

## **CIS 5316-110, 11824, Advanced Database Management**

**Spring 2022**

Texas A&M University-Central Texas

### **COURSE DATES, MODALITY, AND LOCATION**

**Course Dates:** Jan 18, 2022 – May 13, 2022

**Modality:**

This course meets face-to-face on Wednesdays from 6:00-9:00 PM, with supplemental materials made available online through the A&M-Central Texas Canvas Learning Management System [<https://tamuct.instructure.com/>].

**Location:** Founder's Hall 207

### **INSTRUCTOR AND CONTACT INFORMATION**

**Instructor:** Dr. Khaldoon Dhou

**Office:** FH 323

**Phone:** 254-519-5437

**Email:** [kdhou@tamuct.edu](mailto:kdhou@tamuct.edu)

### **Office Hours**

My office hours will be on Monday and Tuesday from 8 AM to 11 AM. Because of the pandemic, I will hold my office hours virtually. You can email me and we can meet using Zoom, Skype, phone, or any way. If there is a need to meet face-to-face, please email me to arrange it. Please feel free to email me at anytime if you need any help. In other words, you are not limited to my office hours and you can always seek help.

### **Student-instructor interaction**

I should respond to your emails within 24-48 hours and I do my best to answer very quickly. You can also email me to arrange an appointment with me. Because of the pandemic, I prefer to meet virtually, but I understand that there are times when a student needs to meet in person. So, I am open to either way while using a facial mask and maintaining a social distance in face-to-face meetings.

### **Emergency Warning System for Texas A&M University-Central Texas**

**SAFEZONE.** SafeZone provides a public safety application that gives you the ability to call for help with the push of a button. It also provides Texas A&M University-Central Texas the ability to communicate emergency information quickly via push notifications, email, and text messages. All students automatically receive email and text messages via their myCT accounts.

Downloading SafeZone allows access to push notifications and enables you to connect directly for help through the app.

You can download SafeZone from the app store and use your myCT credentials to log in. If you would like more information, you can visit the [SafeZone](http://www.safezoneapp.com) website [www.safezoneapp.com].

To register SafeZone on your phone, please follow these 3 easy steps:

1. Download the SafeZone App from your phone store using the link below:
  - o [iPhone/iPad](https://apps.apple.com/app/safezone/id533054756): [https://apps.apple.com/app/safezone/id533054756]
  - o [Android Phone / Tablet](https://play.google.com/store/apps/details?id=com.criticalarc.safezoneapp) [https://play.google.com/store/apps/details?id=com.criticalarc.safezoneapp]
2. Launch the app and enter your myCT email address (e.g. {name}@tamuct.edu)
3. Complete your profile and accept the terms of service

## **COURSE INFORMATION**

### **Course Overview and description**

This course examines the methodologies of database management including data models, database design, normalization, SQL/ PLSQL, NoSQL, performance and reliability, distributed database, data dictionaries, data integrity, security, and privacy.

### **Course Objective or Goal**

#### **Student Learning Outcomes**

Successful completion of this course should enable the student to

- Apply methodologies such as entity relationship diagrams and normalization in the implementation and modification of database
- Create and use tables, views, updatable views, triggers and stored procedures
- Use the advanced SQL to create subqueries and correlated queries
- Use SQL functions to manipulate dates, strings, and other data
- Use SQL statements in a procedural programming language to manipulate database data
- Discuss what concurrency control is and what role it plays in maintaining the database's integrity
- Explain distributed database management systems (DDBMSs) and their components
- Analyze factors that affect the performance of a database system
- Formulate efficient queries and tune the DBMS for optimal performance
- Discuss the four major approaches of the NoSQL data model and how they differ from the relational model
- Discuss integrity, security, and privacy issues: review SQL standard and implementation-specific commands

### **Competency Goals Statements (certification or standards)**

NA

### **Required Reading and Textbook(s)**

- Textbook: Database Systems: Design, Implementation, and Management, Coronel and Morris,

13th Edition, Copyright 2019, CENGAGE, ISBN-13: 9781337627900

Note: An electronic version of the books may be available.

Note: A student of this institution is not under any obligation to purchase a textbook from a university-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer

Optional / Reference Texts:

- T-SQL Fundamentals (3rd Edition) 3rd Edition by Itzik Ben-Gan, ISBN: 9781509302000
- Beginning SQL Server 2012 Programming by Atkinson & Vieira, ISBN: 9781118102282 American Psychological Association. (2009). Publication Manual of American Psychological Association (6th ed.). Washington, D.C
- Exam Ref 70-765 Provisioning SQL Databases (1st edition) by Joseph D'Antoni and Scott Klein, ISBN-13: 9781509303816
- Exam Ref 70-764 Administering a SQL Database Infrastructure (1st edition) by Victor Isakov, ISBN-13: 9781509303830
- Hands-On Database (2nd edition) by Steve Conger, ISBN-13: 978013761509

Purdue Online Writing Lab for APA: <https://owl.english.purdue.edu/owl/section/2/10/>

- Supplementary Material: The course textbook will be supplemented with other materials including handouts, oral presentations, industry articles, videos, research paper readings, case studies, power point presentations etc.
- On-Line References TBA
- Students preferring to use their own computers are required to have products, data encodings, file names, system structure, and products equal to those provided in the computer lab and the server used in class.
- Current publications - The campus library contains numerous books and periodicals relating to Computer Science. The student should take advantage of this resource by visiting the library.

Other material will be provided by the instructor as needed

## **COURSE REQUIREMENTS**

Attendance/Participation Policy: Class attendance is required. The policy as officially stated by the University will be enforced. Students are expected to make arrangements with the instructor before missing a series of classes due to job requirements. Students are responsible for any material missed during an absence. In all cases, the responsibility remains with the students to meet/obtain all course requirements/changes. Regular course progress is expected. It is each student's responsibility to review the blackboard and syllabus for the latest information, assignments and examinations.

Exams: There will be two exams: midterm and final. Each is worth 15 points (15%). Details about the midterm and final exams will be provided to you in the class

Assignments: During the semester, you will get different assignments that measure your understanding to the material and help you gain programming skills. Multiple submissions before the deadline are allowed. You need to zip the files before submission if the assignment has multiple files. Before you submit any assignment, run it on your computer and make sure it works. It is your responsibility to make sure your submission works. Assignments are worth 40 points (40%). More details about the assignments will be provided in the class.

Term Project: There will be one term project that is worth 30 points (30%). The details will be provided later in the class.

### Grading Criteria Rubric and Conversion

The final grade for the course will be based upon the following:

Item	Points	Percentage
Exams	30	30%
Assignments	40	40%
Project	30	30%
Total	100	100%

Grade	Percentage
A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	0-59%

### Posting of Grades

All student grades will be posted on the Canvas Grade Book and students should monitor their grading status through this tool. Grades will be posted within 7 days after of the due date

### Grading Policies

I do not accept late work. However, I am a firm believer that there are situations where a student cannot submit the work on time (i.e. sickness). If you believe you have a legitimate reason that did not allow you to finish the work and submit it by the deadline, please come and talk to me

and depending on the situation, I can make an exception for you to make up the work. I will judge this on a case-by-case basis and it is up to me to accept your excuse or not. I always advise students to start working on the assignments as soon as they get them.

## **COURSE OUTLINE AND CALENDAR**

### **Complete Course Calendar**

Below is a tentative schedule that is subject to change by instructor

<b>Weeks</b>	<b>Topics</b>	<b>Assignments Due</b>
<b>Week 1</b> <b>Jan 18 – Jan 23</b>	Welcome and Introduction Chapter 1 – Database systems	Reading syllabus
<b>Week 2</b> <b>Jan 24 – Jan 30</b>	Chapter 2 – Data Models Chapter 3 – The Relational Database Model	Assignment 2
<b>Week 3</b> <b>Jan 31 – Feb 6</b>	Chapters 4 – ER Modeling	Assignment 3
<b>Week 4</b> <b>Feb 7 – Feb 13</b>	Chapters 5 – Advanced Data Modeling	Assignment 4
<b>Week 5</b> <b>Feb 14 – Feb 20</b>	Chapters 6 – Normalization of Database Tables	Assignment 5 Project phase 1
<b>Week 6</b> <b>Feb 21 – Feb 27</b>	Chapter 7 – Introduction to SQL	Assignment 6
<b>Week 7</b> <b>Feb 28 – Mar 6</b>	Chapter 8 – Advanced SQL	Assignment 7
<b>Week 8</b> <b>Mar 7 – Mar 13</b>	Chapter 9 – Database Design Midterm	Assignment 8
<b>Week 9</b> <b>Mar 14 – Mar 20</b>	Spring Break No classes	
<b>Week 10</b> <b>Mar 21 – Mar 27</b>	Chapter 10 – Transaction Management and Concurrency Control	Assignment 9 Project phase 2
<b>Week 11</b> <b>Mar 28 – Apr 3</b>	Chapter 11 – Database Performance Tuning and Query Optimization	Assignment 10

<b>Week 12</b> <b>Apr 4 – Apr 10</b>	Chapter 12 – Distributed Database Management Systems	Assignment 11
<b>Week 13</b> <b>Apr 11 – Apr 17</b>	Chapter 13 – Business Intelligence & Data Warehouses	Assignment 12
<b>Week 14</b> <b>Apr 18 – Apr 24</b>	Chapter 14 – Big Data & NOSQL	Assignment 13 Final project
<b>Week 15</b> <b>Apr 25 – May 1</b>	Chapter 16 – Database Administration	Assignment 14
<b>Week 16</b> <b>May 2 – May 8</b>	Final Exam	

### Important University Dates

January 17, 2022	Martin Luther King, Jr Day (University Closed)
January 18, 2022	Add, Drop and Late Registration Begins for 16- and First 8-Week Classes \$25 Fee assessed for late registrants
January 18, 2022	Classes Begin for Spring Semester
January 20, 2022	Deadline for Add, Drop, and Late Registration for 16- and First 8-Week Classes
January 25, 2022	Deadline to Drop First 8-Week Classes with No Record
February 1, 2022	Deadline for Teacher Education Program Applications
February 2, 2022	Deadline to Drop 16-Week Classes with No Record
February 25, 2022	Deadline to Drop First 8-Week Classes with a Quit (Q) or Withdraw (W)
March 11, 2022	Classes end for 1st 8-Weeks Session
March 15, 2022	Deadline for Clinical Teaching/Practicum Applications
March 15, 2022	Deadline for Faculty Submission of First 8-Week Final Class Grades (due by 3pm)
March 14-18, 2022	Spring Break (No Classes - Administrative Offices Open)

March 21, 2022	Class Schedule Published for Summer Semester
March 21, 2022	Add, Drop, and Late Registration Begins for Second 8-Week Classes \$25 Fee assessed for late registrants
March 21, 2022	Classes Begin for Second 8-Week Session
March 23, 2022	Deadline for Add, Drop, and Late Registration for Second 8-Week Classes
March 25, 2022	Deadline for Spring Graduation Application for Ceremony Participation
March 28, 2022	Deadline to Drop Second 8-Week Classes with No Record
April 1, 2022	Deadline for GRE/GMAT Scores to Graduate School Office
April 1, 2022	Deadline for School Counselor Program Applications
April 4, 2022	Registration Opens for Summer Semester
April 8, 2022	Deadline to Drop 16-Week Classes with a Quit (Q) or Withdraw (W)
April 16, 2022	Deadline for Final Committee-Edited Theses with Committee Approval Signatures for Spring Semester to Graduate School Office
April 29, 2022	Deadline to drop Second 8-week Classes with a Quit (Q) or Withdraw (W).
May 13, 2022	Deadline to Withdraw from the University for 16- and Second 8-Week Classes
May 13, 2022	Spring Semester Ends
May 13, 2022	Deadline for Applications for Tuition Rebate for Spring Graduation (5pm)
May 13, 2022	Deadline for Spring Degree Conferral Applications to the Registrar's Office. \$20 Late Application Fee.
May 14, 2022	Spring 2022 Commencement at Bell County Expo 7 PM
May 16, 2022	Classes Begin for Minimester
May 17, 2022	Deadline for Faculty Submission of 16-Week and Second 8-Week Final Class Grades (due by 3pm)

## TECHNOLOGY REQUIREMENTS AND SUPPORT

### Technology Requirements

This course will use the A&M-Central Texas Instructure Canvas learning management system. **We strongly recommend the latest versions of Chrome or Firefox browsers. Canvas no longer supports any version of Internet Explorer.**

Logon to A&M-Central Texas Canvas [<https://tamuct.instructure.com/>] or access Canvas through the TAMUCT Online link in myCT [<https://tamuct.onecampus.com/>]. You will log in through our Microsoft portal.

Username: Your MyCT email address. Password: Your MyCT password

### Canvas Support

Use the Canvas Help link, located at the bottom of the left-hand menu, for issues with Canvas. You can select “Chat with Canvas Support,” submit a support request through “Report a Problem,” or call the Canvas support line: 1-844-757-0953.

For issues related to course content and requirements, contact your instructor.

### **Online Proctored Testing**

A&M-Central Texas uses Proctorio for online identity verification and proctored testing. This service is provided at no direct cost to students. If the course requires identity verification or proctored testing, the technology requirements are: Any computer meeting the minimum computing requirements, plus web camera, speaker, and microphone (or headset). Proctorio also requires the Chrome web browser with their custom plug in.

### **Other Technology Support**

For log-in problems, students should contact Help Desk Central, 24 hours a day, 7 days a week

Email: [helpdesk@tamu.edu](mailto:helpdesk@tamu.edu)

Phone: (254) 519-5466

[Web Chat](http://hdc.tamu.edu): [http://hdc.tamu.edu]

*Please let the support technician know you are an A&M-Central Texas student.*

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## **UNIVERSITY RESOURCES, PROCEDURES, AND GUIDELINES**

### **Drop Policy**

If you discover that you need to drop this class, you must complete the [Drop Request](#) Dynamic Form through Warrior Web.

[<https://dynamicforms.ngwebsolutions.com/casAuthentication.ashx?InstID=eaed95b9-f2be-45f3-a37d-46928168bc10&targetUrl=https%3A%2F%2Fdynamicforms.ngwebsolutions.com%2Fsubmit%2FForm%2Fstart%2F53b8369e-0502-4f36-be43-f02a4202f612>].

Faculty cannot drop students; this is always the responsibility of the student. The Registrar’s Office will provide a deadline on the Academic Calendar for which the form must be completed. Once you submit the completed form to the Registrar’s Office, you must go into Warrior Web and confirm that you are no longer enrolled. If you still show as enrolled, FOLLOW-UP with the Registrar’s Office immediately. You are to attend class until the procedure is complete to avoid penalty for absence. Should you miss the drop deadline or fail to follow the procedure, you will receive an F in the course, which may affect your financial aid and/or VA educational benefits.

### **Academic Integrity**

Texas A&M University-Central Texas values the integrity of the academic enterprise and strives for the highest standards of academic conduct. A&M-Central Texas expects its students, faculty,



and staff to support the adherence to high standards of personal and scholarly conduct to preserve the honor and integrity of the creative community. Any deviation by students from this expectation may result in a failing grade for the assignment and potentially a failing grade for the course. All academic misconduct concerns will be referred to the Office of Student Conduct. When in doubt on collaboration, citation, or any issue, please contact your instructor before taking a course of action.

For more [information regarding the Student Conduct process](https://www.tamuct.edu/student-affairs/student-conduct.html),  
[https://www.tamuct.edu/student-affairs/student-conduct.html].

If you know of potential honor violations by other students, you may [submit a report](https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0),  
[https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout\_id=0].

### **Academic Accommodations**

At Texas A&M University-Central Texas, we value an inclusive learning environment where every student has an equal chance to succeed and has the right to a barrier-free education. The Warrior Center for Student Success, Equity and Inclusion is responsible for ensuring that students with a disability receive equal access to the university's programs, services and activities. If you believe you have a disability requiring reasonable accommodations, please contact the Office of Access and Inclusion, WH-212; or call (254) 501-5836. Any information you provide is private and confidential and will be treated as such.

For more information, please visit our [Access & Inclusion](https://tamuct.instructure.com/courses/717) Canvas page (log-in required)  
[https://tamuct.instructure.com/courses/717]

### **Important information for Pregnant and/or Parenting Students**

Texas A&M University-Central Texas supports students who are pregnant and/or parenting. In accordance with requirements of Title IX and related guidance from US Department of Education's Office of Civil Rights, the Dean of Student Affairs' Office can assist students who are pregnant and/or parenting in seeking accommodations related to pregnancy and/or parenting. Students should seek out assistance as early in the pregnancy as possible. For more information, please visit [Student Affairs](https://www.tamuct.edu/student-affairs/pregnant-and-parenting-students.html) [https://www.tamuct.edu/student-affairs/pregnant-and-parenting-students.html]. Students may also contact the institution's Title IX Coordinator. If you would like to read more about these [requirements and guidelines](http://www2.ed.gov/about/offices/list/ocr/docs/pregnancy.pdf) online, please visit the website [http://www2.ed.gov/about/offices/list/ocr/docs/pregnancy.pdf].

Title IX of the Education Amendments Act of 1972 prohibits discrimination on the basis of sex and gender—including pregnancy, parenting, and all related conditions. A&M-Central Texas is able to provide flexible and individualized reasonable accommodation to pregnant and parenting students. All pregnant and parenting students should contact the Associate Dean in the Division of Student Affairs at (254) 501-5909 to seek out assistance. Students may also contact the University's Title IX Coordinator.

### **Tutoring**

Tutoring is available to all A&M-Central Texas students, both virtually and in-person. Student success coaching is available online upon request.

If you have a question, are interested in becoming a tutor, or in need of success coaching contact the Warrior Center for Student Success, Equity and Inclusion at (254) 501-5836, visit the Warrior Center at 212 Warrior Hall, or by emailing [WarriorCenter@tamuct.edu](mailto:WarriorCenter@tamuct.edu).

To schedule tutoring sessions and view tutor availability, please visit [Tutor Matching Services](https://tutormatchingservice.com/TAMUCT) [https://tutormatchingservice.com/TAMUCT] or visit the Tutoring Center in 111 Warrior Hall.

Chat live with a remote tutor 24/7 for almost any subject from on your computer! Tutor.com is an online tutoring platform that enables A&M-Central Texas students to log in and receive online tutoring support at no additional cost. This tool provides tutoring in over 40 subject areas except writing support. Access Tutor.com through Canvas.

### **University Writing Center**

University Writing Center: Located in Warrior Hall 416, the University Writing Center (UWC) at Texas A&M University–Central Texas (A&M–Central Texas) is a free service open to all A&M–Central Texas students. For the Spring 2022 semester, the hours of operation are from 10:00 a.m.-5:00 p.m. Monday thru Thursday in Warrior Hall 416 (with online tutoring available every hour as well) with satellite hours available online only Monday thru Thursday from 6:00-9:00 p.m. and Saturday 12:00-3:00 p.m.

Tutors are prepared to help writers of all levels and abilities at any stage of the writing process. While tutors will not write, edit, or grade papers, they will assist students in developing more effective composing practices. By providing a practice audience for students' ideas and writing, our tutors highlight the ways in which they read and interpret students' texts, offering guidance and support throughout the various stages of the writing process. In addition, students may work independently in the UWC by checking out a laptop that runs the Microsoft Office suite and connects to WIFI, or by consulting our resources on writing, including all of the relevant style guides. Whether you need help brainstorming ideas, organizing an essay, proofreading, understanding proper citation practices, or just want a quiet place to work, the UWC is here to help!

Students may arrange a one-to-one session with a trained and experienced writing tutor by making an appointment via [WConline](https://tamuct.mywconline.com/) [https://tamuct.mywconline.com/]. In addition, you can email Dr. Bruce Bowles Jr. at [bruce.bowles@tamuct.edu](mailto:bruce.bowles@tamuct.edu) if you have any questions about the UWC, need any assistance with scheduling, or would like to schedule a recurring appointment with your favorite tutor by making an appointment via [WConline](https://tamuct.mywconline.com/) [https://tamuct.mywconline.com/]. In addition, you can email Dr. Bruce Bowles Jr. at [bruce.bowles@tamuct.edu](mailto:bruce.bowles@tamuct.edu) if you have any questions about the UWC, need any assistance with scheduling, or would like to schedule a recurring appointment with your favorite tutor.

## **University Library**

The University Library provides many services in support of research across campus and at a distance. We offer over 200 electronic databases containing approximately 400,000 eBooks and 82,000 journals, in addition to the 96,000 items in our print collection, which can be mailed to students who live more than 50 miles from campus. Research guides for each subject taught at A&M-Central Texas are available through our website to help students navigate these resources. On campus, the library offers technology including cameras, laptops, microphones, webcams, and digital sound recorders.

Research assistance from a librarian is also available 24 hours a day through our online chat service, and at the reference desk when the library is open. Research sessions can be scheduled for more comprehensive assistance, and may take place virtually through WebEx, Microsoft Teams or in-person at the library. [Schedule an appointment here](https://tamuct.libcal.com/appointments/?g=6956) [https://tamuct.libcal.com/appointments/?g=6956]. Assistance may cover many topics, including how to find articles in peer-reviewed journals, how to cite resources, and how to piece together research for written assignments.

Our 27,000-square-foot facility on the A&M-Central Texas main campus includes student lounges, private study rooms, group work spaces, computer labs, family areas suitable for all ages, and many other features. Services such as interlibrary loan, TexShare, binding, and laminating are available. The library frequently offers workshops, tours, readings, and other events. For more information, please visit our [Library website](http://tamuct.libguides.com/index) [http://tamuct.libguides.com/index].

## **OPTIONAL POLICY STATEMENTS**

### **A Note about Sexual Violence at A&M-Central Texas**

Sexual violence is a serious safety, social justice, and public health issue. The university offers support for anyone struggling with these issues. University faculty are mandated reporters, so if someone discloses that they were sexually assaulted (or a victim of Domestic/Dating Violence or Stalking) while a student at TAMUCT, faculty members are required to inform the Title IX Office. If you want to discuss any of these issues confidentially, you can do so through Student Wellness and Counseling (254-501-5955) located on the second floor of Warrior Hall (207L).

Sexual violence can occur on our campus because predators often feel emboldened, and victims often feel silenced or shamed. It is incumbent on ALL of us to find ways to actively create environments that tell predators we don't agree with their behaviors and tell survivors we will support them. Your actions matter. Don't be a bystander; be an agent of change. For additional information on campus policy and resources visit the [Title IX webpage](https://www.tamuct.edu/compliance/titleix.html) [https://www.tamuct.edu/compliance/titleix.html].

### **Behavioral Intervention**

Texas A&M University-Central Texas cares about the safety, health, and well-being of its students, faculty, staff, and community. If you are aware of individuals for whom you have a concern, please make a referral to the Behavioral Intervention Team. Referring your concern

shows you care. You can complete the [referral](#) online [https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout\_id=2].

Anonymous referrals are accepted. Please see the [Behavioral Intervention Team](#) website for more information [https://www.tamuct.edu/bit]. If a person's behavior poses an imminent threat to you or another, contact 911 or A&M-Central Texas University Police at 254-501-5805.

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## **OTHER POLICIES**

NA

### **Copyright Notice**

Students should assume that all course material is copyrighted by the respective author(s). Reproduction of course material is prohibited without consent by the author and/or course instructor. Violation of copyright is against the law and Texas A&M University-Central Texas' Code of Academic Honesty. All alleged violations will be reported to the Office of Student Conduct.

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