

Course Syllabus

 Edit

CSCE 4350 / Fundamentals of Database Systems

Instructor Information

Name: Dr. Jacob Hochstetler (he/him)

Office Location: F201

Student Hours: T 1400-1500 or via Zoom (please email to schedule)

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Course Description, Structure, and Objectives

This course covers topics including logical and physical database system organization, logical models, design issues, and secondary storage considerations. Students develop and practice skills through the use of projects and real-world database creation.

This course has a module structure. Each module will have a reading / video / assignment to complete and most modules will have a quiz, homework or exam.

Course Prerequisites or Other Restrictions

None.

Course Outcomes

Students will be able to:

1. Analyze a problem to determine its data requirements.
2. Create a database that satisfies the given data requirements.
3. Create, maintain and access data in a database using SQL.
4. Describe and demonstrate how B+-tree and hashing speed data access.
5. Describe and implement the theory of functional dependencies for Database design.

Required/Recommended Materials

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)  [. \(https://online.unt.edu/learn\)](https://online.unt.edu/learn). There is no text required for the course – all resources are online.

Optional Text

[Database System Concepts](https://www.amazon.com/dp/1260084507)  [. \(https://www.amazon.com/dp/1260084507\)](https://www.amazon.com/dp/1260084507)

by Abraham Silberschatz, Henry Korth, S. Sudarshan, 2019, ISBN 1260084507

How to Succeed in this Course

Netiquette

Netiquette, or online etiquette, refers to the way students are expected to interact with each other and with their instructors online. Here are some general guidelines:

- Treat your instructor and classmates with respect in email or any other communication.
- Remember that all college level communication should have correct spelling and grammar (this includes discussion boards).
- Avoid slang terms such as “fr fr” and abbreviations such as “u” instead of “you.”
- Humor and sarcasm are highly encouraged. People who take the world seriously are in for a rough journey.
- Don’t lead your emails off with your social security and bank account numbers, password manager master password, home address, credit score, and dental record jpegs. Just three of those will suffice.
- No extra credit will be given for mentioning my [kitten](https://knowyourmeme.com/memes/orange-cat-behavior)  [. \(https://knowyourmeme.com/memes/orange-cat-behavior\)](https://knowyourmeme.com/memes/orange-cat-behavior).

See these [Netiquette Guidelines](https://clear.unt.edu/online-communication-tips)  [. \(https://clear.unt.edu/online-communication-tips\)](https://clear.unt.edu/online-communication-tips) (Links to an external site.) for more information.

Communication Expectations

Please send all communication as email via your official student UNT email (my.unt.edu).

Just like you, I receive a virtual ton of spam to my email address, and if it has *[EXT]* in the subject line, there's a ~95% chance I'm just deleting it. Additionally, I cannot discuss any student issues through external email due to FERPA, i.e. I cannot confirm that I *know* it's *you* I'm conversing with.

I have a 48 hour reply policy on all emails, excepting weekends and holidays. All grades will be posted promptly after grading has been completed.

Please come to me with any issues. Sending an email is free and if I can't resolve it, we can move the issue up the chain.

In your emails please include:

- **Subject:** the course (e.g. CSCE4600) that you are emailing about and a few words (aka, *the Subject*)
- **Body:** a signature with your email with your name and UNT ID number.

This helps me not only help you, but if there are multiple issues with the course (i.e. a module is broken for instance), I can quickly collate the issue. I flag these emails with my preferred **color** ➡

(<https://en.wikipedia.org/wiki/Red>).

ODA

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** ➡ (<https://studentaffairs.unt.edu/office-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

I value the many perspectives students bring to our campus. Please work with me to create a classroom culture of open communication, mutual respect, and inclusion. All discussions should be respectful and civil. Although disagreements and debates are encouraged, personal attacks are unacceptable. Together, we can ensure a safe and welcoming classroom for all. If you ever feel like this is not the case, please stop by my office and let me know. We are all learning together.

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)  [_.\(https://deanofstudents.unt.edu/conduct\)_](https://deanofstudents.unt.edu/conduct))
(<https://deanofstudents.unt.edu/conduct>)

Technical Assistance

Part of working in the online environment involves dealing with the inconveniences and frustration that can arise when technology breaks down or does not perform as expected. Here at UNT we have a Student Help Desk that you can contact for help with Canvas or other technology issues.

UNT Help Desk  [_.\(https://it.unt.edu/helpdesk\)](https://it.unt.edu/helpdesk)

Call: [940-565-2324](tel:940-565-2324) (tel:940-565-2324)

Email: helpdesk@unt.edu (mailto:helpdesk@unt.edu)

Walk-in: Sage Hall, Room 330

Walk-in Hours: Monday–Friday: 8am - 5pm

Telephone Availability:

- Monday–Thursday: 8am – 9pm
- Friday: 8am- 5pm
- Saturday: 11am- 3pm

For additional support, visit [Canvas Support FAQ](https://www.instructure.com/support/canvas-support-faq) (<https://www.instructure.com/support/canvas-support-faq>)

Laptop Checkouts  [_.\(https://library.unt.edu/services/laptop-checkout/\)](https://library.unt.edu/services/laptop-checkout/)

The following library service desks provide laptop checkouts during [hours of operation](https://calendar.library.unt.edu/hours)  [_.\(https://calendar.library.unt.edu/hours\)_](https://calendar.library.unt.edu/hours). MacBooks are only available at Willis Library.

- **Willis Library:** [The Spark](https://guides.library.unt.edu/spark)  [_.\(https://guides.library.unt.edu/spark\)_](https://guides.library.unt.edu/spark), First Floor
- **Sycamore Library:** [Sycamore Service Desk](https://library.unt.edu/sycamore/)  [_.\(https://library.unt.edu/sycamore/\)](https://library.unt.edu/sycamore/)
- **Discovery Park:** [Library Service Desk](https://library.unt.edu/discovery-park/)  [_.\(https://library.unt.edu/discovery-park/\)_](https://library.unt.edu/discovery-park/), Room B112

Student Support Services

- **Registrar**  [_.\(https://registrar.unt.edu/registration\)](https://registrar.unt.edu/registration)
- **Financial Aid**  [_.\(https://financialaid.unt.edu/\)](https://financialaid.unt.edu/)
- **Student Legal Services**  [_.\(https://studentaffairs.unt.edu/student-legal-services\)](https://studentaffairs.unt.edu/student-legal-services)
- **Career Center**  [_.\(https://studentaffairs.unt.edu/career-center\)](https://studentaffairs.unt.edu/career-center)

- **Counseling and Testing Services** ➞ <https://studentaffairs.unt.edu/counseling-and-testing-services>
- **Student Affairs Care Team** ➞ <https://studentaffairs.unt.edu/care>
- **Student Health and Wellness Center** ➞ <https://studentaffairs.unt.edu/student-health-and-wellness-center>

Academic Support Services

- **Academic Resource Center** ➞ <https://clear.unt.edu/canvas/student-resources>
- **Academic Success Center** ➞ <https://success.unt.edu/asc>
- **UNT Libraries** ➞ <https://library.unt.edu/>
- **Writing Center** ➞ <https://writingcenter.unt.edu/>
- **Math Lab** ➞ <https://math.unt.edu/mathlab>

Miscellaneous College of Engineering links

- **National Society of Black Engineers (NSBE)** ➞ <https://unt.campuslabs.com/engage/organization/nsbe>
- **Society of Hispanic Professional Engineers** ➞ <https://unt.campuslabs.com/engage/organization/society-of-hispanic-professional-engineers> (SHPE)
- **Society of Women Engineers (SWE)** ➞ <https://www.untswe.org/>
- **Women in Computing (WiC)** ➞ <https://unt.campuslabs.com/engage/organization/women-in-computing>

Assessing Your Work

Percentages of final grade are approximate and subject to change.

Assignment Percentages

Category	Percentage of Final Grade	Notes
Administrative Quizzes	5%	3 x Quizzes
Academic Quizzes	20%	12 x Quizzes
Homework	40%	9 x Assignments
Project	15%	
Midterm	10%	
Final Exam	10%	Comprehensive

Grading Scale

Final Grade	Letter
90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
< 60	F

Grades are rounded to the nearest whole integer (commercial rounding). There is no curving of grades, nor “extra” credit, as it is unfair to the other students.

UNT’s grading system uses the letters A, B, C, D, F, P, NP, I, PR, NPR, and W. 
(<https://registrar.unt.edu/grades/understand-your-grade-report>)

The letter **Z** is used to indicate that a grade was not properly received and/or recorded for a course.

Note: No grade points are allowed for grades F, P, NP, I, PR, NPR, W, or Z.

Course Topics

Module	Topics	Major Assignment
00	Course Overview	
01	What is a Database?	
02	Entity Relationship Diagramming	
03	Structuring data	
04	Querying data	
05	Indexes and B-Trees	
06	Advanced querying	
07	Three Modern Databases	Midterm Exam
08	Management interfaces	
09	NoSQL	
10	RESTful APIs	
11	Highly Scalable and Highly Available Databases	
12	Cloud Data Management	

13 Data Warehousing

14 Data Lakes

15 *No new material*

Final Exam

UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Blackboard for contingency plans for covering course materials.

According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

Course Policies

Attendance and Participation

I have great respect for students who are balancing the demands of their coursework with the responsibilities of caring for family members. If you run into challenges that require you to miss assignment deadlines, please contact me or my TA. There may be some flexibility we can offer to support your academic success.

This course may involve a collaboration project, and participation is essential to learning. If included, this project-based activity requires you to be actively engaged in working together and submitting code.

If you are experiencing any symptoms of COVID, influenza, or norovirus, please seek medical attention from the Student Health and Wellness Center (940-565-2333 or askSHWC@unt.edu (<mailto:askSHWC@unt.edu>)) or your health care provider PRIOR to coming to campus.

Course Evaluation

Student Perceptions of Teaching (SPOT) is the student evaluation system for UNT and allows students the ability to confidentially provide constructive feedback to their instructor and department to improve the quality of student experiences in the course.

Assignment Policy

All assignments are posted to Canvas and should be submitted to Canvas. Assignments cannot be accepted through email.

Late Work Policy

No late submissions will be accepted for any reason. Please start work on assignments and quizzes well before the deadline and on a stable Internet connection to avoid any submission delays due to technical difficulties.

Canvas File Upload Policy

Assignments may require multiple file uploads.

- Do not archive/compress/zip these into one file: Attach them individually.
- The only acceptable file type for upload is what can be **previewed automatically by DocViewer in Canvas** (<https://community.instructure.com/en/kb/articles/662858-what-types-of-files-can-i-preview-in-canvas>).
- Please ensure you have actually submitted your files to Canvas; it is your responsibility to verify that the file has been uploaded and accepted.

AI (Artificial Intelligence) with AI (Academic Integrity) Policy

I expect you to use AI (GitHub Copilot, Cody, Ghostwriter, ChatGPT, etc.), in this class. Learning to use AI is an emerging skill, and I am happy to meet and help with these tools during office hours or after class.

Be aware of the limits of AI-based code generators:

- If you provide minimum effort prompts, you will get low quality results. You will need to refine your prompts to produce good outcomes. This will take work.
- Don't trust anything it says. If it gives you a number or fact, assume it is wrong unless you either know the answer or can check in with another source. You will be responsible for any errors or omissions provided by the tool. It works best for topics you understand.
- AI is a tool, but one that you need to acknowledge using. Please include a paragraph at the end of any assignment that uses AI explaining what you used the AI for and what prompts you used to get the results. Failure to do so is in violation of academic honesty policies.
- Do not use AI to generate screenshots.

Be thoughtful about when this tool is useful. Don't use it if it isn't appropriate for the case or circumstance.

Screenshot Submission Policy

Many assignments will have you submit screenshots to show you completed the work.

- Do not use AI to generate screenshots.
- Do not take a photo with your phone. **Take a native screenshot with your operating system**  (<https://www.take-a-screenshot.org/>).
- This screenshot should show identifying information: No need to overthink this. The easiest way is just to open up a Notepad.exe (Windows) or Stickies (macOS) and enter your EUID, then take the

screenshot of the assignment. Or you can open up university webmail in a browser tab and have your profile open in the screenshot.

- If you have a 48" wide monitor, and the assignment only takes up 10% of your screen, please crop down the screenshot to only what is needed and no more.

Examination Policy

You may use the Internet or any printed resources during exams, but please do not rely on this as the exams and quizzes have a time limit and the questions are not easily 'Google-able'.

DO NOT POST quiz questions to any online venue (Quizlet, Chegg, CourseHero, etc.) or share quiz questions with other students (GroupMe, Discord, etc.). Violation of this policy will result in a zero for the assignment or exam. You may use online resources during the exam, but all quizzes and exams must be taken by yourself without human help.

Course Summary:

Date	Details	Due
	 <u>Build a database</u> (https://unt.instructure.com/courses/149865/assignments/3200824)	
	 <u>Final Exam</u> (https://unt.instructure.com/courses/149865/assignments/3200825)	
	 <u>LinkedIn Learning Quiz</u> (https://unt.instructure.com/courses/149865/assignments/3200826)	
	 <u>Midterm</u> (https://unt.instructure.com/courses/149865/assignments/3200827)	
	 <u>Module 01: What is a Database? Quiz</u> (https://unt.instructure.com/courses/149865/assignments/3200828)	
	 <u>Module 02: Create an ERD Assignment</u> (https://unt.instructure.com/courses/149865/assignments/3200829)	
	 <u>Module 02: Entity Relationship Diagramming Quiz</u> (https://unt.instructure.com/courses/149865/assignments/3200830)	
	 <u>Module 03: Structuring data Quiz</u>	

Date	Details	Due
	https://unt.instructure.com/courses/149865/assignments/3200831	
	 Module 04: Codecademy 'Learn SQL' Lesson Assignment https://unt.instructure.com/courses/149865/assignments/3200832	
	 Module 04: Querying data Quiz https://unt.instructure.com/courses/149865/assignments/3200833	
	 Module 05: Indexing Quiz https://unt.instructure.com/courses/149865/assignments/3200834	
	 Module 05: W3 Schools SQL Quiz Assignment https://unt.instructure.com/courses/149865/assignments/3200835	
	 Module 06: Advanced querying Quiz https://unt.instructure.com/courses/149865/assignments/3200836	
	 Module 06: SQL Bolt 1-18 Assignment https://unt.instructure.com/courses/149865/assignments/3200837	
	 Module 08: Database Management Interfaces Quiz https://unt.instructure.com/courses/149865/assignments/3200838	
	 Module 08: Database Management Table Assignment https://unt.instructure.com/courses/149865/assignments/3200839	
	 Module 09: NoSQL Quiz https://unt.instructure.com/courses/149865/assignments/3200840	
	 Module 09: NoSQL: Couchbase Install and Demo Assignment https://unt.instructure.com/courses/149865/assignments/3200841	
	 Module 10: BatterDB Assignment https://unt.instructure.com/courses/149865/assignments/3200842	

 **Module 10: RESTful APIs Quiz**
(<https://unt.instructure.com/courses/149865/assignments/3200843>)

 **Module 11: Highly Scalable and Highly Available Databases Quiz**
(<https://unt.instructure.com/courses/149865/assignments/3200844>)

 **Module 12: Cloud Data Management Assignment**
(<https://unt.instructure.com/courses/149865/assignments/3200845>)

 **Module 13: Data Warehouses Quiz**
(<https://unt.instructure.com/courses/149865/assignments/3200846>)

 **Module 13: Querying your Cloud Database Assignment**
(<https://unt.instructure.com/courses/149865/assignments/3200847>)

 **Module 14: Data Lakes Quiz**
(<https://unt.instructure.com/courses/149865/assignments/3200848>)

 **Student Academic Integrity Policy Quiz**
(<https://unt.instructure.com/courses/149865/assignments/3200856>)

 **Syllabus Quiz**
(<https://unt.instructure.com/courses/149865/assignments/3200857>)
