spring Break - No Classes***	
Mar 16-20	**Ch7** – Relational Database Design (M5)	**H5 (Ch7) (03/25)**
Mar 23-27	**Ch 8 & 9** – Complex Data Types and Application Development (M6)	**Q3 (03/27), H6 (Ch8 & 9) (04/01),** ***Project (Step 3): Relational design and development plan due on (03/27)***
Mar 30-Apr 3	**Ch12 & 13** – Storage Management (M7)	
Apr 6-10	**Ch14** – Indexing (M7, cont.)	**Q4 (04/10), H7 (Ch12, 13 & 14) (04/15)**
Apr 13-17	**Ch15 & 16** – Query Processing & Optimization (M8)	**H8 (Ch15 & 16) (04/22)**
Apr 20-24	**Ch10 & 11** – Big Data Analytics & NoSQL (M9)	**Q5 (04/24),** ***Project (Step 4): Final report due on (04/24)***
Apr 27-May 1	***Project (Step 5): Presentation & Demo (Online Discussion Forum on 04/30)***	
May 4-8	**Final Exam (*Thursday 05/07/2026*)**	

Communication

Students are expected to communicate with the instructor/TAs through the office hours, using only the UNT emails of students and instructor/TAs, and/or the communication facilities provided in Canvas. Connect with me through email and/or by attending office hours. During busy times, my inbox becomes rather full, so if you contact me and do not receive a response within two business days, please send a follow up email. A gentle nudge is always appreciated.

Laboratory Safety Procedures and Guidelines policy

Students can access this policy at: Laboratory Safety Procedures and Guidelines policy (PDF) (https://policy.unt.edu/sites/default/files/06.049_Standard%20Syllabus%20Policy%20Statements_supplement.pdf).

Attendance and Participation

Research has shown that students who attend class are more likely to be successful. You should attend every class unless you have a university excused absence such as active military service, a religious holy day, or an official university function as stated in the Student Attendance and Authorized Absences Policy (PDF) (https://policy.unt.edu/sites/default/files/06.039_StudAttnandAuthAbsence.Pub2_.19.pdf). If you cannot attend a class due to an emergency, please let me know. Your safety and well-being are important to me.

Digital Requirements

This course has digital components. To fully participate in this class, students will need internet access to reference content on the Canvas Learning Management System. If circumstances change, you will be informed of other technical needs to access course content.
Information on how to be successful in a digital learning environment can be found at Learn Anywhere (https://online.unt.edu/learn).

How to Succeed in this Course

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time; however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, refer to the Office of Disability Access website (http://www.unt.edu/oda). You may also contact ODA by phone at (940) 565-4323.

Supporting Your Success and Creating an Inclusive Learning Environment

Every student in this class should have the right to learn and engage within an environment of respect and courtesy from others. We will discuss our classroom's habits of engagement and I also encourage you to review UNT's student code of conduct so that we can all start with the same baseline civility understanding (Code of Student Conduct) (https://deanofstudents.unt.edu/conduct)

Academic integrity, student misconduct, and professionalism policies for CSE

These are the policies of the Department of Computer Science and Engineering (CSE) at University of North Texas related to academic integrity, student misconduct, and professionalism.

All department policies on Academic Integrity and Student Conduct apply for this course – these are available at the following link:

https://engineering.unt.edu/cse/students/resources/academic-integrity.html

You can also download one copy form the course site on Canvas.

Artificial Intelligence in Academic Integrity

Students need to be aware the "unauthorized" use of any person or technology that assists in a student's assignment, project, or paper is considered cheating under the UNT Student Academic Integrity Policy (UNT Policy 6.003). Unless a professor or instructor gives explicit "authorization," AI cannot be used to assist in the completion of assignments, projects, or papers. Doing so will result in a "cheating" violation. Again, if uncertain contact the instructor prior to using AI tools.

Other University Polices

Students will be aware about Eagle Alert if there is a campus closing that will impact a class and the calendar is subject to change, refer to the Emergency Notifications and Procedures Policy (PDF) and the Campus Closures Policy (https://policy.unt.edu/policy/15-006).

Students can access these policies in Navigate (Navigate.unt.edu), in Canvas under the Help menu, in EIS, and on the Student Support Services & Policies page.