

## Comp 521 – Files and Databases

### Bulletin Description:

Placement of data on secondary storage. File organization. Database history, practice, major models, system structure and design.

### General Course Info:

Term: FALL 2014  
Department: COMP  
Course Number: 512  
Section Number: 001  
Time: T R, 9:30 – 10:45  
Location: FB 009  
Website:  
<http://www.csbio.unc.edu/mcmillan/index.py?run=Courses.Comp521F14>

### Instructor Info

Name: Prof. Leonard McMillan  
Office: SN 311  
Email: [mcmillan@cs.unc.edu](mailto:mcmillan@cs.unc.edu)  
Phone: 919-590-6078  
Web: <http://www.cs.unc.edu/~mcmillan>  
Office Hours: W 3:00 – 5:00

### Co-Instructor Info

Name: Erik Scott  
Office: SN127  
Email: [escott@renci.org](mailto:escott@renci.org)  
Phone: 919-445-9691  
Web: [esco](http://esco)  
Office Hours: Th 11:15-1:15

### TA Info

Name	Office	Email	Office Hours
TBA	TBA	TBA	TBA

### Textbooks and Resources (Optional, not required)

Database Management Systems  
by Raghu Ramakrishnan and Johannes Gehrke  
McGraw-Hill Higher Education © 2003, ISBN: 0072465638.

## Course Description

Databases are an indispensable tool for managing information, and a course on the principles and practice of database systems is now an integral part of any computer science curricula. This course covers the fundamentals of modern database management systems, in particular relational database systems.

The material covered in Comp 521 can be broken into three areas of emphasis. The first area includes database foundation material such as the relational model, relational algebra, relational calculus, and normal forms. The second area of emphasis is database application programming and includes among others the topics of Structured Query Language (SQL), eXtensible Markup Language (XML), integrating databases into programs, web-based database usage, and triggers and active databases. The third area of emphasis is the systems side of databases, which includes database indexing, efficient query evaluation, the transaction-based model, concurrency, and security.

## Target Audience

This course is suitable for computer science majors at both undergraduate and graduate levels. Students who wish to take this course should have some programming experience in a modern language and knowledge of data structures.

## Prerequisites

All students are expected to have taken introductory courses in data structures, computer organization, and discrete math equivalent to COMP 410, COMP411 and COMP 283 or MATH 381.

## Goals and Key Learning Objectives

Comp 521 emphasizes database foundations, applications, design, optimization and implementation. This includes the relational model, relational algebra, relational calculus, and normal forms. Application programming and includes, among others the topics, of Structured Query Language (SQL), eXtensible Markup Language (XML), integrating databases into programs, web-based database usage. The design aspects of databases, include indexing, efficient query evaluation, the transaction-based model, concurrency, and security.

## Course Requirements

The textbook is considered optional. However, it can be used to supplement lecture materials. Each lecture will specify the corresponding topics from the textbook. Student will be assigned 5 problem sets. In addition, there will be two midterms, and a final exam.

## Key Dates

Midterm 1: October 1, 2014

Midterm 2: November 6, 2014

Final Exam: December 9, 2014 (Saturday)

## Grading Criteria

The final grade will be based on the follow weighting factors:

5 – Problem Sets/Programming Exercises	30% (6% each)
2 – Midterm Exams	40% (20% each)
1 – Final Exam	30%

## Course Policies

This section should address the following:

- Attendance is expected, but no roll will be taken
- Late problem sets will be penalized by a factor of 0.7071 for each class meeting after the assigned due date. Problem sets will only be accepted at the beginning of class meetings.

The course final is given in compliance with UNC final exam regulations and according to the UNC Final Exam calendar.

## Honor Code

Collaboration on problem sets is encouraged. However, what you hand in must be your own work. Good scholarship requires that all collaboration must be acknowledged. Thus, if you collaborate on the solution of a problem set, I expect that you list your collaborators at the top of the page.

Collaboration on tests (midterms, final) is, of course, a violation of the Honor Code. This includes discussion of questions on a midterm, or final with students that have not yet taken the test.

Using any unauthorized information sources on an exam is a violation of the honor code.

## Course Schedule

A course schedule and handouts from each lecture will be posted on the course website.

## Disclaimer

“The professor reserves to right to make changes to the syllabus, including lecture topics, problem-set due dates, and examination dates. These changes will be announced as early as possible.”