

# CSC 261/461 Introduction to Databases

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Spring 2020

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## Course Description

This course presents the fundamental concepts of database design and use. It provides a study of data models, data description languages, and query facilities including relational algebra and SQL, data normalization, transactions and their properties, physical data organization and indexing, security issues and object databases. It also looks at the new trends in databases, e.g. NoSQL systems.

## Topics covered

The course covers foundational material in the field of database systems:

- Basic introductory concepts necessary for a good understanding of database models.
- Database Management System (DBMS) concepts, terminology, and architecture.
- Entity relationship modeling and database design.
- Relational database and SQL for efficiently storing, retrieving, and updating data in a database.
- File organization on disk, indexing and hashing

Additionally and time permitting, the course will cover more advanced topics in database systems, such as

- Transactions
- Query Processing and Optimization
- NoSQL systems

## Required Readings

- Lecture notes
- Textbook: **Fundamentals of Database Systems**, 7th Edition (ISBN: 0133970779) by Ramez Elmasri & Shamkant B. Navathe (Pearson Education, 2016).

## Additional Readings

- “Database Systems: The Complete Book“, Garcia-Molina, Ullman, Widom
- “Database System Concepts“, by Silberschatz, Korth, Sudarshan.
- Other references occasionally provided by the instructor

## Prerequisites

CSC 172; CSC 173 recommended

## Grading Policy

- Letter grades will follow the **Official University of Rochester Grading Scheme**.
- All appeals of grades for any component of the course (homework, project, exam, midterm, etc.) must be made within ONE WEEK of the grade being posted. Your work (submission) will be reconsidered as a whole and the reassessment may result in the grade remaining the same, being raised, or being lowered.
- I reserve the right to curve the scale dependent on overall class scores at the end of the semester.
- The grade will be determined taking into account the following:
  - Each midterm exam is worth **15** points.
  - The final exam is worth **15** points.
  - Projects are worth **40** points.
  - Additional hw/assignments are worth **5** points. This activity is required *\*only\** for graduate students.

## Grading Scale

Percentage score	Letter grade
90-100	A
85-89	A-
80-84	B+
75-79	B
70-74	B-
65-69	C+
60-64	C
55-59	C-
50-54	D
0-49	F

## Course Policies

### Accommodations for Disabilities

- The University of Rochester respects and welcomes students of all backgrounds and abilities. In the event you encounter any barrier(s) to full participation in this course due to the impact of disability, please contact the Office of Disability Resources. The access coordinators in the Office of Disability Resources can meet with you to discuss the barriers you are experiencing and explain the eligibility process for establishing academic accommodations. You can reach the Office of Disability Resources at: [disability@rochester.edu](mailto:disability@rochester.edu); (585) 276-5075; Taylor Hall.
- After you receive accommodation approval, it is imperative that you reach out to the instructor for the appropriate arrangements.

## Communication and information about the course

- Relevant information and updates about the course will be posted on the website of the course and/or on Blackboard. It is your responsibility to regularly check announcements.
- Emails sent to the instructor about this course (better) include in the subject "CSC261/461: ".
- Discussion boards available on Piazza.

## During lecture

- You do not need any electronics in class and they will not help you or your fellow students seated near you.
- Unless you are taking notes with a laptop, you do not need it.
- Please note [Section V.7](#) of the College's Academic Honesty policy regarding Unauthorized Recording, Distribution or Publication of Course-Related Materials.

## Attendance Policy

- Attendance in lectures is recommended, but not required. If you choose not to attend, please make sure you don't miss important announcements or information about the course.

## Policies on Incomplete Grades and Late Assignments

- A grade of "I" can be given only in circumstances beyond the students' control, such as illness or personal emergency, that prevented the students from finishing the coursework on time. Please refer to the Academic Procedures for more information on this.
- Late submissions are not permitted in this course.

## Academic Integrity and Honesty

- All assignments and activities associated with this course must be performed in accordance with the University of Rochester's Academic Honesty Policy. More information is available at: <http://www.rochester.edu/college/honesty>
- All the work you do in this course must be \*mainly\* your own contribution. Collaboration on homework or projects is permitted, subject to the following requirements:
  - You must acknowledge collaborators in your submission.
  - You must be able to explain anything you submit in person at any time during the term.