Welcome to Fall 2022 Syllabus

My name is Kamran Z. Khan, and I will be your instructor for this course. I am looking forward to a terrific semester with you.

This is not a self-paced course--it's important that you keep on top of the weekly reading and assignments!

Each of you must manage your own time each week to know when assignments, and any other weekly course obligations, are due. This will involve regularly logging into eLearning to check discussion forums and communications, monitoring your UTD email address, and virtually interacting with classmates, team members, instructors, and course materials.

At this point, I suggest the following actions:

- ✓ Log into eLearning and begin to familiarize yourself with the course site
- ✓ Make sure you've confirmed your email address in the eLearning system so you can receive messages and announcements via eLearning
- ✓ Read through the Syllabus so you know the rhythm of course, and what is expected.
- ✓ Please post your specific questions about the class in the Getting Started forum
- ✓ Take Quiz 1 available under Quizzes and Exams at eLearning – due by August 28th

I look forward to working with you this semester and getting off to a strong start!

Best,
Kamran Z. Khan
Assistant Professor of Instruction
Erik Jonsson School of Engineering & Computer Science
The University of Texas at Dallas
800 W. Campbell Rd. EC32, Richardson, TX 75080
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kkhan@utdallas.edu

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Contact Information

Modality	In Person
Course	CS/SE: 4347.501
Course Title	**Database Systems**
Term	Fall 22
Course Number/Section	Section 501: Mon/Wed: 7:00-8:15pm
Name	Professor: Kamran Z. Khan
Phone	Cell: (214) 280 - 7124 Office: (972) 883 – 3892
Office Location / Hours	ECSS 4.607 or by Appt: Tue/Thurs 3:45pm – 5:30pm
Email	kkhan@utdallas.edu
Email Subject	4347.501
TA/Grader	TBD

General Course Information

Pre-requisites
Pre-/Co-requisite

CE 3345 or CS 3345 or SE 3345 or TE 3345

Course Description

This course emphasizes the concepts and structures necessary for the design and implementation of database management systems. Topics include data models, data normalization, data description languages, query facilities, file organization, index organization, file security, data integrity, and reliability. Additional Material will be posted on eLearning

Learning Outcomes

1. Understand Data Modeling
2. Understand the Relational Model and theory
3. Understand normalization of relations
4. Gain a fundamental understanding of SQL programming
5. Understand and protect against SQL attacks
6. Understand data organization methods, indexing, and query processing
7. Understand database integrity and concurrency

COVID-19 Guidelines and Resources

The information contained in the following links list the University's COVID-19 resources for students and instructors of record.

https://go.utdallas.edu/syllabus-policies
https://www.utdallas.edu/covid/

Unless recommended by UTD, there will not be an asynchronous option for this class. Students required to quarantine by the university will be given an opportunity to attend class remotely (synchronously) for the duration of the quarantine. If you feel sick, please fill out the daily health check and complete the required actions by UTD. A remote synchronous option will not be provided without communication from the university.

Lecture notes will be available on eLearning
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DO YOU NEED ASSISTANCE?
1. Try to solve it yourself – use the internet to research the problem and try different solutions. If you can't solve it after a couple of hours move to the next level.

2. Consult with your classmates – Post your question in eLearning discussion board.

3. Visit me during office hours – If you are truly stumped, I will give you the information you need to move forward.

Help Desk: For help with issues regarding your computer, UTD maintains a walk-in help desk. Visit their Web site for details: http://www.utdallas.edu/ir/helpdesk/

If you need help, please make the effort to reach out. We can't help you if we don't know that you need help.

- **WHAT IS REQUIRED?**
- **Textbook**
  - **Fundamentals of Database Systems (7th Edition)**
    ISBN-13: 978-0133970777
    ISBN-10: 0133970779

- **Required Software**

MySQL Windows	https://dev.mysql.com/downloads/installer/
MySQL macOS	https://dev.mysql.com/downloads/mysql/
DB Designer	https://www.dbdesigner.net/
Visual Studio Code	https://code.visualstudio.com/download
Visual Studio Code (Tutorial)	https://www.youtube.com/watch?v=VqCgcpAypFQ
Scrum Training (FYI, Optional)	https://scrumtrainingseries.com/

- **Required Architecture**
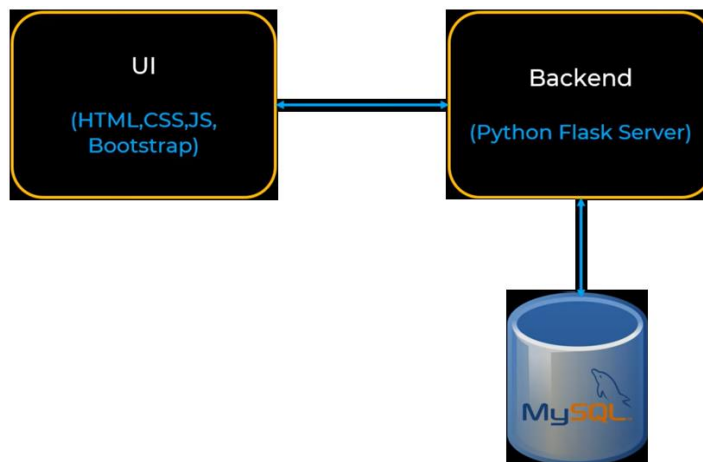
Class Participation

Regular class participation is expected regardless of course modality. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus.

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Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student Accessibility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student Accessibility accommodation.

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Class Materials

The Instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course lecture; however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class or uploaded to other online environments except to implement an approved Office of Student Accessibility accommodation.

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Failure to comply with these University requirements is a violation of the [Student Code of Conduct.](#)

Technical Requirements

In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements on the [Getting Started with eLearning](#) webpage.

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Course Access and Navigation

This course can be accessed using your UT Dallas NetID account on the [eLearning](#) website. Please see the course access and navigation section of the [Getting Started with eLearning](#) webpage for more information.

To become familiar with the eLearning tool, please see the [Student eLearning Tutorials](#) webpage.
UT Dallas provides eLearning technical support 24 hours a day, 7 days a week. The [eLearning Support Center](#) includes a toll-free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service.

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Communication

This course utilizes online tools for interaction and communication. Some external communication tools such as regular email and a web conferencing tool may also be used during the semester. For more details, please visit the [Student eLearning Tutorials](#) webpage for video demonstrations on eLearning tools. Student emails and discussion board messages will be answered within 3 working days under normal circumstances.

Discussion Board: The fastest and easiest way to get help is by posting your questions on eLearning on the class's discussion board, not by email. You will be able to post your questions, anonymously if you wish, about anything related to the class (except grades) and get a response either from me or your classmates. Since there are multiple students that can answer questions, you should get a quicker response allowing you to complete the tasks you are working on. If you have a question during a lecture, do not hesitate to raise your and ask.

Email: students **must include their course and section number** while sending emails to instructor or graders to get prompt response.

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Distance Learning Student Resources

Online students have access to resources including the McDermott Library, Academic Advising, The Office of Student Accessibility, and many others. Please see the [eLearning Current Students](#) webpage for more information.

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Server Unavailability or Other Technical Difficulties

The University is committed to providing a reliable learning management system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and also contact the online [eLearning Help Desk](#). The instructor and the eLearning Help Desk will work with the student to resolve any issues at the earliest possible time.

An exam should not be missed except for the most extreme circumstances (such as hospitalization or death of an immediate family member). If you miss an exam, you must have documentation for the absence. A make-up exam may be given to students with valid documentation. The allowance of a make-up exam is at the sole discretion of the instructor.

Grading Policy:

Exams: 50%   (**2 midterm and 1 final exam)**
Assignments: In Class, Quizzes, Homework & Project Average: 50%

In Class assignments require class interaction and cannot be made up

Departmental Attendance Policy: The Computer Science Department has implemented the following attendance policy beginning Fall 2016: If a student misses three consecutive classes, the student will receive a letter grade reduction to his or her final grade. This deduction is cumulative, so if a student misses three consecutive classes twice, the final grade will be reduced by two letter grades. If a student misses four consecutive classes, the student will automatically receive an F for his or her final grade.

Grading Scale:

98-100 A+	88-89 B+	78-79 C+	68-69 D+	Below 60 F
92-97 A	82-87 B	72-77 C	62-67 D	
90-91 A-	80-81 B-	70-71 C-	60-61 D	

Classroom Citizenship	The instructor encourages students to take active part in class discussions. No question is too simple/stupid to be asked. So, do not hesitate.
Comet Creed	*This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:* *"As a Comet, I pledge honesty, integrity, and service in all that I do."*
UT Dallas Syllabus Policies and Procedures	*The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.* *Please go to http://go.utdallas.edu/syllabus-policies for these policies.*

Course Learning Outcome (CLO):

1. Understand Data Modeling
2. Understand the Relational Model and theory
3. Understand normalization of relations
4. Gain a fundamental understanding of SQL programming
5. Understand and protect against SQL attacks
6. Understand data organization methods, indexing, and query processing
7. Understand database integrity and concurrency

Chapters:
1. Databases and Database Users
2. Database System Concepts and Architecture
3. Data Modeling Using the Entity–Relationship (ER) Model
4. The Enhanced Entity–Relationship (EER) Model
5. The Relational Data Model and Relational Database Constraints
6. Basic SQL
7. More SQL: Complex Queries, Triggers, Views, and Schema Modification
8. The Relational Algebra and Relational Calculus
9. Relational Database Design by ER- and EER-to-Relational Mapping

14. Basics of Functional Dependencies and Normalization for Relational Databases
15. Relational Database Design Algorithms and Further Dependencies
16. Disk Storage, Basic File Structures, Hashing, and Modern Storage Architectures
17. Indexing Structures for Files and Physical Database Design
18. Strategies for Query Processing
19. Query Optimization
20. Introduction to Transaction Processing Concepts and Theory
21. Concurrency Control Techniques
22. Database Recovery Techniques

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.

	Date	Topic	CLOs		Due
1	22-Aug	Introduction			
2	24-Aug	Ch 1: Databases and Database Users	CLO 1		
3	29-Aug	Ch 2: Database System Concepts and Architecture	CLO 1	HW #1	
4	31-Aug	Ch 2: Database System Concepts and Architecture	CLO 1		
5	5-Sep	Ch 3: Data Modeling Using the Entity–Relationship (ER) Model	CLO 1		
6	7-Sep	Ch 3: Data Modeling Using the Entity–Relationship (ER) Model	CLO 1		HW #1
7	12-Sep	Ch 4: The Enhanced Entity–Relationship (EER) Model	CLO 1		
8	14-Sep	Ch 4: The Enhanced Entity–Relationship (EER) Model	CLO 1	Project	
9	19-Sep	Ch 5: The Relational Data Model and Relational Database Constraints	CLO 2		
10	21-Sep	Ch 6: Basic SQL	CLO 4	HW #2	
11	26-Sep	Ch 6: Basic SQL	CLO 4		
12	28-Sep	Ch 7: More SQL: Complex Queries, Triggers, Views, and Schema Modification	CLO 4		
13	3-Oct	Ch 7: More SQL: Complex Queries, Triggers, Views, and Schema Modification	CLO 4		HW #2
14	5-Oct	Exam I (5:30pm – 6:45pm)			
15	10-Oct	Ch 8: The Relational Algebra and Relational Calculus	CLO 6		
16	12-Oct	Ch 9: Relational Database Design by ER- and EER-to-Relational Mapping			
17	17-Oct	Ch 14: Basics of Functional Dependencies and Normalization for Relational Databases	CLO 3		
18	19-Oct	Ch 15: Relational Database Design Algorithms and Further Dependencies	CLO 6	HW #3	
19	24-Oct	Ch 16: Disk Storage, Basic File Structures, Hashing, and Modern Storage Architectures	CLO 6		
20	26-Oct	Ch 17: Indexing Structures for Files and Physical Database Design	CLO 6		
21	31-Oct	CH 18: Strategies for Query Processing	CLO 6		HW #3
22	2-Nov	Exam II (5:30pm – 6:45pm)			
23	7-Nov	Ch 19: Query Optimization	CLO 6		
24	9-Nov	Ch 20: Introduction to Transaction Processing Concepts and Theory	CLO 7	HW #4	
25	14-Nov	Ch 20: Introduction to Transaction Processing Concepts and Theory	CLO 7		
26	16-Nov	Ch 21: Concurrency Control Techniques	CLO 7		HW #4
27	21-Nov	No Class (Fall Break & Thanksgiving Holiday)			
28	23-Nov	No Class (Fall Break & Thanksgiving Holiday)			
29	28-Nov	Proection against SQL attacks	CLO 5	HW #5	Project
30	30-Nov	Ch 22: Database Recovery Techniques	CLO 7		
31	5-Dec	Review			HW #5
32	7-Dec	Exam III (5:30pm – 6:45pm)			