Instructor:	Tsau -Young Lin
Office Location:	MH 214
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Office Hours:	TR 8:45-9:15PM Friday (appointment only)
Class Days/Time:	Section 5: TR, 7:30-8:45pm
Classroom:	MH 225
Prerequisites:	CS 146 (with a grade of "C-" or better) or instructor consent

Course Description

(From Catalog) Survey course. Object-oriented data model, definition language, query language. Object relational database systems. Database trends like active, temporal, multimedia, deductive databases. Web database topics, namely, architectures, introduction to interface languages. Team projects. Prerequisite: CS 157A (with a grade of "C-" or better); Computer Science, Applied and Computational Math, or Software Engineering Majors only; or instructor consent.

Before survey, we will address the key issues in database internal: Query algebra and logic query optimization, concurrent control, and the technology of secondary storage. So we can address these issues for each database system.

Object-oriented will not be covered: A well know expert, C. Date says: "most IT people now feel that, while object systems might well have a role to play, that role is a comparatively limited one.
Active database will not be covered: Most modern relational databases include active database features in the form of database triggers ; it is often covered in database design under the term non-loss decomposition.
Survey of data science (extract generalizable knowledge from data) will be added and deductive database will be regarded as a small chapter. Temporal, multimedia, Web database will be discussed.

Course Learning Outcomes (CLO) (Required)

Upon successful completion of this course, students will be able to know:

1. User's view of various Database systems

2. Concurrent control,

3. Technology of secondary storage

4. Logical query optimizations.

5. *knowledge structure hidden in data.*

6. *Programming aspect of data science (knowledge extraction from data).*

Textbook

Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer D. Widom, Database Systems: The Complete Book. Prentice Hall. 2nd Ed ISBN-13: 978-0131873254. 2008.

Other Readings

Jure Leskovec, Anand Rajaraman, Jeffrey D. Ullman, Mining of Massive Datasets, 2010, 2011, 2012, 2013, 2014 (can be done loaded from Stanford website)
Margret H. Dunham, Data Mining, Prentice Hall, 2002, ISBN 0-201-53921-7
W. Chu and T. Y. Lin, Foundation and Advances in Data mining, Springer, October, 2005, ISBN**:** 3540250573

Course Requirements and Assignments

1. Projects: Concept Mining Engine that include a MapReduce component
2. Exams: 3 exams
3. Quizzes: Many unscheduled quizzes. Missing quizzes (up to 4 quizzes) can be made up by attending public technical talks sponsored by professional organizations, such as IEEE, ACM, AMS, and etc.
4. Homework: Short SQL 's to enhance the understanding of lectures
5. Class Participation: Present some interesting topics in class, give some demos of short programs, or explaining hard home works in class will be properly awarded.
6. Each student is required to spend three hours per unit per week for instruction, preparation, studying, and labs.

Final Examination or Evaluation

An accumulative exam that includes lectures and project will be given at the time scheduled by the university.

Determination of Grades

Projects & home works	30%
Exams	30%
Quizzes (Class average set 80 linearly)	10%
Final Exam (include lecture and project)	30%
Total	100%
90-92; 93-96;97-100	A
80-82; 83-86;87-89.99	B
70-72; 73-76;77-79.99	C
60-62; 63-66;67-69.99	D
<60	F

Please verify all web links are active prior to online publication. Revised in September, 2018

Classroom Protocol

I expect you to arrive promptly for every class meeting. If you do come in late, please take a seat quietly. Do not talk on a cell phone during class. If your phone rings, turn it off or leave the room. I would appreciate it if you would refrain from talking to your neighbors while I am talking or while a classmate is trying to talk to me. A lot of people making tiny noises makes it very hard for me to hear.

University Policies (Required)

Per University Policy S16-9 *(http://www.sjsu.edu/senate/docs/S16-9.pdf)*, relevant information to all courses, such as academic integrity, accommodations, dropping and adding, consent for recording of class, etc. is available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/" Make sure to review these university policies and resources with Algebra students.

CS 157B, Introduction to Database Management Systems
Section 5, Spring, 2019, Course Schedule

Weeks	date	Lectures & Assignments
1	1/21	First day of the class (1/24), policies(Green sheet) Project Description
2	1/28	Database Internal: Query Algebra and Query Optimization
3	2/4	Database Internal: Query Algebra and Query Optimization
4	2/11	Database Internal: Query Algebra and Query Optimization
5	2/18	Database Internal: Secondary Storage Management
6	2/25	Database Internal: Secondary Storage Management
7	3/4	Database Internal: Secondary Storage Management
8	3/11	Database Internal: Concurrency Control
9	3/18	Database Internal: Concurrency Control
10	3/25	Database Internal: Concurrency Control
11	4/1	Data Science, knowledge base system, deductive system

12	4/8	Data Science, knowledge base system, deductive system
13	4/15	Temporal, multimedia, Web database will be discussed
14	4/22	Temporal, multimedia, Web database will be discussed.
15	4/29	Temporal, multimedia, Web database will be discussed.
Final Exam	5/7	7:00 - 8:50 p.m. Tuesday, May 7

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