

**Class meets on Mondays and Wednesdays at 4:00 to 5:15PM in Room: FH 302.
Ph: 235 2366. Office Hrs: 2:00-3:00PM on MW (Office: RFH 550J).**

This is a first graduate course in Database Management Systems Architecture. This course concentrates mainly on the database systems architectural issues and their problems. The course also discusses some advanced topics such as data warehousing, query optimization and workflow. The entire course includes lectures, project, tests, research report, and a seminar presentation. Every student of this course must complete a research report on an assigned topic and present a seminar. Student participation in all course activities is mandatory. Any absence from any of these activities must be justified to avoid penalty. It is expected that each student would have his/her own copy of the book right from the first day of the class.

Prerequisite: CS431 (Operating System) and CS470 (Introduction to Database Systems). A student who has not completed these prerequisites will not be allowed in this course.

Textbook: Concurrency Control and Recovery in Database Systems by Bernstein, Hadzilacos, and Goodman. Addison Wesley. The entire book is available on my website (http://k.web.umkc.edu/kumarv/cs570/text_book/complete-CCM-book.pdf). So no need to buy this book.

The following books and a number of research papers will be used for the entire course. A list of “must read” research papers will be provided in the class.

1. Database Recovery by Vijay Kumar and Sang Song. Kluwer International.
2. On Database Operating Systems and Transaction Execution: Database Operating Systems, Jim Gray in, An Advanced Course. Ed. by Bayer, Graham, and Seegmuller. Springer-Verlag.
3. Principles of Transaction Processing. Bernstein and Newcomer. MK.

Chapters	Topics
1	All sections. Transaction structure, Database states, Cache manager, Recovery manager, etc. At the end of this chapter students are expected to have a sound knowledge of these topics.
2	All sections. At the end of this chapter students are expected to have a good knowledge of serializability theory including view serializability.
3	All sections. At the end of this chapter students are expected to have a good insight into concurrency control, especially two-phase locking schemes. They must also become familiar with research problems in this area and begin reading research papers.
4.	All sections, except topics on distributed database systems such as distributed concurrency control. Non-Locking Schedulers.
5.	Most sections, excluding distributed database topics.
6	All sections.
	Data Warehousing (lecture notes)
	Mongo DB

Project

Every group must do a project. Depending upon the enrollment, one project may be assigned to a group of X students. This decision will be made in the class. Students are advised to begin working toward the assigned project as early as possible.

A project is composed of (a) research towards the project, (b) writing a research report, and (c) presenting a seminar on the research topic.

Research towards the project: Students should begin their work in the assigned project as early as possible. This will give them enough time to complete their project. This work involves literature survey, reading research papers, thinking about the solution, and so on. This will be discussed in the class.

Writing a research report: At the completion of the research work, students will write their research report. The format of this report will be explained in the class. This report must be completed and submitted on the deadline. No extension will be given.

Seminar: Near the end of semester, each group must present a seminar on the project topic. The time duration for a seminar will be 1 hr. and 15 mins.

Class discussion

Discussion among student is an effective way to improve understanding. A few discussion sessions will be embedded in the entire lecture session.

Tests and Homework

There will be two tests: Test 1 and Test 2. Test times and days are as follows:

Possible test dates

Test 1	Test 2
Monday, Oct. 5. Class time	Wednesday, Nov. 18. Class time

Points Distribution: Total Points: 100.

Report:	20.
Seminar:	20.
Homework:	10
Midterm:	20.
Final:	30

Grading Range: A: (95-100). A-: (90-94). B+: (85-89). B: (80-84). B-: (75-79). C: (70-74).