

CSC 261/461 Introduction to Databases

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Syllabus (Spring 2024)

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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 overview

Required Readings

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

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

- Letter grades will follow the **Official University of Rochester Grading Scheme**.
- All appeals of grades for any component of the course (project milestones, exams, etc.) must be made within ONE WEEK of the grade being posted.
- I reserve the right to curve the scale dependent on overall class scores at the end of the semester.
- The final percentage (max 100%) for the course will be determined taking into account the following:
 - Exams are worth **18%** each.
 - The project is worth **40%** and it consists of 3 milestones of equal weight (12% each) and a final individual interview on the project (4%).
 - Attendance and participation in class activities is worth 6% of your final grade.

Important note: requirements for graduate students may be different from requirements for undergraduate students.

- The following table is an estimate of how the numeric grades will map onto the letter grades:

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; (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 Blackboard.
- Emails sent to the instructor about this course (better) include in the subject "CSC261/461: ".
- It is student's responsibility to follow the updates on Blackboard regularly.
- Slack channel available for the course: see BB.

During lecture

- Distribution of notes, videos, pictures, slides, code presented in the course is prohibited.
- Please note [Section V.7](#) of the College's Academic Honesty policy regarding Unauthorized Recording, Distribution or Publication of Course-Related Materials.
- Every exception to the above has to be agreed with the instructor of the course beforehand.

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.
- Attendance in in-class practical activities is worth a total of 6% of your grade. There will be 3-5 such sessions during lecture time, to be announced the week before.

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 submit in this course must be your own.
- Additional requirements/details may be posted with each assignment/exam.
- You may be required at any time to answer questions on the exam answers you give or on the work you submit for the project. If not able to show that you understand what you submit, your grade may change.