CS4400 Sections A, B
Introduction to Database Systems
Fall 2015

CS4400 A	ARCH 123	Tu, Th 3:05-4:25 pm	Monica Sweat
CS4400 B	KACB 1443	Tu, Th 12:05-1:25 pm	Sham Navathe

Professors:
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Office Hours: By appointment

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Office Hours: `Tu/Th 2-3pm` and by appointment (Use CS4400 in header if you send email)
Asst.: Joy West, jwest62@cc.gatech.edu, KACB 3121, Phone: (404) 385-3163

Head TA:
Malvika Paul (malvika.paul@gatech.edu)
Office: KACB 3319
Office hours: By appointment

TAs and TA Office Hours Schedule:
We expect that there will be 10-12 additional TAs for the course. Their hours and information will be listed shortly on T-Square. TA office hours are held in the area outside Klaus KACB #3319 Door 1.

Piazza: We will be using Piazza (available on T-Square) to help with class communication.
- Group Formation – To help you find group members.
- Project Questions – Questions specific to the project. Do not post any part of your solution to the forum. You may ask general questions about the project.

Text, Notes, Resources:
- **Required Text:** *Fundamentals of Database Systems*, 7th edition, Elmasri & Navathe, Addison-Wesley, 2015. [Sixth edition is OK to use. Please make sure to consult the right chapters. See Quiz Table below.]
- **Chapter by Chapter Slides for Textbook:** Posted on T-Square (They are posted as Edition 5 and Edition 6 slides. Edition 5 slides were prepared by authors and will be modified as the course progresses. Edition 6 slides were prepared by the publisher. Edition 7 chapters that we will cover mostly are in the same order as Ed.5. We are modifying Ed. 5 slides and posting them as the course progresses.).
- **Database Design Methodology Notes (**by Prof. Leo Mark**):** Posted on T-Square.
- **MySQL and PHP Documentation:** Posted on T-Square.
- **Sample Quizzes:** Posted on T-Square.
- **Class Project:** Posted on T-Square.

Prerequisite(s): Basic programming skills such as those from CS1301, CS1315, or CS1371.

Languages: Most students use Java and PHP or Python to do the project which also involves use of SQL.

Grading:
Quiz 1, 2, 3, 4: 15% each
Project (Phase I 10%, Phase II 10%, Phase III 20%- Heavy option; 10% Light option)
Final Exam – 10% only for those who choose to do the light option of the project in Phase III. (Those who do the heavy option in Phase III CANNOT take the Final).

PROJECT:
You will design and implement a database application using the MySQL/PHP relational database system available via CoC (College of Computing). The Project *must be done in groups of 3 or 4 students*. Groups of more than 4 or less than 3 will not be allowed. You are allowed to form groups across the two sections (A & B) of the class. We will follow a typical database design methodology for this project. Notes describing the methodology are available via the class web page on T-Square. The project will consist of 3 phases (deliverables) as well as a final demonstration to the TA. Phase I and Phase II of the project are each worth 10% credit. Phase III of the project is worth 10% credit without the GUI – implemented as queries only, and 20% credit with GUI, so that it runs as a full-fledged application. All members of a group get the same grade for each phase of the project. If a member of a group does not carry his/her weight (in terms of an equitable distribution of work), then the group may kick out that member *at the end of phase I or Phase II, only*. The course professors and head TA should be notified of this immediately when this takes place.

RULES FOR PROJECT COLLABORATION:
Students within each project group are strongly encouraged to split each phase of the project into smaller tasks and collaborate closely with each other to accomplish that phase. No collaboration of any kind whatsoever is allowed between students in different project groups. Any violation of this policy will be reported to the Dean of Students without exception.

RULE FOR REGRADING:
If you have issues with the grading of a project phase, see the TA who graded that project phase. The TA can explain why you lost points and see if you deserve any extra points. If you believe you have an issue after that, see the Head TA. You may approach the instructor only if you are not satisfied with the way the TA and Head TA explain to you why certain points were taken off. All regrading of Phases 1 and 2 must be completed before dead week. No requests for regrade will be entertained after that time.

COURSE CONTENT:

We introduce the fundamental concepts necessary for the design and use of modern database systems in today's large scale enterprise applications. We examine the concepts in the order that we typically 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 and indexing schemes that are used in relational database systems. We end the course with a discussion of some advanced topics in the database management area.

Topic	**Chapters 7th Edition**	**Chapters 6th Edition**	**Chapters 5th Edition**
Basic concepts - data independence, 3 level database architecture, database system components	1, 2	1, 2	1,2
Conceptual database level - Entity-Relationship Model	3, 4	7, 8	3,4
DBMS Design Methodology	notes	notes	notes
Relational Data Model: Introduction, Algebra and Calculus	5, 8	3, 6	5,6
SQL Query Language	6.7	4, 5	8
Mapping from ER Model to Relational Model	9	9	7
Relational database design - Normal Forms, Functional Dependencies	14,15	15, 16	10,11
MySQL & PHP	notes	notes	notes
Internal database level - storage structures, files and indexing	16,17	17, 18	13,14
Data mining and data warehousing- time permitting- not on test	28, 29	28, 29	28,29

IMPORTANT DATES:

Quiz #	Topics	DATE	7th Ed. Reading	6th Ed. Reading	5th Ed. Reading
1	DB Concepts & ER/EER Model	Sep 10 (Thu)	1, 2, 3, 4	1, 2, 7, 8	1,2,3,4
2	Relations, Algebra & Calculus, and QBE	Oct 8 (Thu)	5, 8	3, 6	5,6
3	SQL and ER to Relational Mapping	Oct. 29 (Thu)	6,7, 9	4, 5, 9	7,8
4	Normalization and Physical Design	Nov.24 (Tues)	14,15,16,17	15, 16, 17, 18	10,11,13,14

Project	Due Date
Assigned	Sept 3 (Approx. Date)
Phase I	Oct.1 (Thurs.)
Phase II	Nov. 3 (Tues)
Phase III	Dec. 1 (Tues), 11:59pm

PROJECT DEMO DATES: Dec .2nd through 4th (Wed- Friday).

FINAL EXAM DATES: Section A: Dec 10 (Thursday) 11:30 – 2:20
Section B: Dec 8 (Tuesday) 11:30 – 2:20