Syllabus
Database 1, INLS 523_003W, Fall 2013

Instructor
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Acknowledgements
The design, materials, and implementation of this online version of INLS 523 is the product of a collaborative effort of SILS database instructors: Joan Boone, Rob Capra, Arcot Rajasekar, and myself.

Syllabus Contents

Course Description
INLS 523: Database Systems I: Introduction to Databases (3 credits)
Prerequisite:

> Undergraduates: INLS 261 or equivalent.
> Graduates entering SILS in Summer/Fall 2013 (under the new curriculum): Satisfactory completion of the SILS Information Technology Competency Requirement OR INLS 261.
> Graduate students who entered SILS prior to Summer/Fall 2013 (under the old curriculum) INLS 461.

Design and implementation of database systems. Semantic modeling, relational database theory, including normalization, query construction, and SQL.

This course will introduce the basic concepts and applications of relational database management systems, including semantic modeling and relational database theory. Topics include: user requirements and specifications, semantic data modeling relational model, SQL, normalization and data quality, relation topics and emerging technologies.

Course Outline
Week 1, Startup
Week 2: Introduction, Database Concepts
Weeks 3 & 4 Entity-Relationship Models
Week 5 Relational Theory and Concepts
Week 6 Mapping from Entity Relationship to Database Schema
Weeks 7 & 8 SQL
Weeks 9 & 10 Advanced SQL
Week 11 Relational Algebra
Weeks 12 & 13 Functional Dependencies and Normalization
Week 14 Wrapping up and Looking ahead

Learning Objectives
- Understand the basic concepts of databases, with emphasis on the relational model
- Gain experience with both the theoretical and practical aspects of database design and implementation.
- Develop proficiency with entity-relationship modeling.
- Be able to weigh, discuss, and justify database design decisions.

- Learn how to use SQL to create, manipulate and query databases
- Apply practical techniques for improving database design quality
- Gain an understanding of important ideas for databases in the future

Policies on Academic Integrity and Diversity
Chapel Hill has had a student-administered honor system and judicial system for over 100 years. Because academic honesty and the development and nurturing of trust and trustworthiness are important to all of us as individuals, and are encouraged and promoted by the honor system, this is a most significant University tradition. More information is available at http://studentconduct.unc.edu/honor-system

The UNC Honor Code is in effect for all work in this course. The "Instrument of Student Judicial Governance" gives examples of actions that constitute academic dishonesty: http://studentconduct.unc.edu/sites/studentconduct.unc.edu/files/2012_2013_Instrument.pdf#academicdishonesty

Students often ask what is okay to talk about with other students and what is not. There are some specific guidelines for this course.

- I do encourage you to help each other learn the course material – your fellow students can often be a great resource for learning. However, you should not discuss the details of a solution to an assignment with other students, and should never copy or share answers for an assignment with other students. It is okay to talk about course material with other students, but you should not discuss solutions to pending assignments.
- All work you submit should be your own.
- You may give and receive assistance regarding the use of hardware and software. For example, you may ask or answer a question such as "how do I [fill in the blank] in SQLite?"). A question such as "Should I have a separate table to represent cats and their information?" should be addressed to me.
- Individual homework assignments are to be done **individually**. You may consult the course readings, your notes, and even other print or web sources. (Keep in mind, however, that what you find in other sources may not be consistent with what I want you to do.) You may not consult your classmates or other people; all questions should be addressed to me.
- You must sign (check) the honor statement when you submit each assignment. This confirms that you and the work conforms to the Honor Code.

In support of the University's diversity goals and the mission of the School of Information and Library Science, SILS embraces diversity as an ethical and societal value. We broadly define diversity to include race, gender, national origin, ethnicity, religion, social class, age, sexual orientation and physical and learning ability. As an academic community committed to preparing our graduates to be leaders in an increasingly multicultural and global society we strive to:

- Ensure inclusive leadership, policies, and practices;
- Integrate diversity into the curriculum and research;
- Foster a mutually respectful intellectual environment in which diverse opinions are valued;
- Recruit traditionally underrepresented groups of students, faculty and staff; and
- Participate in outreach to underserved groups in the State.

The statement represents a commitment of resources to the development and maintenance of an academic environment that is open, representative, reflective and committed to the concepts of equity and fairness.

Grading Policies
All grades will be recorded in the Sakai Gradebook.

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

Grade Range	Definition*
A 90-100%	Mastery of course content at the highest level of attainment that can reasonably be expected of students at a given stage of development. The A grade states clearly that the students have shown such outstanding promise in the aspect of the discipline under study that he/she may be strongly encouraged to continue.
B 80-89.9%	Strong performance demonstrating a high level of attainment for a student at a given stage of development. The B grade states that the student has shown solid promise in the aspect of the discipline under study.
C 70-79.9%	A totally acceptable performance demonstrating an adequate level of attainment for a student at a given stage of development. The C grade states that, while not yet showing unusual promise, the student may continue to study in the discipline with reasonable hope of intellectual development.
D 60-69.9%	A marginal performance in the required exercises demonstrating a minimal passing level of attainment. A student has given no evidence of prospective growth in the discipline; an accumulation of D grades should be taken to mean that the student would be well advised not to continue in the academic field.
F 0-59.9%	For whatever reason, an unacceptable performance. The F grade indicates that the student's performance in the required exercises has revealed almost no understanding of the course content. A grade of F should warrant an advisor's questioning whether the student may suitably register for further study in the discipline before remedial work is undertaken.

*Definitions are from: http://registrar.unc.edu/academic-services/grades/explanation-of-grading-system/ (underlining is my emphasis)

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

Grade Range	Definition*
H 95-99%	High Pass
P 80-94.9%	Pass
L 70-79.9%	Low Pass
F 0-69.9.9%	Fail

*Definitions are from: http://registrar.unc.edu/academic-services/grades/explanation-of-grading-system/

Due Dates and Late Work
Each assignment will have a due date and time and will include instructions for submission. A late penalty of 10% per day will be applied unless prior arrangements have been made with the instructor. Assignments submitted more than 5 days after the due date will receive no credit and will not be graded.

Requests for Extensions
Any request for an extension must be made, preferably by email, at least 24 hours prior to the due date. If an emergency arises that prevents you from contacting me in advance, you must do so as soon as possible.

Grade Components
Your final grade is based on the following deliverables.

Exercises, 8% of final grade
You must submit **at least 8** exercises over the course of the semester. Submittable exercises are due by **12:00 noon EST on the Wednesday** one week after they are made available. in other words, you have a full week to work on the submittable exercises.

These ungraded exercises provide an opportunity for you to work through specific concepts or techniques before you use them in a graded assignment or project. You should expect to spend 5-10 minutes on each one. Exercises that are eligible for submission will be identified in the slides for that week (although not all weeks will have an eligible exercise, and some may have more than one). Exercise solutions will be uploaded to the "Exercise Solutions" folder in the Resources section of Sakai. We may also discuss them during the class meeting or in the discussion forum.

Unit Tests, 32% of final grade
Most units include 1 or 2 tests to assess your understanding of the unit content. You may not talk about the test with anyone, either during or after you have completed it. However, you may consult the course materials during the test – in other words, these are open-book tests. Tests will be published on Tuesdays at 5:00 pm EST, and are due no later than the following Friday at 5:00 EST. Once you have started a test you will have 30 minutes to complete it.

Assignments, 40% of final grade
You will complete 5 individual assignments. The first assignment, "Course Startup" is ungraded, but required. Assignments will be published by 5:00 pm EST on the Wednesday they are available, and must be received in Sakai by 5:00 EST on the Tuesday they are due. The Course Startup includes detailed instructions as well as practice in submitting an assignment.

1. Course Startup. Available Wednesday 8/21/13, due Tuesday 8/27/13.
2. ER. Available Wednesday 9/4/13, due Tuesday 9/17/13.
3. ER-DB Mapping. Available Wednesday 9/25/13, due Tuesday 10/8/13.
4. SQL. Available Wednesday 10/23/13 due Tuesday 11/5/13
5. FD & Normalization. Available Wednesday, 11/13/13, due Tuesday 11/26/13

Project Deliverables, 20% of grade
You will work on the project throughout the semester, with specific deliverables as given below. Specifications for each deliverable will be published by 5:00 pm EST on the Wednesday they are available, and must be received in Sakai by 5:00 EST on the Tuesday they are due.

1. Requirements. Available Wednesday 9/4/13, due Tuesday 9/24/13. 4%
2. ER & Schema. Available Wednesday 10/8/13, due Tuesday 10/29/13. 7%
3. Implementation. Available Wednesday 11/13/13 due Tuesday 12/10/13 (in place of the final). 9%

Course Communications
Course announcements
Announcements will be posted on Sakai, and usually also sent via email to each student's email address of record. However, it is the responsibility of every student to check the Sakai site regularly for announcements.

Messages
I may use the message tool to send individual messages to you; usually I will also copy the message to your email address. You can also use the tool to send a message to me or to our Course Graduate Assistant, Brittany Hayes.

Email
Email is the best way to contact me.
Note that I receive a large amount of email and while I try to reply to student emails within 48 hours, there are times that it may take me 2-3 days to reply. Therefore, it is important that you get started on assignments early, so there is time for me to respond to any questions you may have. I cannot guarantee that I will be able to answer last-minute questions (e.g., within 2 days of the assignment due date).

Questions may also be addressed to our course Graduate Assistant, Brittany Hayes. She will forward them to me if necessary. Please consult the "Who Do I Ask About" chart if you're not sure whom you should contact. The chart is in the Official Course Documents Folder in Sakai Resources, and is also part of the Introduction Slides in the Unit 0 Module.

Blackboard Collaborate (linked from Sakai through the Elluminate Live! Bridge) Virtual Class Meetings
Once a week we will hold a real-time Blackboard Collaborate (linked from Sakai through Elluminate Live! Bridge) "class meeting". The session will also be recorded, so those who cannot participate at that time should watch the session later. These 30-minute sessions will be group office hours. Activities will vary, and may include highlights of important or difficult topics, review of solutions to exercises, assignments, and tests, demonstrations, and answering questions you ask during the meeting, or that have come up during the week.

The Resources section in Sakai contains documentation and links to tutorials on using both the Eluminate Live! bridge, and Blackboard Collaborate.

Sakai
All enrolled students should have access to the UNC Sakai site for this course: http://sakai.unc.edu/
We will use Sakai for almost all course activities.

Course Materials
All materials can be found in Sakai. The course syllabus, schedule, and information about tools and other resources will be there at the beginning of the semester.

Materials for each unit are located in the **Modules** section of the Sakai site. There is 1 module for each week of the semester. I recommend that you work through each week's materials in the order they are listed. Each unit's materials will be published at these times each week:

Wednesday, 5:00 pm EST, instructional materials, exercises, and assignment (if any)
Tuesday, 5:00 pm EST, unit test (if any)

Discussion Forum
We will use the Sakai discussion forum for a variety of interactions and exchanges. I will start some topics, for example, to pose questions or puzzles for you to discuss, to clarify assignments, or to respond to questions that I think are of general interest. You can also start topics, for example, to start a discussion about current issues or news involving databases, or asking a question of general interest about course content.
I encourage you to get involved in these discussions, but please follow these guidelines.

- Be respectful of your colleagues. Online discussions are a common tool in many professional settings, and you should always be professional in your contributions. You will sometimes disagree with something someone else says. This kind of discussion and debate is a vital part of system design and development, but your contributions must be phrased in a courteous, professional manner.
- Follow the guidelines for seeking, giving, and receiving help (see the section on the Honor Code). I will remove a post if I think it should be handled in a one-to-one conversation with me rather than in the discussion forum.

Submitting assignments

In order for you to receive credit for an assignment, it must be submitted using the Sakai **Assignments** section. In my experience, Sakai is a reliable method for submitting assignments. It is the responsibility of each student to make sure they have access to Sakai and can submit assignments when they are due.

If for some reason you are unable to submit an assignment to Sakai, as a last resort you may email it to the instructor along with a note about the problem you encountered. Then, as soon as you are able to, it is your responsibility to submit the exact same assignment to Sakai. The email serves as a record that you tried to submit the assignment on time, but to receive credit, your assignment must be uploaded to Sakai.

Detailed instructions for submitting assignments will be given in Assignment 1.

Dropbox

You each have a dropbox in Sakai that is accessible only to you and me. You may store work in progress here. If you have a question about an assignment, and it would be helpful for me to see your work, you may store the draft in your dropbox, and refer to it in your emailed question. I will look at only that file to respond to your question.

Do NOT submit homework by putting it into your Dropbox; all assignments should be submitted in the assignment.

Taking Tests

Most units include 1 or 2 tests to assess your learning of the unit content. Tests will be published on Tuesdays at 5:00 pm EST, and are due no later than the following Friday at 5:00 EST. Once you have started a test you will have 30 minutes to complete it.

Virtual Class Meetings

We will use the Elluminate Live! Bridge for virtual class meetings once a week. Meetings are usually held on Mondays from 1:00 – 1:30 pm EST. Each session will be recorded. If you cannot attend in real time, or you want to review something from the session, you can watch the recording.

The Resources section in Sakai contains documentation and links to tutorials on using both the Eluminate Live! bridge, and Blackboard Collaborate.

Schedule
Database 1, INLS 523_003W, Fall 2013

This **tentative** schedule lists major dates and assignments for the semester. Adjustments to the schedule will be made as needed.

Unit 0, Course Startup, published Monday, 8/19/13

Monday 8/26/13, 1:00 – 1:30 EST Attend the Virtual Class Meeting
Assignment 1: Getting started, due Tuesday 8/27/13, 5:00 pm EST
(Note that lthough Assignment 1 isn't due until Tuesday, it would be good to make progress on it so you can ask any questions you have at the meeting.)

Unit 1, Introduction and Database Concepts, published Wednesday 8/28/13

Tuesday 9/3/13, 1:00 – 1:30 EST Attend the Class Meeting. **NOTE the change in time**, because of the Labor Day Holiday
Unit 1 test, published Tuesday 9/3/13 5:00 EST, due by Friday 9/6/13, 5:00 EST

Unit 2a, Entity-Relationship Models, published Wednesday 9/4/13

Monday 9/9/13 1:00 – 1:30 EST Attend the Class Meeting
Assignment 2: Entity-Relationship Model, due Tuesday 9/17/13, 5:00 pm EST
Project Deliverable 1: Requirements, due Tuesday 9/24/13, 5:00 pm EST
Unit 2a test, published Tuesday 9/10/13, 5:00 pm EST, due by Friday 9/13/13, 5:00 pm EST.

Unit 2b, EER Models, published Wednesday 9/11/13

Monday 9/16/13 1:00 – 1:30 EST Attend the Class Meeting
Assignment 2 due
Unit 2b test, published Tuesday 9/17/13 5:00 pm EST, due by Friday 9/20/13, 5:00 pm EST

Unit 3, Relational Concepts, published Wednesday 9/18/13

Monday 9/23/13 1:00 – 1:30 EST Attend the Class Meeting
Project Deliverable 1 due
Unit 3 test, published Tuesday 9/24/13 5:00 pm, due by Friday 9/27/13 5:00 EST.

Unit 4, ER-DB Mapping, published Wednesday 9/25/13

Monday 9/30/13 1:00 – 1:30 EST Attend the Class Meeting
Assignment 3: ER-DB Mapping, due Tuesday 10/8/13, 5:00 pm EST
Unit 4 test, published Tuesday 10/1/13, must be completed by Friday 10/4/13, 5:00 pm EST

Unit 5a SQL Part 1, published Wednesday 10/2/13

Monday 10/7/13 1:00 – 1:30 EST Attend the Class Meeting
Assignment 3 due

Unit 5b SQL Part 2, published Wednesday 10/9/13

Monday 10/14/13 1:00 – 1:30 EST Attend the Class Meeting
Project Deliverable 2, ER and Schema, due Tuesday 10/29/13, 5:00 pm EST.
Unit 5 test, published Tuesday 10/15/13, must be completed by Friday 10/18/13, 5:00 EST.

Unit 6a, Advanced SQL, Part 1, published Wednesday 10/16/13

Monday 10/21/13 1:00 – 1:30 EST Attend the Class Meeting

Unit 6b, Advanced SQL, Part 2, published Wednesday 10/23/13

Monday 10/28/13 1:00 – 1:30 EST Attend the Class Meeting
Project Deliverable 2
Assignment 4: SQL, due Tuesday 11/5/13, 5:00 EST
Unit 6 test, published Tuesday 10/29/13, must be completed by Friday 11/1/13, 5:00 EST.

Unit 7, Relational Algebra, published Wednesday 10/30/13

Monday 11/4/13 1:00 – 1:30 EST Attend the Class Meeting
Assignment 4 due

Unit 8a, Functional Dependencies and Normalization, published Wednesday 11/6/13

Monday 11/11/13 1:00 – 1:30 EST Attend the Class Meeting
Unit 8a test, published Tuesday 11/12/13, must be completed by Friday 11/15/13, 5:00 EST.

Unit 8b, Functional Dependencies and Normalization, published Wednesday 11/13/13

Monday 11/18/13 1:00 – 1:30 EST Attend the Class Meeting
Assignment 5: FD & Normalization. due Tuesday, 11/26/13, 5:00 EST
Assignment: Project Deliverable 3, Implementation, available Wednesday 11/13/13, due Tuesday 12/10/13.
Unit 8b test, published Tuesday 11/19/13, must be completed by Friday 11/22/13

Unit 9, Looking ahead, wrapping up, published Wednesday 11/20/13

Monday 11/25/13 1:00 – 1:30 EST Attend the Class Meeting
FD/Normalization homework due

Monday 12/2/13

Monday 12/2/13 1:00 – 1:30 EST Attend the Final Class Meeting

Tuesday 12/10/13

Project Deliverable 3 due