

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 2020
Department: COMP
Course Number: 512
Section Number: 002
Time: T R, 3:00-4:15
Location: Sitterson SN-014
Website: <http://www.csbio.unc.edu/mcmillan/index.py?run=Courses.Comp521F20>

COVID-19 considerations:

Let me start by saying, in semester we will be operating in uncharted territory. Section 002 of Comp521, will be offered in a hybrid face-to-face (mask-to-mask) format. This means that all students will have the opportunities to engage the instructor and other students in learning forums that are not strictly online. Below I describe how I plan to accomplish this. But these as merely intents, and are subject to change:

- All course meetings will be simulcast via Zoom using a link provided on the course website. You are expected to use Zoom if you are exhibiting any COVID-19 symptom, including an elevated temperature, a cough, shortness of breath, fatigue, head or body aches, loss of taste or smell, sore throat, congestion, or runny nose.
- If the instructor exhibits any symptoms, that day's lecture will be presented online rather than in person. If this happens, students will be able to watch the live broadcast projected in the classroom if they wish.
- ALL students must adhere to the university's health safety standards in effect at the time of each lecture. Currently, this requires a mask AND social distancing of at least 6 feet while in the classroom.
- NO students are allowed to sit in the front row of the classroom nor enter through the east door located at the front of the classroom.
- Exams, problem sets, and live exercises will be online. Access will only be provided during prescribed intervals, which implies that exercises and exams cannot be taken asynchronously.
- Students will be responsible for cleaning and removing all materials from their desk areas at the end of each class period.
- The class may at any time revert to being entirely on-line.

Instructor:

Name: Prof. Leonard McMillan
Office: Sitterson SN-316
Email: mcmillan@cs.unc.edu
Phone: 919-590-6078
Web: <http://www.cs.unc.edu/~mcmillan>
Office Hours: W 10:00am – 12:00pm

TA Info:

Name	Office	Email	Office Hours
Boo Fullwood	TBA	iamboo@email.unc.edu	TBA

Textbooks and Resources (Optional, not required):***Database Management Systems***

by Raghu Ramakrishnan and Johannes Gehrke
3rd Edition, 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 programming languages, data structures, and computer organization equivalent to COMP 401, COMP 410, and COMP411.

Goals and Key Learning Objectives:

Comp 521 emphasizes database foundations, applications, design, optimization and implementation. This includes the relational model and normal forms. Application programming which includes Structured Query Language (SQL), integrating databases into programs, web-based database usage. The design aspects of databases include indexing, efficient query evaluation, the transaction-based model, and database concurrency. Upon completion of Comp 521 students should be able to construct, write queries of, and tune databases. In addition, students should be able to incorporate databases into larger software applications and systems.

Course Requirements:

The textbooks are optional. However, they can be used to supplement lecture materials. Each lecture will roughly correspond to topics from one of the two textbooks. Student will be assigned 6 problem sets. In addition, there will be a midterm, and a final exam.

Key Dates:

Midterm: October 1, 2020 (Tuesday, online, during the class period)
Final Exam: TBA

Grading:

The course final grade will be based on the following factors:

5 – Problem Sets/Programming Exercises with the lowest score dropped	30%
N - Unannounced in-class exercises	10%
1 – Midterm Exam	30%
1 – Final Exam	30%

Course Policies::

- Attendance is expected, but no roll will be taken
- Problem sets are submitted online and NO LATE problem sets will be accepted, however, the lowest score of the 5 problem sets will not be considered in the final grade.
- Examinations will be given online and make-up exams must be pre-arranged with at least two-weeks advance notice.
- 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 in your answer as a comment.

Collaboration on examinations (midterm or 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 the 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.”