UNI CS 3140 (Fall 2024)
Database Systems, Section 01

Course Syllabus

Course Information

Course Name and Number

CS 3140 Database Systems

Meeting Times

Lecture: MWF 1:00pm–1:50pm in Wright 009

Contact Information

(Lead Professor): Dr. Sarah Diesburg – sarah.diesburg@uni.edu
Office: EBAR 39
Office hours: Zoom only. Schedule here: https://tinyurl.com/yedutmm3
Class website: Available through UNI eLearning: https://elearning.uni.edu

Credit Hours

3 Credit Hours
This course meets the Course Credit Hour Expectation outlined in the Course Catalog. **Students should expect to work approximately 2 hours per week outside of class for every course credit hour.**

Course Materials (Required)

Follow these directions to obtain access to your mandatory online textbook:

- Sign in or create an account at http://learn.zybooks.com
- Enter zyBook code: UNICS3140DiesburgFall2024
- Subscribe

Course Description

Storage of, and access to, physical databases; data models, query languages, transaction processing, and recovery techniques; object-oriented and distributed database systems; and database design. Prerequisite(s): CS 1520; CS 1800; junior standing. Prerequisite(s) for Data Science minors: CS 2150; junior standing. (Fall)

Course Learning Outcomes

- Understand the role of a database management system in an organization.
- Understand basic database concepts, including the structure and operation of the relational data model.
- Understand and apply basic database design principles, including ER diagrams.
- Construct database queries using Structured Query Language (SQL).
- Compare and contrast data storage models.
- Design, implement, and program the interface to a database containing real-world data.

Performance Evaluation

Grade Determination

The final grade you earn in this course will be based on the points accumulated over five activities as described below.

Note: The final is optional and, if taken, will replace the lowest exam grade. Note that the final will replace the lowest exam grade, regardless if it is higher or lower than that grade.

Activity	Percent
Lab Work	15%
Zybook Participation Activities	10%
Zybook Challenge Activities	10%
Final Hands-on Project	20%
Regular Exams (3 regular exams @ 15% each)	45%
Final Cumulative Exam (replaces lowest regular exam)	optional
Total	***100%***

For this class to count towards the computer science and network and system administration majors, you must earn at least a C-.

Grading Scale

100 – 92	A	77.9 – 72	C
91.9 – 90	A-	71.9 – 70	C-
89.9 – 88	B+	69.9 – 68	D+
87.9 – 82	B	67.9 – 62	D
81.9 – 80	B-	61.9 – 60	D-
79.9 – 78	C+	59.9 – 0	F

Class Attendance and Participation

If you miss a class due to illness, quarantine, or any other reason, it is your responsibility to find out what was covered by watching the recording of the lecture (Panopto link found on elearning). If you must miss a class with an in-class lab, you must finish the lab on your own.

Lab Work

At different points in the class, we will pause from regular lectures to implement a learned concept during a lab (either in-class or on your own). These labs are meant to give you experience outside of your textbook environment with a real database. In-class labs are typically meant to be finished within the regular class period, but if they are not completed in class, they must be completed by the due date.

Lab work is to be completed individually unless made into a partner/group activity in class.

Zybook Participation and Challenge Activities

Zybook participation activities can be found within the textbook chapter section. These questions are meant to gauge if you are reading and understanding the material and should be completed before the class in which they are discussed.

Zybook challenge activities are more challenging than patriation activities and can also be found with the textbook chapter section. These activities are a bit more like traditional homework. It is expected that you attempt these activities as you read the section and bring your questions to class.

Both weekly zybook participation and challenge activities for the weekly assigned readings are due each Friday at 11:59pm. Again, it is a great idea for you to read these assigned sections before the class in which they are discussed so that you can engage more fully with the lecture and have an

opportunity to ask questions on any challenge activity for which you are stuck.

Participation and challenge activities are to be completed individually.

Exams

There is a total of three in-class regular exams this semester.

- Each regular exam must be taken during the scheduled time and will cover content from the knowledge unit.
- The final exam is cumulative and is optional. If you elect to take the final, it will replace the lowest regular exam grade, regardless if the final grade is higher or lower than the lowest regular exam grade.

By default these exams are closed-book/closed-notes exams. The dates of these exams are listed on the class schedule. You are expected to be present for these exams unless you have made prior arrangements. Make-up exams will be offered under very limited circumstances. If you are aware of conflicts prior to the exam, please bring these to my attention as early as possible.

Final Hands-on Project

The hands-on group project will involve the design, implementation, and front-end programming of a small database containing real-world data. This project will be introduced shortly before Thanksgiving break. In the final two regular weeks of class after Thanksgiving break, you will be given class time to work on the project.

The hands-on project is to be completed individually.

Incompletes

Incompletes are awarded only in very rare instances when an unforeseeable event causes a student who has completed all the coursework to date to be unable to complete a small portion of the work in the last week or two of the semester (typically the final project or exam). Incompletes will not be awarded for foreseeable events including a heavy course load or a poorer-than- expected performance. Verifiable documentation must be provided for the incomplete to be granted.

Tentative Schedule (Subject to Change)

Date	Topics/Notes
8/26 – 8/30	Introduction to Databases
9/2 –9/20	Relational Database and Basic SQL
9/23	Exam #1
9/25 – 10/18	Normal Forms and Advanced SQL
10/21	Exam #2
10/23 –11/15	Database Design and Front-End Programming
11/18	Exam #3
11/20 – 12/13	Final Comprehensive Database Project
12/17 (Tuesday)	Optional Final (1-2:50pm)

AI Statement

Summary

Do not use AI tools to answer textbook questions, complete labs, or else generate programs for this class

unless given permission. (See the Full AI Statement below for the explanation.)

Full AI Statement

AI is rapidly changing the face of software engineering. Artificial Intelligence (AI) tools are rapidly developing that can generate full programs based on a prompt (e.g. ChatGPT and Bard) to being a "copilot" and suggesting lines of code as you are writing. These tools hold great promise to increase our productivity as programmers.

As software developers, we are tasked with the incredibly important job of making sure code we use or produce is correct, free from errors, and does not introduce security issues. To properly use these AI tools in the future as professionals, we first need to understand how code works, inside and out. Only once we understand how to code can we read, test, and properly evaluate code generated by AI tools. Therefore, the purpose of this class is to teach you how to fully understand the foundations of relational databases by creating your own schemas, diagrams, and code.

Further, nearly half of the points in this class will be evaluated on your abilities to read and write code in exam environments without access to an AI. If you can't generate and read SQL code yourself without the use of an AI, you will fail exams and the class. You really have to know your stuff.

Towards the end of the class, I may allow the use of AI in specialized lab/project circumstances. However, the general use of AI is not permitted unless given explicit permission.