INLS 623
Database Systems II
Spring 2014

Tuesday/Thursday, 8:00 – 9:15 AM, Manning 304

Instructor:

Arcot Rajasekar
Office: Manning 021
Office Hours: 9:30 – 10:30 AM, Tue/Thu, & by appointment through email.
Email: rajasekar at unc dot edu

Course Description: Intermediate-level design and implementation of database systems, building on topics studied in INLS 523. Additional topics include MySQL, indexing, XML, and non-text databases.

Prerequisite(s): INLS 382 or INLS 582, and INLS 523.

Textbook (required):

Fundamentals of Database Systems, Sixth Edition
Elmasri, R. and Navathe, S.B., Pearson Addison Wesley.
(5^{th} edition is also okay – but chapters are moved around)

Grading Scheme:

1. Class exercises & participation 10%
2. Home works, Journal & Assignments 20%
3. Semester project 25%
4. Midterm exam 20%
5. Final exam 25%

1. Course Description

Intermediate-level design and implementation of database systems, building on topics studied in INLS 523. Additional topics include MySQL, indexing, XML, and non-text databases.

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2. Prerequisites

• Knowledge of relational theory, including normalization and functional dependency
• Knowledge of basic SQL (both DML and DDL)
• Knowledge of Data Models, ER diagrams and conversion to relations
• Knowledge of implementing simple databases and query processing.

3. Course Objectives

- Concepts in relational algebra and relational calculus
- Concepts in database storage, hashing and indexing
- Exercises in Advanced SQL and Embedded SQL
- Database Application Development – design and development project
- Non-relational databases (XML, non-textual, web, NoSQL, etc)

4. Hardware and Software Requirements

You will require a laptop to install and run MySQL or Postgres. This will be used for SQL-based exercises. The main project will be done on an Oracle database running at SILS.

5. Graded Work

Your grade will be based on class exercises and participation, a midterm test, a final exam, home works, journal and assignments, and a semester project, weighted as shown under "Grade Weighting" on the first page.

Semester Design Project

The project carries 25% weight. You will be design and implement a database and demonstrate its usage by the end of the semester. The project will be in three phases: information gathering (5%), design (10%) and implementation (10%). Details about the project will be discussed during the semester.

Homework, Journal & Assignments

Homework and programming assignments will be given throughout the semester. As part of the course, you are expected to keep a journal of activities in the SILS Life Time Library (LTL)(http://lifetime-library.ils.unc.edu/). You can keep all class materials as well as your class notes, home works and project work. This will be a useful compendium of digital assets that may be helpful as a reference for you in your job. Create a sub-collection called INLS690 in your home collection in the LTL and share this sub-collection with me (rajaseka is my LTL id). If you don't have an account already in LTL, please join now. Materials deposited in the LTL will be available to you beyond your student days at UNC. Please read the guidelines and terms and conditions carefully.

Class Exercises and Participation

Active participation in class is required and will be basis for part of the grade. In class exercises will be given randomly and will count towards your grade. No makeups will be given for these exercises if you are absent.

Exams

There will be one mid-term and one final exam.

6. Grading Policies

The following grade scale will be used AS A GUIDELINE (subject to any curve):

Graduate Percentage	Undergraduate Percentage
H 100-95%	A 100-90%
P+ 94-90%	B 89-80%
P 85-89%	C 79-70%
P- 80-84%	D 69-60%
L 70-79%	F Below 60%
F Below 70%	

This scale will be used as a GUIDELINE ONLY. The final grade scale may differ.

Due Dates and Late Work

Each assignment will have a due date and time and will include instructions for submission. Late submissions will not be given any credit if submitted after graded assignments or solutions have been released. Typically, a late penalty of 10% per day will be applied unless prior arrangements have been made with the instructor.

Requests for Extensions and Absences

Any request for an extension must be made, preferably by email, at least 24 hours prior to the due date. Written documentation is required for illness. If a serious illness prevents you from taking any of the tests, send your instructor an e-mail message, or a friend with a note, describing your condition before the scheduled test. Also, to establish a valid excuse for an illness you must get a note from a physician or the University infirmary. Before missing a test for any reason, you must make every effort to discuss the problem with your instructor before the day of the test.

Statute of Limitations

Any questions or complaints regarding the grading of an assignment or test must be raised within one week after the score or graded assignment is made available (not when you pick it up).

7. Course Communication (Sakai)

A course website will be set up and it is the responsibility of every student to **check the Sakai website regularly** for announcements and materials. The instructor will place presentation slides and other materials pertinent to the course in Sakai, including exam and project information. If something the instructor says in class conflicts with information posted by the instructor on the Sakai website, in slides or other documents, then the information posted on by the instructor **on the website takes precedence**. Verbal instructions are easily misinterpreted, and they do not leave a documentation trail.

8. Honor Code

The UNC Honor Code is in effect for all work in this course. When work or ideas are not your own, you must attribute them. Unless otherwise stated, all assignments in this class are individual assignments, meaning that the substance of the work you turn in must be your own. If you have any doubts or questions about a course of action or a specific situation, please ask for clarification. Students should NOT receive (or give) major creative assistance or ongoing minor support on individual assignments. If you have any questions about this, please ask the instructor.

9. Special Accommodations

If any student needs special accommodations, please contact the instructor during the first week of classes.

Cl No	Date	Classroom Topic	Project Timeline
1	Jan 09	Intro	
2	Jan 14	Intro	
3	Jan 16	Intro & Project Intro	Project Introduction - Start of Phase I
4	Jan 21	Adv SQL/Embedded SQL (Chaps 5 and 13)	
5	Jan 23	Adv SQL/Embedded SQL (Chaps 5 and 13)	
6	Jan 28	Adv SQL/Embedded SQL (Chaps 5 and 13)	
7	Jan 30	Adv SQL/Embedded SQL (Chaps 5 and 13)	
8	Feb 04	Rel Alg/Calc (Chap 6)	
9	Feb 06	Rel Alg/Calc (Chap 6)	
10	Feb 11	Rel Alg/Calc (Chap 6)	Phase I Report Due
11	Feb 13	Rel Alg/Calc (Chap 6) Additional Normal Forms (Chap 15.5-7)	Start of Phase II
12	Feb 18	Additional Normal Forms (Chap 15.5-7)	
13	Feb 20	DB Storage and Hashing (Chap 17)	
14	Feb 25	DB Storage and Hashing (Chap 17)	
15	**Feb 27**	**Mid Term Exam – In Class**	
16	Mar 04	DB Indexing (Chap 18)	
17	Mar 06	DB Indexing (Chap 18)	
18	Mar 18	DB Indexing (Chap 18)	
19	Mar 20	DB Indexing (Chap 18)	Phase II Report Due
20	Mar 25	XML (Chap 12)	Start of Phase III
21	Mar 27	XML (Chap 12)	
22	Apr 01	Web Database (Chap 14)	
23	Apr 03	Web Database (Chap 14)	
24	Apr 08	Non-text DB (Chap 26)	
25	Apr 10	Non-text DB (Chap 26)	
26	Apr 15	DataWarehousing and OLAP (Chap 29)	
27	Apr 17	NoSQL	
28	Apr 22	Project Demonstration	Project Demonstration & Code due
29	Apr 24	Recap	
Exam	**Apr 29**	**Final Exam – In Class - 8AM**	