Syllabus - CS 4400
Summer 2014

Instructor:

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Office: Floor 3, room 304
Office Hours: 13:30-15:00 on class days, or by appointment.

Course Content

We introduce the fundamental concepts necessary for the design and use of modern database systems. We examine the concepts in the order that we encounter them in the actual database design process. We start with the problem of conceptually representing data that is to be stored in a database. From there, we see how the data in a conceptual data model can be converted to a database specific model (e.g., the relational data model). We also discuss various forms for relations that possess good properties. We see how to use the relational database language SQL to define the relations and to write SQL statements to insert, delete, retrieve and update the data. We also examine some of the fundamental storage structures that are used in relational database systems. We end the course with a discussion of some advanced topics in the database management area.

Required Text: Fundamentals of Database Systems, 6th ed, Elmasri & Navathe, Addison-Wesley, 2011.

Topics	Chapters (5th ed.)	Chapters (6th ed.)
Basic concepts - data independence, 3 level database architecture, database system components	1, 2	1, 2
Conceptual database level - Entity-Relationship Model	3, 4	7, 8
DBMS Design Methodology	notes	notes
Relational Data Model: Introduction, Algebra and Calculus	5, 6	3,6
SQL Query Language	8	4, 5
Mapping from ER Model to Relational Model	7	9
Relational database design - Normal Forms, Functional Dependencies	10, 11	15, 16
Internal database level - storage structures	13, 14	17, 18

Grading

Heavyweight Project Option	Lightweight Project Option

• 10% Attendance
• 50% 4 in-semester exams (12.5% each)
• 40% Team Project
  • Phase 1: 10%
  • Phase 2: 10%
  • Phase 3 (heavy): 20%
	• 10% Attendance
	• 50% 4 in-semester exams (12.5% each)
	• 25% Team Project
	  • Phase 1: 10%
	  • Phase 2: 10%
	  • Phase 3 (Light): 5%
	• 15% Final Exam (Only Lightweight)

Project:

You will design and implement a database application using the MySQL relational database system available on a College of Computing server or installed on your laptop. The Project will be done in self selected groups of 4 or 5 students. We will follow a typical database design methodology for this project. Notes describing the methodology will be available on T-Square. The project will consist of 3 phases (deliverables). You will demo phase 3 of the project during the last week of classes. All members of a group get the same grade for each phase of the project. Each group member should fully participate in each phase of the project. If a member of a group does not carry his/her weight, then the group may remove that member at the end of phase I or the end of Phase II, only. The course instructor must be notified of this.

Important note about project collaboration

Please note that project groups are supposed to collaborate only within the group among group members. Collaboration among distinct groups resulting in very similar submissions will not be tolerated. Serious penalties and honor code violation actions will be taken.

Important Dates:

Exam 1	**-**	**May 27th**
Project Phase 1	**-**	**June 4th**
Exam 2	**-**	**June 17th**
Project Phase 2	**-**	**June 27th**
Exam 3	**-**	**July 4th**
Exam 4	**-**	**July 18th**
Project Phase 3	**-**	**July 23rd**
Project Demos	**-**	**July 24th/25th**
Final Exam	**-**	**July 28th-31st (day TBD by GTL)**