

San José State University
Department of Computer Science
Spring 2025
CS 257 Database Systems Principles

Course and Contact Information

Instructor:	Ramin Moazeni, PhD
Class Hours:	TTh: 4:30PM - 5:45PM
Office Hours:	Fri: 12:30PM – 1:00PM over Zoom or after class
Email:	Ramin.Moazeni@sjsu.edu
Classroom:	MH 233
Prerequisites:	CS 157B or instructor consent

Catalog Description

Design management and performance issues on file organization and access methods, buffer management and storage management. Query processing and query optimization, transaction management, recovery, and concurrency control techniques. Reliability, protection and integrity techniques. Extensive programming project.

This course covers the essential concepts, principles, techniques, internals and mechanisms for the design, analysis, use, and implementation of computerized database systems.

The database and information management system technology examined in this course represents the state-of-the-art, including traditional approaches as well as recent research developments. By providing a balanced view of "theory" and "practice," the course should allow the student to understand, use, and build practical database and information management systems.

Learning Outcomes

By the end of this course, a student should be able to:

- Understanding of Storage management architecture and relevant performance issues
- Understanding of File and System structure, page structure, heap files, buffer manager
- Detailed understanding of DBMS critical subsystems such as query processing and optimization techniques,
- Understanding of concurrency control, transaction management and recovery.
- Detailed understanding to the different indexes support (Static Hashing, Extendible Hashing, Linear Hashing) and how they are leveraged by the query optimizer.
- Exposure to current advanced research topics related to Big Data paradigm for distributed processing.

Required Texts

(Required)	Raghu Ramakrishnan, Johannes Gehrke Database Management Systems 3rd Edition ISBN-13: 978-0072465631 ISBN-10: 0072465638
(Recommended)	Garcia-Molina, Ullman, Widom Database Systems: The Complete Book 2nd Edition ISBN-13: 978-0131873254 ISBN-10: 0131873253

