

BZAN 6354: Database Management Tools for Business Analytics

University of Houston Spring 2023

Revision 2023.01.10

Instructor: Dr. Mark Grimes
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Melcher 280D

Blackboard: <https://elearning.uh.edu>

Time: Monday 6:00 PM – 9:00 PM

Textbooks:
Data Modeling and Database Design 2nd Edition
Authors: N. S. Umanath and R. W. Scamell
ISBN: 1-285-08525-6

Location: Melcher 126

Office Hours FtF: Mon 11:00 - 12:00
Office Hours Zoom: Mon 12:00 - 1:00

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 IS 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 SQL to define and create a database, implement various 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 dictionary
- Create 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 in data analytics. To this end, all of the course assessments are designed to help you develop and demonstrate mastery of these skills.

<p>50% Exams</p> <p>Two @ 25% each</p>	<p>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.</p>
<p>20% Exam Readiness Quizzes (ERQ)</p> <p>Four @ 5% each</p>	<p>As we complete major milestones in the course material, we will have four in-class Exam Readiness Quizzes, each worth 5% of your grade. ERQs will consist of questions directly from previous exams.</p> <p>If you miss an ERQ: Your score from the exam immediately following the ERQ will be applied to the ERQ (see the Day 1 slides for more details). ERQ scores are invariably higher than exam scores, so it is in your best interest to attend class on these days.</p>
<p>10% Assignments</p> <p>Four @ 2.5% each</p>	<p>Four assignments, each worth 2.5% of your grade, will be collected during the semester. Some assignments will require you to think critically about the material and apply the concepts to a real world scenario, while others will be used to reinforce technical or conceptual items from the textbook and presentations. The assignments will help develop skills that will be useful in completing the SQL project and exams, while also enhancing your marketable skills.</p>
<p>10% SQL Assignment</p>	<p>The SQL project is worth 10% of your grade. SQL (Structured Query Language) is a language used by people and applications to create, query and update relational databases. The project will utilize Oracle 11g. The purpose of the SQL Experience Project is to illustrate how this powerful language can be used to create the structure of a database, populate a database, and retrieve information from a database.</p>
<p>10% In Class Exercises (ICE)</p>	<p>During most classes we will complete an in-class exercise. You must be in class to complete an ICE. ICEs may take the form of very simple questions about the class, mini-quizzes, group activities, or just about anything else. We have around 10 ICEs, and your lowest ICE grade will be dropped.</p>

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

Software

Poll Everywhere: Poll Everywhere is a student response system similar to clickers, but way better and more interactive (and importantly, free for you!). You can access poll everywhere using a web browser or by using the free iOS or Android app.

Oracle SQL Developer: Oracle SQL Developer is the client we will use to connect to our Oracle server for the SQL project assignment. Instructions for installing will be provided prior to the assignment.

Schedule

As of January 10, 2023 - Schedule is subject to change

Please read the modules in the book prior to class

Date	Topic	Notes
1: 1/23	Intro/Database Architecture Modules 1.1, 1.2, 1.3, 1.4, 1.5, 1.6	
2: 1/30	Database Concepts Modules 2.1, 2.2, 2.3	Assignment 1 assigned
3: 2/6	Entity-Relationship Modeling Modules 3.1, 3.2	ERQ 1
4: 2/13	ER Modeling and Relational Modeling Module 3.3, 6.1, 6.2, 6.3, 6.4	Assignment 2 assigned
5: 2/20	Relational Data Modeling Modules 6.5, 6.6, 6.7	ERQ 2
6: 2/27	Database Creation Modules 10.1, 10.2	
7: 3/6	Exam 1 – Data Modeling	Exam 1
8: 3/13	Spring Break	
9: 3/20	Relational Algebra Structured Query Language Modules 11.1, 11.2, 12.1	Assignment 3 assigned SQL Project assigned
10: 3/27	Structured Query Language Module 12.2, 12.3	
11: 4/3	Normalization Modules 7.1, 7.2, 7.3	ERQ 3
12: 4/10	Normalization Modules 8.1, 8.2, 8.3, 8.4	Assignment 4 assigned SQL Project Phase 1 Due
13: 4/17	Advanced/Applied SQL Modules 13.1, 13.2, 13.3	ERQ 4
14: 4/24	Wrap up/Review Introduction to non-relational database systems	SQL Project Phase 2 Due
15: 5/1	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.

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

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 Blackboard. 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.

Poll Everywhere: For many in class exercises and various other activities throughout the semester, we will be using polleverywhere.com - this system is very much like “clickers” except way better and FREE for you. See details in the Day 1 slides. To use Poll Everywhere you will need an internet connected laptop, tablet, or smart phone (Android and iOS both work fine).

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

UNIVERSITY OF HOUSTON SYLLABUS LANGUAGE: Spring 2023

Required Language for All Courses

COVID-19 Information

Students are encouraged to visit the University’s [COVID-19](#) website for important information including diagnosis and symptom protocols, testing, vaccine information, and post-exposure guidance. Please check the website throughout the semester for updates. Consult the (select: [Undergraduate Excused Absence Policy](#) or [Graduate Excused Absence Policy](#)) for information regarding excused absences due to medical reasons.

Reasonable Academic Adjustments/Auxiliary Aids

The University of Houston complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for disabled students. In accordance with Section 504 and ADA guidelines, UH strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them. If you believe that you have a disability requiring an academic

adjustments/auxiliary aid, please contact [the Justin Dart Jr. Student Accessibility Center](#) (formerly the Justin Dart, Jr. Center for Students with DisABILITIES).

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 [military service](#), [religious holy days](#), [pregnancy and related conditions](#), and [disability](#).

Recording of Class

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 [Justin Dart, Jr. Student Accessibility Center](#). 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.

Resources for Online Learning

The University of Houston is committed to student success, and provides information to optimize the online learning experience through our [Power-On](#) 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 UHOnline@uh.edu.

UH Email

Please check and use your Cougarnet email for communications related to this course. To access this email, [login](#) to your Microsoft 365 account with your Cougarnet credentials.

Webcams

Access to a webcam is required for students participating remotely in this course. Webcams must be turned on (*state when webcams are required to be on and the academic basis for requiring them to be on*). (Example: Webcams must be turned on during exams to ensure the academic integrity of exam administration.)

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.

Syllabus Changes

Due to the changing nature of the COVID-19 pandemic, please note that the instructor may need to make modifications to the course syllabus and may do so at any time. Notice of such changes will be announced as quickly as possible via Blackboard.

Helpful Information

Coogs Care: <https://uh.edu/dsa/coogscare/>

Student Health Center: <https://www.uh.edu/healthcenter/>

GOOD LUCK

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!