San José State University
Fall Semester 2016
CS 157A, Introduction to Database Management Systems, Section 8

Course and Contact Information

Instructor:	Charles Bocage
Office Location:	MacQuarrie Hall, Room 422
Email:	Charles.Bocage@sjsu.edu
Office Hours:	Sa 4:00PM – 5:00PM (also by reservation)
Class Days/Time:	Sa 1:00PM – 3:45PM
Classroom:	MacQuarrie Hall, Room 422
Prerequisites:	CS 146 (Data Structures and Algorithms) with a grade of C- or better, or instructor's consent. The Department of Computer Science strictly enforces prerequisites. The instructor may drop any student who does not show up for the first two class meetings without providing a valid excuse ahead of time.

Course Description

Introduction to Database Management Systems

Current, classical database systems. Entity-relationship and enhanced entity models. Relational model, algebra, calculus. Current, emerging SQL standard. Embedded, Dynamic SQL. Application perspective on transactions and security. Interactive and programmatic interfaces to database systems. Application programming project using commercial database system. Prerequisite: CS 146 (with a grade of "C-" or better); Computer Science, Applied and Computational Math, or Software Engineering majors only; or instructor consent.

Course Learning Outcomes (CLO)

Upon successful course completion, students would achieve the following:

- Know the algorithms for testing if a decomposition is in a given specific Normal Form (NF). Given a set of Functional Dependencies (FD), Know the algorithms to do a table decomposition into BCNF, 3NF and 4NF.
- Write SQL commands to create database, create table, Insert/Update/Delete/Query rows in a database system.
- Ability to load data into the database.
- Being able to write relational algebra queries and predict what the query will return from a given database instance.
- Write simple transaction using JDBC or similar application programming interface (API).
- Understand the different flavors of SQL engines (OLTP vs Dara Warehouse).
- Understand at high-level the differences between SQL and NoSQL databases.

Required Texts/Readings

- Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer D. Widom, "**Database Systems: The Complete Book**," Prentice-Hall, 2nd Edition, 2009, ISBN-13: 978-0-13-606701-8 [Mandatory].

Recommended texts for self-study

- C. Date, "**An Introduction to database Systems**," Addison Wesley, 8th Edition, 2003, ISBN-13: 978-0-32-119784-9 [Optional].
- Ramez Elmasri and Shamkant B. Navathe, "**Fundamentals of Database Systems**," Addison Wesley, 5th Edition, 2006, ISBN-13: 978-0-32-136957-4 [Optional].

Course Requirements and Assignments

All the assignments and related documents must be submitted to Canvas by 11:59 PM PST on the due date. Late work is not accepted, and there is no extra credit or makeup work.

Homework and Project descriptions are available on Canvas:

- Homework-1: Assignment is on Sept 3, 2016, and is due back on Sept 17, 2016.
- Homework-2: Assignment is on Sept 24, 2016, and is due back on Oct 15, 2016.
- Homework-3: Assignment is on Oct 29, 2016, and is due back on Nov 12, 2016.

Project: Assignment is on Nov 12, 2016, and is due back on Dec 10, 2016.

Exams or Evaluation

The midterm and final examinations will be closed book and no notes. There will be no laptops, or any personal digital devices allowed. There will be no make-up exams. If a student misses an exam without a legitimate excuse, a grade of zero will be recorded. If a student missed an exam with a legitimate excuse then the grade for that exam will be prorated. More details can be found in *University Policy S06-4 (http://www.sjsu.edu/senate/docs/S06-4.pdf) which states that "There shall be an appropriate final examination or evaluation at the scheduled time in every course, unless specifically exempted by the college dean who has curricular responsibility for the course."*

Grading Information

Your individual class grade will be weighted as follows:

- Assignments 30% 300 points
- Project 20% 200 points
- Midterm 20% 200 points
- Final exam 20% 200 points
- Quizzes/Labs 10% 100 points

Each assignment, project, quiz, lab, and exam will be scored (given points) but not assigned a letter grade. The mean, median and mode scores will be announced after each exam.

Determination of Grades

At least	Letter Grade
93%	A
90%	A-
87%	B+
83%	B

80%	B-
77%	C+
72%	C
70%	C-
67%	D+
62%	D
60%	D-
<60%	F

Classroom Protocol

Attendance is recommended, but it is not mandatory, except for exam dates. Cell phone use is prohibited. Punctuality is appreciated.

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/"

CS 157A Introduction to Database Management Systems, Section 8, Fall 2016 Course Schedule

Any changes in the schedule will be sent to registered students through SJSU email 1 week earlier.

Course Schedule

Week	Date	Topics, Readings, Assignments, Deadlines
1	Aug 27th	Lecture: Introduction to Data Model (Ch. 1 + Ch. 2)
1	Aug 27th	Lecture: Introduction to Data Model (Ch. 1 + Ch. 2)
2	Sept 3rd	Lecture: Relational Algebra (Ch. 2) + HW-1 Preview
2	Sept 3rd	Lecture: Relational Algebra (Ch. 2)
3	Sept 10th	Lecture: Relational Database Design Overview (Ch. 3)
3	Sept 10th	Lecture: Physical RDBMS Design: Schema design and normalization (Ch. 3)
4	Sept 17th	Lecture: Physical RDBMS Design: Schema design and normalization (Ch. 3)
4	Sept 17th	Lecture: Physical RDBMS Design: Schema design and normalization (Ch. 3)
5	Sept 24th	Lecture: Logical RDBMS Model: E-R Model (Ch. 4) + HW-2 Preview
5	Sept 24th	Lecture: Logical RDBMS Model: E-R Model (Ch. 4)
6	Oct 1st	Lecture: Logical RDBMS Model: E-R Model (Ch. 4)
6	Oct 1st	Lecture: SQL Overview and SELECT (Ch. 6)
7	Oct 8th	Lecture: SQL Overview and SELECT (Ch. 6) + Midterm Preview
7	Oct 8th	Lecture: SQL JOIN, Aggregate, Grouping, Having and DML (Ch. 6)

Week	Date	Topics, Readings, Assignments, Deadlines
8	Oct 15th	Midterm (Closed book)
8	Oct 15th	Lecture: SQL JOIN, Aggregate, Grouping, Having and DML (Ch. 6) + SQL Group-by, Sub-query, Security (Ch. 7)
9	Oct 22nd	Lecture: SQL Group-by, Sub-query, Security (Ch. 7)
9	Oct 22nd	Lecture: Transactions in SQL (Ch. 6.6), Constraints and Triggers (Ch. 7), Views and Indexes (Ch. 8) + HW-3 Preview
10	Oct 29th	Lecture: Transactions in SQL (Ch. 6.6), Constraints and Triggers (Ch. 7), Views and Indexes (Ch. 8)
10	Oct 29th	Lecture: Transactions in SQL (Ch. 6.6), Constraints and Triggers (Ch. 7), Views and Indexes (Ch. 8)
11	Nov 5th	Lecture: JDBC + Project Preview
11	Nov 5th	Lecture: JDBC
12	Nov 12th	Lecture: SQL Persistent Stored Module (PSM) – Stored Procedure (Ch. 9)
12	Nov 12th	Lecture: SQL Persistent Stored Module (PSM) – Stored Procedure (Ch. 9)
13	Nov 19th	Lecture: Embedded SQL, Dynamic SQL and CLI (Ch. 9)
13	Nov 19th	Lecture: OLTP vs. Data Warehouse
14	Nov 26th	Thanksgiving
14	Nov 26th	Thanksgiving
15	Dec 3rd	Lecture: OLTP vs. Data Warehouse + SQL vs. NoSQL
15	Dec 3rd	Lecture: SQL vs. NoSQL + Final Preview
16	Dec 10th	Class Review
Final Exam	Dec 17th	Final (Closed book) – MacQuarrie Hall, Room 422, Time: 1:00pm – 2:30pm