

CS174B Design and Implementation Techniques of Database Systems¹

Spring 2010

Prerequisite: Computer Science 130B

Credits: 4

Catalog Course Description:

Query processing, optimizer, access methods, indexing; transactions, ACID properties, concurrency control; distributed databases; search engine; distributed key-value store.

Textbook: Database Management Systems, 3rd Edition, R. Ramakrishnan and J. Gehrke, McGraw-Hill, 2003

References:

1. Database System Implementation, H. Garcia-Monila, J. D. Ullman, and J. Widom, Prentice Hall, 2000
2. Database System Concepts, 6th Edition, A. Silberschatz, H. F. Korth, and S. Sudarshan, McGraw-Hill, 2010

Course Goals:

Learn the essential query optimization techniques and transaction system design techniques in database management systems; have a basic understanding of DBMS implementation; keep updated on the newest development of Databases

Prerequisites by Topic:

Data structures, algorithm design and analysis, programming in Java/C/C++, B-tree indexing.

Lectures:

Time: Mon/Wed 2:00-3:15pm

Location: North Hall 1111

Discussion Section: Code 52696, Time: Friday 2:00-2:50pm, Location: PHLEP 1440

Instructor:

Professor Xifeng Yan, Department of Computer Science

Email: xyan@cs.ucsb.edu

Office Hours: Wed. 5:00-6:00pm or by appointment, HFH 1111

Course Homepage (course schedule, announcement):

<http://www.cs.ucsb.edu/~xyan/classes/CS174B2010spring.htm>

Course Twiki Site (slides, homework):

<http://habitus.cs.ucsb.edu/twiki/bin/view/CS174B2010/WebHome>

Requirements:

1. There will be a midterm exam and a final exam (close-book, close-notebook). The midterm exam covers topics discussed in lectures and discussions before the exam; the final covers everything taught in the course with an emphasis on the materials studied after the midterm.

¹This syllabus is adopted from Prof. Jianwen Su.

2. There will be a course project and about 4 homework assignments.
3. Copying (parts of) answers or programs in homework, project, or an exam will automatically result in a FAILURE for the course and a report to the Department and the University.

Grading: Homework 25%, Exams 50%, Project 25%

Course Outline (tentative):

1. Introduction
2. Storage and indexing, Chapters 8-11
3. Query optimization, Chapters 12-15
4. Transaction management, Chapters 16-18