



**Computer Science Department**  
**Database Systems**  
**COMP333**

**Course Outline**

**Fall 2024**

**Instructors**

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**Overview**

This course is intended to give students a solid background in relational database management systems. Topics include data modeling, database design theory, data definition and manipulation languages, Normalization, Connectivity with a programming language, overview of storage and indexing, Query evaluation and optimization, Transactions. Furthermore, this course aims to provide practical experience in applying these concepts using commercial database management systems.

**Objectives**

By the end of the course, the students should develop skills in:

- The design methodology for databases and verifying their design correctness.
- Implementing databases and applications software primarily in the relational model.
- Using querying languages such relational algebra and SQL with the supporting database software.
- Applying the theory behind various database models and query languages
- Working in-group settings to design and implement larger programming projects.

**Textbook** Database Management Systems 3<sup>rd</sup> Ed. Ramakrishnan & Gehrke

**References**

1. Fundamentals of Database Systems by Elmasri (7<sup>th</sup> Edition)
2. Database Systems: The complete book by Manlina, Ullman & Widom.

## Outline

Topic	Material	# of Lectures (75 min)
1. Overview of database system	Ch.1(1.1-1.4+1.8-1.10)	2
2. Introduction to database design	Ch.2 (except 2.4.5, 2.5.4, 2.8)	3
3. Relational model	Ch.3 (except 3.5.7, 3.6,3.7, 3.8)	3
4. Relational algebra	Ch.4 (4.1- 4.2 except 4.2.5)	2
5. SQL: queries, constraints	Ch.5 (except 5.6.4, 5.7, 5.9)	5
6. Lab	Lab (creating database + SQL)	2
7. Connecting java with database	Lecture notes	1
8. Normalization	Ch. 19.1- 19.7 and lecture notes	3
9. Transactions	Ch.16.1-16.4	2
10. Overview of storage and indexing.	Ch.8 (8.1-8.4)	3
11. Query evaluation and optimization	Ch.12(12.1 – 12.4) Ch. 14(14.1 – 14.3,14.4.1) (tentative as time allows)	2
12. Project presentation		2
Total		<b>30</b>

## Grading Criteria

The course will include several evaluations including assignments, exams/quizzes and a main project. The grading distribution is subject to change depending on university and computer science department regulations during emergency situations.

Midterm	30%
Quizzes and/or Assignments	10%
Project	20%
Final Exam	40%

## Course Rules

- **Attendance.** Attendance is mandatory. University regulations regarding this matter will be strictly enforced.
- **Academic Honesty.** Individual homework assignments must be each student's own work. Team projects must be the work of all students in the team. Plagiarism or cheating will result in official University disciplinary review.
- If you use information from a book, article or the Internet, you must provide a reference to that source. Failure to acknowledge the source of a significant idea or approach is considered plagiarism and is not allowed.
- **Due Dates.** All assignments/projects must be submitted through Ritaj (ritaj.birzeit.edu) before the announced deadlines.
- **Late Work.** Work (individual and team) that are turned in late are automatically lowered 10% each day.
- **Missed Exams.** There are no makeup exams.
- **Etiquette.** Please keep all cell phones and other electronic devices turned off during class. If your activities during class are deemed disruptive, you will be asked to leave. Use of a personal computer during class is allowed only for note taking with Instructor permission.