# BZAN 6354: Database Management Tools for Business Analytics

## University of Houston
## Spring 2024
### Revision 2024.01.10

**Instructor:** Dr. Mark Grimes
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Melcher 290H

**Canvas LMS:** https://canvas.uh.edu

**Kahoot!:** https://kahoot.it

**Time:** Monday 6:00 PM – 9:00 PM

**Location:** Melcher 120

**Textbook (optional):**
Data Modeling and Database Design 2nd Edition
Authors: N. S. Umanath and R. W. Scamell
ISBN: 1-285-08525-6

**Office Hours:** Monday 10:00 – 11:00 AM
or by appointment

## Course Description

Data is one of the most important assets modern businesses have. Consider Google, Uber, Facebook, AirBnB, eBay, and Alibaba - these companies do not provide value by the physical products they provide, but rather by managing and presenting data in such a way as to provide value to users. As a future data professional, learning to manage data is critical to your success.

In this course, we will learn about the fundamentals of data modeling, database design, and structured query language (SQL). By the end of the class you should have a solid understanding of how and why businesses use databases and the tools necessary to start designing, developing, and using databases yourself.

The topics covered in this class are divided into four parts:

1. Conceptual data modeling using entity relationship (ER) diagrams.
2. Creating relational data models based on conceptual ER models
3. Normalizing data to improve the accuracy, speed, efficiency, and robustness of a database.
4. Implementation of the relational data model using structured query language (SQL) to define and create a database, implement relational algebra operations, and query multiple tables.

## Learning Objectives

Each module will have specific learning objectives to help you gauge your understanding of the material (and ensure you are prepared for the exams!). In general, by the end of this class you should be able to:

- Describe the differences between data, information, and metadata
- Create a data dictionaries, entity relationship diagrams, and relational data models
- Infer and describe the types of data and data structures a system is using
- Describe the normal forms and transform data between first, second, and third normal form
- Compose SQL code to create, read, update, and delete data and data structures

# Grading

The goal of this class is to develop skills that will be useful for your career. To this end, all of the course assessments are designed to help you develop and demonstrate mastery of data management skills.

| | |
|---|---|
| **50% Exams**<br><br>Two @ 25% each | Two exams, each worth 25% of your grade, will be given during the semester. Rescheduling exams will only be allowed in exceptional circumstances - please let me know as far in advance as possible if you have a conflict. If you miss an exam without prior approval no makeup opportunities will be available. Exams may consist of multiple choice, matching, short answer, essay, and diagramming questions. |
| **20% Progress Quizzes**<br><br>Ten @ 2% each | Each week a progress quiz will be made available on Canvas. These quizzes will cover the content from that week's lecture and will be made up of questions from previous semesters' exams and other questions very similar to what you should expect on the exam.<br><br>Progress quizzes are due by 5:00 on Friday each week. |
| **10% Assignments**<br><br>Four @ 2.5% each | Four assignments, each worth 2.5% of your grade, will be collected during the semester. The assignments are designed to help develop skills that will be useful in completing the SQL project and exams, while also enhancing your marketable skills.<br><br>Each assignment has a walkthrough video (link in the assignment file) which will take you step-by-step through how to complete the assignment, as well as pointing out common pitfalls and mistakes.<br><br>You are encouraged to first attempt the assignment(s) yourself, then when you either feel lost or would like to check you work refer to the video. |
| **10% SQL Project** | Throughout the semester we will be developing a relational database for your SQL project. You will use your knowledge of database design and SQL to create DDL code to create tables and integrity constraints, populate the tables with data, then run a few dozen queries to answer business questions. |
| **10% Professionalism** | While this class is largely technical in nature, being able to interact effectively with others is an important part of using data in business.<br><br>To this end, points may be deducted for excessively messy work, disruptive or disrespectful behavior, and unethical behavior including but not limited to asking for your grade to be increased, academic integrity infractions, or other unscrupulous behaviors. |

**Grade Allocations:   A:** 90-100%   **B:** 80-89%   **C:** 70-79%   **D:** 60-69%   **F:** < 60%

There is no +/- grading in this class. On average +/- grading results in lower grades due to the lack of A+ and F+ grades. Your grade will reflect my perception of your mastery of the material in the course.

My primary goal is that you leave this class with skills you did not previously have. If you put forth the work to obtain these skills, your grade will reflect it.

## Schedule
**As of January 10, 2024 - Schedule is subject to change**
**Module numbers correspond to chapters in the optional textbook**

| Date | Topic | Notes |
|---|---|---|
| 1: 1/22 | Intro/Database Concepts<br><br>**Modules 1.1, 1.2, 1.3, 1.4, 1.5, 1.6** | |
| 2: 1/29 | Conceptual Data Modeling<br>Introduction to Data Definition Language (DDL)<br>and Structured Query Language (SQL)<br><br>**Modules 2.1, 2.2, 2.3, 10.1** | **Assignment 1 assigned** |
| 3: 2/5 | Relationships<br><br>**Modules 2.4, 2.5, 2.6, 10.2** | |
| 4: 2/12 | Entity Relationship (ER) Modeling<br><br>**Modules 3.1, 3.2** | **Assignment 2 assigned** |
| 5: 2/19 | The Relational Data Model<br><br>**Module 3.3, 6.1, 6.2, 6.3** | |
| 6: 2/26 | The Relational Data Model<br><br>**Modules 6.4, 6.5, 6.6, 6.7** | |
| 7: 3/4 | Exam 1 – Data Modeling | **Exam 1** |
| 8: 3/11 | Spring Break – No Class! | |
| 9: 3/18 | Relational Algebra<br>Structured Query Language<br><br>**Modules 11.1, 11.2, 12.1** | |
| 10: 3/25 | Structured Query Language<br><br>**Module 12.2, 12.3** | **Assignment 3 assigned** |
| 11: 4/1 | Normalization<br><br>**Modules 7.1, 7.2, 7.3** | |
| 12: 4/8 | Normalization<br><br>**Modules 8.1, 8.2, 8.3, 8.4** | **Assignment 4 assigned** |
| 13: 4/15 | Advanced/Applied SQL<br><br>**Modules 13.1, 13.2, 13.3** | |
| 14: 4/22 | Wrap up/Review | |
| 15: 4/29 | Exam 2 – SQL and Normalization | **Exam 2** |

# Other Important Details

## Classroom Behavior

The non-academic use of cell phones, laptops, tablets and the like are distracting to yourself and those around you - plus it is rude!  Please silence or turn off your phone prior to entering the classroom. If you are causing a disruption you will be asked once to cease the activity.  If the activity continues, you will be asked to leave the classroom and will lose professionalism points.

Disruptive or threatening behaviors are strictly prohibited and will be dealt with in accordance with university policy.

**Violations of the Classroom Behavior policy will result in the loss of "Professionalism" points as described in the "Grading" section of the syllabus**

## Late Work

Assignments turned in late will be penalized 10% per calendar day for a maximum of five days, after which no credit will be given. Technology failure is not an excuse for late work, so do not wait until the last minute!

## HARDWARE/SOFTWARE

Assignments will be completed digitally and submitted via Canvas. The Bauer computer labs are available to complete assignments.  In order to complete some of the assignments and SQL project, you will need access to a computer running a modern version of Windows or MacOS.

Kahoot!: For many in class activities we will use a response system called Kahoot! You can access Kahoot! using a web browser on Windows, Apple, and Android devices.

Please contact me ASAP if you do not have access to the required hardware so that special arrangements can be made.

# UH REQUIRED SYLLABUS LANGUAGE: Spring 2024

## Mental Health and Wellness Resources

The University of Houston has a number of resources to support students' mental health and overall wellness, including CoogsCARE and the UH Go App. UH Counseling and Psychological Services (CAPS) offers 24/7 mental health support for all students, addressing various concerns like stress, college adjustment and sadness. CAPS provides individual and couples counseling, group therapy, workshops and connections to other support services on and off-campus. For assistance visit uh.edu/caps, call 713-743-5454, or visit a Let's Talk location in-person or virtually. Let's Talk are daily, informal confidential consultations with CAPS therapists where no appointment or paperwork is needed.

The Student Health Center offers a Psychiatry Clinic for enrolled UH students. Call 713-743-5149 during clinic hours, Monday through Friday 8 a.m. - 4:30 p.m. to schedule an appointment. The A.D. Bruce Religion Center offers spiritual support and a variety of programs centered on well-being.

**Need Support Now?**

**If you or someone you know is struggling or in crisis, help is available. Call CAPS crisis support 24/7 at 713-743-5454, or the National Suicide and Crisis Lifeline: call or text 988, or chat 988lifeline.org.**

Academic Honesty Policy
High ethical standards are critical to the integrity of any institution, and bear directly on the ultimate value of conferred degrees. All UH community members are expected to contribute to an atmosphere of the highest possible ethical standards. Maintaining such an atmosphere requires that any instances of academic dishonesty be recognized and addressed. The UH Academic Honesty Policy is designed to handle those instances with fairness to all parties involved: the students, the instructors, and the University itself. All students and faculty of the University of Houston are responsible for being familiar with this policy.

Title IX/Sexual Misconduct

Per the UHS Sexual Misconduct Policy, your instructor is a "responsible employee" for reporting purposes under Title IX regulations and state law and must report incidents of sexual misconduct (sexual harassment, non-consensual sexual contact, sexual assault, sexual exploitation, sexual intimidation, intimate partner violence, or stalking) about which they become aware to the Title IX office. Please know there are places on campus where you can make a report in confidence. You can find more information about resources on the Title IX website at https://uh.edu/equal-opportunity/title-ix-sexual-misconduct/resources/.

Reasonable Academic Adjustments/Auxiliary Aids
The University of Houston is committed to providing an academic environment and educational programs that are accessible for its students. Any student with a disability who is experiencing barriers to learning, assessment or participation is encouraged to contact the Justin Dart, Jr. Student Accessibility Center (Dart Center) to learn more about academic accommodations and support that may be available to them. Students seeking academic accommodations will need to register with the Dart Center as soon as possible to ensure timely implementation of approved accommodations. Please contact the Dart Center by visiting the website: https://uh.edu/accessibility/ calling (713) 743-5400, or emailing jdcenter@Central.UH.EDU.

Excused Absence Policy
Regular class attendance, participation, and engagement in coursework are important contributors to student success. Absences may be excused as provided in the University of Houston Undergraduate Excused Absence Policy and Graduate Excused Absence Policy for reasons including: medical illness of student or close relative, death of a close family member, legal or government proceeding that a student is obligated to attend, recognized professional and educational activities where the student is presenting, and University-sponsored activity or athletic competition. Under these policies, students with excused absences will be provided with an opportunity to make up any quiz, exam or other work that contributes to the course grade or a satisfactory alternative. Please read the full policy for details regarding reasons for excused absences, the approval process, and extended

absences. Additional policies address absences related to <u>military service</u>, <u>religious holy days, pregnancy and related conditions</u>, and <u>disability</u>.

<u>Recording of Class</u>
Students may not record all or part of class, livestream all or part of class, or make/distribute screen captures, without advanced written consent of the instructor. If you have or think you may have a disability such that you need to record class-related activities, please contact the <u>Justin Dart, Jr. Student Accessibility Center</u>. If you have an accommodation to record class-related activities, those recordings may not be shared with any other student, whether in this course or not, or with any other person or on any other platform. Classes may be recorded by the instructor. Students may use instructor's recordings for their own studying and notetaking. Instructor's recordings are not authorized to be shared with anyone without the prior written approval of the instructor. Failure to comply with requirements regarding recordings will result in a disciplinary referral to the Dean of Students Office and may result in disciplinary action.

**Recommended Language and Guidance**

<u>Resources for Online Learning</u>
The University of Houston is committed to student success, and provides information to optimize the online learning experience through our <u>Power-On</u> website. Please visit this website for a comprehensive set of resources, tools, and tips including: obtaining access to the internet, AccessUH, Blackboard, and Canvas; using your smartphone as a webcam; and downloading Microsoft Office 365 at no cost. For questions or assistance contact <u>UHOnline@uh.edu</u>.

<u>UH Email</u>
Please check and use your Cougarnet email for communications related to this course. Faculty use the Cougarnet email to respond to course-related inquiries such as grade queries or progress reports for reasons of FERPA. To access your Cougarnet email, <u>login</u> to your Microsoft 365 account with your Cougarnet credentials. Visit <u>University Information Technology (UIT)</u> for instructions on how to connect your Cougarnet e-mail on a mobile device.

<u>Syllabus Changes</u>
Please note that the instructor may need to make modifications to the course syllabus. Notice of such changes will be announced as quickly as possible through Canvas.

# <u>GOOD LUCK</u>

This course is not easy!

...however, databases are a fundamental part of information systems and modern business. The skills you learn in this class will serve you well if you put in the effort to learn them!