

San José State University
Department of Computer Science
Fall Semester 2016
CS 157A – Introduction to Database Management Systems,
Section 7

Course and Contact Information

Instructor:	Ahmed Ezzat
Office Location:	Dunkin Hall, Room 282
Email:	Ahmed.Ezzat@sjsu.edu
Office Hours:	Th 5:00PM – 6:00PM (by reservation)
Class Hours:	Tu,Th: 7:30PM – 8:45PM
Classroom:	MH-233
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.
Grader: Sahil Kaw	Email: Sahil.Kaw@sjsu.edu

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 Data 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 handed in the classroom on due date. Students will lose 10% of the homework or project grade for each day delay, and after 5 days, homework or projects will not be accepted.

Homework and Project descriptions are available on Canvas

- Homework-1: [Assignment is on Sept. 1, 2016, and is due back on Sept. 15, 2016.](#)
- Homework-2: [Assignment is on Sept. 22, 2016, and is due back on Oct 18, 2016.](#)
- Homework-3: [Assignment is on Oct. 25, 2016, and is due back on Nov. 10, 2016.](#)

Project: [Assignment is on Nov. 8, 2016, and is due back on Dec. 6, 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 on final examination 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 15% 15 points individual scores
- Project 25% 25 points individual scores
- Midterm 30% 30 points individual scores
- Final exam 30% 30 points individual scores

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

Determination of Grades

Final individual class letter grades will be assigned based on the class curve (i.e. relative grading). Your final class grade can be adjusted up or down depending on your level and quality of participation on your project team.

Classroom Protocol

It is expected that student attend classes, be active and participate in the class by asking/answering questions, arrive in time and leave only after the class is ended. No eating is allowed in the classroom, and it is expected to turn your cell off before entering the classroom.

University Policies

General Expectations, Rights and Responsibilities of the Student

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](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>

CS 174, Server-side Web Programming, Section 5, Course Schedule

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

Tentative course calendar

Week	date	Item
1	Aug 25 th	Lecture: Introduction to Data Model (Ch. 1 + Ch. 2)
2	Aug 30 th	Lecture: Introduction to Data Model (Ch. 1 + Ch. 2)
2	Sept 1 st	Lecture: Relational Algebra (Ch. 2) + HW-1 Preview
3	Sept 6 th	Lecture: Relational Algebra (Ch. 2)
3	Sept 8 th	Lecture: Relational Database Design Overview (Ch. 3)
4	Sept 13 th	Lecture: Physical RDBMS Design: Schema design and normalization (Ch. 3)

4	Sept 15th	Lecture: Physical RDBMS Design: Schema design and normalization (Ch. 3)
5	Sept 20th	Lecture: Physical RDBMS Design: Schema design and normalization (Ch. 3)
5	Sept 22 nd	Lecture: Logical RDBMS Model: E-R Model (Ch. 4) + HW-2 Preview
6	Sept 27 th	Lecture: Logical RDBMS Model: E-R Model (Ch. 4)
6	Sept 29 th	Lecture: Logical RDBMS Model: E-R Model (Ch. 4)
7	Oct 4 th	Lecture: SQL Overview and SELECT (Ch. 6)
7	Oct 6 th	Lecture: SQL Overview and SELECT (Ch. 6) + Midterm Preview
8	Oct 11th	Lecture: SQL JOIN, Aggregate, Grouping, Having and DML (Ch. 6)
8	Oct 13th	Midterm (Closed book)
9	Oct 18th	Lecture: SQL JOIN, Aggregate, Grouping, Having and DML (Ch. 6) + SQL Group-by, Sub-query, Security (Ch. 7)
9	Oct 20th	Lecture: SQL Group-by, Sub-query, Security (Ch. 7)
10	Oct 25th	Lecture: Transactions in SQL (Ch. 6.6), Constraints and Triggers (Ch. 7), Views and Indexes (Ch. 8) + HW-3 Preview
10	Oct 27th	Lecture: Transactions in SQL (Ch. 6.6), Constraints and Triggers (Ch. 7), Views and Indexes (Ch. 8)
11	Nov 1st	Lecture: Transactions in SQL (Ch. 6.6), Constraints and Triggers (Ch. 7), Views and Indexes (Ch. 8)
11	Nov 8th	Lecture: JDBC + Project Preview
12	Nov 10th	Lecture: JDBC
12	Nov 15th	Lecture: SQL Persistent Stored Module (PSM) – Stored Procedure (Ch. 9)
13	Nov 17th	Lecture: SQL Persistent Stored Module (PSM) – Stored Procedure (Ch. 9)
13	Nov 22nd	Lecture: Embedded SQL, Dynamic SQL and CLI (Ch. 9)
14	Nov 24th	Thanksgiving
14	Nov 29th	Lecture: OLTP vs. Data Warehouse
15	Dec 1st	Lecture: OLTP vs. Data Warehouse + SQL vs. NoSQL
15	Dec 6th	Lecture: SQL vs. NoSQL + Final Preview
16	Dec 8th	ClassReview
16	Dec 15th	Final (Closed book) – MH-233, Time: 7:45pm – 9:00pm