# COMP 3421 Database Organization and Management I

## Course Overview

The course objective is to learn the fundamental principles governing relational and nonrelational (noSQL) database management system design and operation with an emphasis on relational. Topics will include relational algebra, ER modeling, SQL, scripting, embedded programming (Python), B-trees, data normalization, and Mongo (noSQL).

## Objectives

Students will be able to design, create, and query both SQL and noSQL databases. Students will have a firm understanding of the ER model, SQL (including CRUD operations and aggregates), scripting, indexes, and a noSQL data model as well as noSQL CRUD and aggregates.

## Textbooks and Materials

All material will be online.

## Grading

| **Assignment/Assessment** | **Points** | **Weight on Final Grade** |
|---|---|---|
| Assignment 1 | 20 | 0.65 * 20 / 360 |
| Assignment 2 | 40 | 0.65 * 40 / 360 |
| Assignment 3 | 40 | 0.65 * 40 / 360 |
| Assignment 4 | 60 | 0.65 * 60 / 360 |
| Assignment 5 | 30 | 0.65 * 30 / 360 |
| Assignment 6 | 40 | 0.65 * 40 / 360 |
| Assignment 7 | 40 | 0.65 * 40 / 360 |
| Assignment 8 | 30 | 0.65 * 30 / 360 |
| Assignment 9 | 60 | 0.65 * 60 / 360 |
| Midterm | 100 | 20% |
| Final | 100 | 15% |

## Grading Scale

A 93–100%
A– 90–92%

B+ 87–89%
B 83–86%
B– 80–82%
C+ 77–79%
C 73–76%
C– 70–72%
D+ 67–69%
D 63–66%
D– 60–62%
F Below 59%

## Assignment and Assessment Information

There will be a weekly assignment due 24 hours before the next live session. Detailed information on weekly assignments can be found in the Assessments unit. The assignments add up to 65% of the grade. There will be a midterm and a final worth 20% and 15% of the grade respectively.

## Weekly Schedule

There will be an assignment assigned each week and due the following week. The assignment is due 24 hours before the live session. The schedule includes many asynchronous exercises in addition to the assignments. Please complete each week's asynchronous content 24 hours before the live session.

Week 1: Asynchronous work should be done 24 hours before live session. No assignment is due.

Week 2: Asynchronous work should be done 24 hours before the live session. Assignment 1 is due 24 hours before the live session.

Week 3: Asynchronous work should be done 24 hours before the live session. Assignment 2 is due 24 hours before the live session.

Week 4: Asynchronous work should be done 24 hours before the live session. Assignment 3 is due 24 hours before the live session.

Week 5: Asynchronous work should be done 24 hours before the live session. Assignment 4 is due 24 hours before the live session.

Week 6: Midterm (to be completed 72 hours before Week 7 live session). The midterm will be password protected and students will have 120 minutes to complete it. Asynchronous work

should be done 24 hours before the live session. Assignment 5 is due 24 hours before the live session.

Week 7: Asynchronous work should be done 24 hours before the live session. Assignment 6 is due 24 hours before the live session.

Week 8: Asynchronous work should be done 24 hours before the live session. Assignment 7 is due 24 hours before live session.

Week 9: Asynchronous work should be done 24 hours before the live session. Assignment 8 is due 24 hours before the live session.

Week 10: Final (to be completed within 48 hours after the Week 10 live session). The final will be password protected and students will have 120 minutes to complete it. Asynchronous work should be done 24 hours before the live session. Assignment 9 is due 24 hours before the live session.

## Attendance Policy

Attendance at all live session meetings is mandatory.

## Program Mission

Our MS in data science provides students with a broad course of study in programming, algorithms, statistics and data management, as well as a depth of understanding in specific fields such as data mining, machine learning and parallel systems. Graduates of the data science program go on to work in a wide variety of careers, including business, government, education and the natural sciences.

## Honor Code and Academic Integrity

All students are expected to abide by the University of Denver Honor Code. These expectations include the application of academic integrity and honesty in your class participation and assignments. Violations of these policies include, but are not limited to:

- Plagiarism, including any representation of another's work or ideas as one's own in academic and educational submissions.
- Cheating, including any actual or attempted use of resources not authorized by the instructor(s) for academic submissions.

- Fabrication, including any falsification or creation of data, research or resources to support academic submissions. Violations of the Honor Code may have serious consequences including, but not limited to, a zero for an assignment or exam, a failing grade in the course, and reporting of violations to the Office of Student Conduct.

## Diversity, Inclusiveness, Respect

DU has a core commitment to fostering a diverse learning community that is inclusive and respectful. Our diversity is reflected by differences in race, culture, age, religion, sexual orientation, socioeconomic background, and myriad other social identities and life experiences. The goal of inclusiveness, in a diverse community, encourages and appreciates expressions of different ideas, opinions, and beliefs, so that conversations and interactions that could potentially be divisive turn instead into opportunities for intellectual and personal enrichment.

A dedication to inclusiveness requires respecting what others say, their right to say it, and the thoughtful consideration of others' communication. Both speaking up AND listening are valuable tools for furthering thoughtful, enlightening dialogue. Respecting one another's individual differences is critical in transforming a collection of diverse individuals into an inclusive, collaborative, and excellent learning community. Our core commitment shapes our core expectation for behavior inside and outside of the classroom.