# CSE 5330/3330 Database Systems 1 Spring 2019

**Course Information and Outline**

**Instructor:** Bhanu Jain, ERB 307

**Office Hours:** Mo 11:50 AM-12:50 PM Contact: [bhanu.jain@mavs.uta.edu](mailto:bhanu.jain@mavs.uta.edu)

006-LEC Regular  MoWe 1:00PM - 2:20PM   **NH 109**   CSE 3330 Database Systems and File Structures

002-LEC Regular  MoWe 2:30PM - 3:50PM   **WH 311**   CSE 5330 Database Systems

**GTAs:**

**CSE 3330 – Brandon Carter** brandon.carter3@mavs.uta.edu

**CSE 5330 – Chaitanya Sardesai Mo, Wed** 12.30pm to 2pm. chaitanyasunil.sardesai@mavs.uta.edu

**Course Web page:** Blackboard (up-to-date)

**Textbook: *Fundamentals of Database Systems, Seventh Edition,*** by Elmasri/Navathe, published by Pearson, 2016.

**Statement of Ethics:** <https://www.uta.edu/engineering/current-students/academic-honesty.php>

**Grading Policy:**

There will be four tests. The schedule for the tests will be posted on blackboard. There is no final exam. In addition, two projects will be given. The final grade will be calculated based on the four tests (60% of grade), projects (40% of grade). The grade cutoffs for graduate students are generally as follows: 90-100 A, 75-89 B, 60-74 C. The cutoffs will be less for undergraduate students. (Important Note: The exact cutoffs for each letter grade will be determined at the end of the course).

**Projects will require:**

JAVA programming using JDBC, **or** C/C++/C# programming with ODBC/Oracle **or** Python programming **or** other programming languages upon approval, and the use of database systems such as Oracle **or** MySQL **or** PostGres. XAMPP (Apache+MySQL+PHP)

**Note:**

The Instructor reserves the right to modify the grading policy, course schedule and all other course policies. Make-ups for Tests may be arranged if your absence is caused by *documented* illness or emergency and requested in advance if possible. In order to get acceptance for make-ups a written explanation along with the supporting documents must be submitted to the Instructor.

**Reading:**

You are expected to read the materials in the textbook before class so that you can be ready to understand the concepts and ask questions during class.

**Attendance:**

At the University of Texas at Arlington, taking attendance is not required. Rather, each faculty member is free to develop his or her own methods of evaluating students’ academic performance, which includes establishing course-specific policies on attendance. As the instructor of this section, I have decided that attendance at class meetings is not required but strongly encouraged.

**Exams:**

Material covered on the exams will be based on the class lectures and assigned chapters. All exams are mandatory. There are NO make-up exams after the scheduled times. All exams will be kept by the instructor

**Drop Policy:**

Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student’s responsibility to officially withdraw if they do not plan to attend after registering. Students will not be automatically dropped for non-attendance.

**Submission Policy for Assignments:**

Assignments are due in their entirety on the due date by 12:00 midnight. There will be a 5% penalty per day late. Lateness is determined *with respect to your submission time*. For instance, an assignment due on Tuesday: if submitted on Wednesday before 12:00 midnight is considered one day late. *No assignments will be accepted if late more than two days*.

**Omega Machine:**

Make sure you have an account on Omega (omega.uta.edu), the computer offered by OIT that hosts the Oracle and MySQL database systems. This is the machine on which projects can be implemented. You can also download Oracle (free version) or MySQL or PostGres and do the assignments on your computer. UTA’s OIT (Office of Information Technology) has a help desk and a link from UTA’s Web page if you need assistance with Omega and other OIT managed resources. You can also have an account created for you on the Oracle and MySQL database systems, but you have to request it from Helpdesk yourself.  XAMPP

**American with Disabilities Act:** The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the Americans with Disabilities Act (ADA). All instructors at UT Arlington are required by law to provide “reasonable accommodations” to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a **letter certified by the staff in the Office for Students with Disabilities, University Hall 102**. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

**Title IX:** The University of Texas at Arlington is committed to upholding U.S. Federal Law “Title IX” such that no member of the UT Arlington community shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity. For more information, visit [www.uta.edu/titleIX](http://www.uta.edu/titleIX).

**Academic Integrity**: At UT Arlington, academic dishonesty is completely unacceptable and will not be tolerated in any form, including (but not limited to) cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts (UT System Regents Rule 50101, 2.2). **Suspected violations of academic** integrity standards will be referred to the **Office of Student Conduct.** Violators will be disciplined in accordance with University policy, which may result in the students’ suspension or expulsion from the University. Homework assignments are not group projects; each student is expected to write his or her own programs individually. Students should not be showing each other their code prior to the deadline for submission.

**Student Support Services:** UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may contact the **Maverick Resource Hotline by calling 817-272-6107**, sending a message to resources@uta.edu, or visiting [www.uta.edu/resources](http://www.uta.edu/resources).

**Electronic Communication Policy:** UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly.

**Email subject:**

**Please let the subject of your email start with-   CSE-3330 or CSE-5330**

**Questions/Answers:**

List questions in a shared file by Monday evening 9:30 PM (Answered before Tuesday 6:00 AM. Detailed explanations given during Wednesday class)

List questions in a shared file by Wednesday evening 9:30 PM (Answered before Thursday 6:00 AM. Detailed explanations given during Monday class)

**Campus Carry:** Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <https://www.uta.edu/news/info/campus-carry/>

**Student Feedback Survey:** At the end of each term, students enrolled in face-to-face and online classes categorized as "lecture," "seminar," or "laboratory" are directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback via the SFS database is aggregated with that of other students enrolled in the course. Students' anonymity will be protected to the extent that the law allows. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit <http://www.uta.edu/sfs>.

**Final Review Week:** A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabus. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

**Emergency Exit Procedures:** Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located next to the classroom. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

**Emergency Phone Numbers**: In case of an on-campus emergency, call the UT Arlington Police Department at 817-272-3003 (non-campus phone), 2-3003 (campus phone). You may also dial 911. Non-emergency number 817-272-3381

**Course Contents:**

This is a first course in database systems. The prerequisites are knowledge of programming and data structures (CSE 2320 or equivalent). We will cover the following chapters from the textbook. Parts or all of items 8 through 12 (below) may be omitted if time does not permit to cover all the topics.

1. Chapters 1, 2: Introduction to database concepts and architecture.
2. Chapters 3, 4: Conceptual database design using the Entity-Relationship model and Extended Entity-Relationship modeling.
3. Chapter 5: The relational data model.
4. Chapters 6, 7: The SQL database language.
5. Chapter 8 (Sections 8.1-8.5): The relational algebra
6. Chapters 9: ER and EER mapping to relational model.
7. Chapters 10, 11: Database programming techniques.
8. Chapters 16, 17: File and index structures and search methods for database storage.
9. Chapters 14: (Sections 14.1-14.5): Introduction to relational database theory, functional dependencies, and normalization.
10. Sections 30.1, 30.2: Introduction to database security.
11. Sections 8.6, 8.7: Relational calculus.
12. Overview of the material covered in the second database course (CSE5331).

Chapter correspondence between 7th, 5th and 6th editions of the textbook:

**Sixth Edition Fifth Edition Seventh Edition**

1,2 1,2 1,2

3 5 5

4,5 8 6,7

6 6 8

7,8 3,4 3,4

9 7 9

13,14 9,26.2-26.5 10,11

17,18 13,14 16,17

15,16 10,11 14,15

24 23 30

# Course Schedule: As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. The following schedule is tentative and will be updated.

|  |  |  |
| --- | --- | --- |
| **Date** | **Topic** | **Lab** |
| Jan 14 | Introduction, Chapter 1 |  |
| Jan 16 | Chapter 1- Databases and Database users |  |
| Jan 21 | Chapter 2- Database System Concepts and Architecture |  |
| Jan 23 | Chapter 3-Data Modeling Using the Entity-Relationship (ER) Model | Project 1-pt1 |
| Jan 28 | Chapter 3 |  |
| Jan 30 | Chapter 4-The Enhanced Entity-Relationship (EER) Model |  |
| Feb 4 | Chapter 4 |  |
| Feb 6 | Chapter 5-The Relational Data Model and Relational Database Constraints |  |
| Feb 8 |  | Project due |
| Feb 11 | **Exam 1** | Project 1-pt2 |
| Feb 13 | Chapter 5 |  |
| Feb 18 | Chapter 6 -Basic SQL |  |
| Feb 20 | Chapter 7-More SQL: Complex Queries, Triggers, Views, and Schema Modification |  |
| Feb 25 | Chapter 7 |  |
| Feb 27 | Chapter 8--The Relational Algebra and Relational Calculus |  |
| Mar 4 | Chapter 8 | Project due |
| Mar 6 | **Exam 2** | Project 2-pt1 |
| Mar 18 | Chapter 9-Relational Database Design by ER- and EER-to-Relational Mapping |  |
| Mar 20 | Chapter 9 |  |
| Mar 25 | Chapter 10-Introduction to SQL Programming Techniques |  |
| Mar 27 | Chapter 10    **Last day to drop class** |  |
| Mar 29 | Chapter 16-Disk Storage, Basic File Structures and Hashing |  |
| April 1 | Chapter 16 | Project due |
| April 3 | **Exam 3** | Project 2-pt2 |
| Apr 8 | Chapter 17-Indexing Structures for Files |  |
| Apr 10 | Chapter 17 |  |
| Apr 15 | Chapter 14-Basics of Functional Dependencies and Normalization for Relational Databases |  |
| Apr 16 | Chapter 14 |  |
| Apr 22 | Chapter 15-Relational Database Design Algorithms and Further Dependencies (Advanced Normalization) |  |
| Apr 24 | Chapter 15 | Project due |
| Apr 29 | Chapter 30 DB Security and **Exam 4 review** |  |
| May 1 | **Exam 4 (Assume this for now but don’t book your flights)** |  |

**Exam 4 (Might take place later during Final exam week based on department schedule)**

**How to excel?**

1. Complete your work after each class: read, program, review after each class
2. **Have an accountability partner/Be an accountability partner**
   1. Did you finish your work?
   2. How are you doing?
   3. I am stuck here. What about you? (don’t share code – just discuss the challenges that you are facing)
   4. I am reading these things. This is how I got unstuck.
   5. ……
3. Eat 6-8 minimally processed fruits and vegetables every day (very dark green and brightly colored ones)
4. Sleep for at least 7 hours a day
5. Eat raw nuts and whole grains if you are not allergic to them
6. Drink lots of water every day
7. Exercise 30-40 minutes everyday
8. Be kind and courteous towards each other
9. Practice gratitude consciously (privately list 2 things that you are grateful for - every day)
10. Write thank you notes – one every day
11. Meditate few minutes a day – every day
12. Don’t cheat/collude/plagiarize

**What can you expect from me (my opinion)?**

1. Treat you with kindness, respect, and fairness
2. Never put you on the spot
3. Assume respectful behavior 100% of the time
4. Answer your questions
5. Make you feel comfortable and safe to ask pertinent questions in class in our great school
6. Work so that everyone excels
7. Work – knowing that it is possible for each one of you to earn an A.

**What can I expect from you? (5330)**

1. Hardwork always pays
2. Combined studies is the best way
3. Commitment
4. Dedication
5. Always ask questions
6. Student professor interaction
7. Being proactive in every class
8. Discuss ideas/concepts with everyone
9. Silent while teaching
10. Never give up
11. Punctuality
12. Questions
13. Honesty
14. Hard work
15. Attend class regularly