

INLS 523-002 Intro to Databases

Schedule: Tuesday and Thursday, 9:30-10:45am in Manning 208

Canvas Site: <https://uncch.instructure.com/courses/32618>

Instructor: Eric Chernoff, eric_chernoff@unc.edu

Office hours: I will be in Manning Hall for 15-30 minutes after each class. I am also available to meet by appointment. I will respond to emails and messages within 24 hours.

Course Overview

This course will be a pleasant introduction to the wonderful world of database systems. By the end of the semester, you will have a solid understanding on:

1. Why databases are used and how they represent real world information.
2. How information is organized within relational databases.
3. The use of Structured Query Language (SQL) to retrieve, create, and update information in a relational database.
4. Best practices for designing relational databases in the professional world.

We will be using MySQL to explore these topics. You will learn a lot about MySQL, but the key concepts will apply to all relational database systems.

Before participating in this exciting course, all must students must have:

- Completed the required prerequisite INLS 161.
- A proper laptop with a SSH client.
- Access to Canvas to submit the assignments and access the course materials.

Our optional/recommended textbook is Murach's MySQL 3rd Edition (Joel Murach, ISBN 978-1-943872-36-7)

Grading / Expectations

The information in this course can be extremely helpful to your career and supporting your life goals, so gaining a strong understanding is even more important than gaining a good grade. Everyone is expected to attend class, be on-time, participate, and treat one another respectfully.

Our class time will be split between in-class labs/discussions and interactive lectures with plenty of time for questions. You are expected to attend and engage with this class, for your benefit and the benefit of your peers. Only university-approved absences will be excused; please see <https://attendance.unc.edu/>

The grading scale will be:

A = 90-100	B = 80 - 89.9	C = 70 - 79.9	D = 60 - 69.9	F = 0 - 59.9
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Note: Final scores ending in 0, 1, or 2 will be labeled with the 'minus', and scores ending with 8 or 9 will receive the plus label. (Exception: a 100 is an A+).

Your grade will be based on the following:

Weekly Assignments	20%	SQL exercises and design projects. Practice for larger assignments	Individual Canvas
Midterm Exam Assignment	20%	SQL exercises and short-form essay questions.	Individual work Canvas
Database Design Project	30%	Work in pairs to conceive of a database use case and prepare the schema to enable this idea.	Group work Canvas
Participation in Class Labs and Discussions.	15%	Active collaboration with your lab partners, contributing your thoughts and ideas. Asking questions and attending class.	Group work In-Class
Final Exam Assignment	15%	Database design and SQL exercises	Individual work Canvas

Unless specifically labeled “Group work”, these tasks are to be completed individually. Our conduct in this class will be governed by the UNC Student Code of Conduct and UNC Honor Code. Information on both codes is available here: <https://studentconduct.unc.edu/> While completing the assignments, please do make use of your notes, the textbox, and online reference sites (W3CSchools, Stackoverflow.com, MySQL.com, etc.). However, you must cite your sources and you may not copy-and-paste text into your essay. (I can tell how students write. Use your own words.)

Your questions are welcome! Chances are someone else has the same question, so please ask for everyone's benefit. I am happy to answer questions in class, during office hours, and via email. I will broadcast many answers via announcements, so help out your classmates.

Class Meeting Plan

The plan below is my most sincere intention, but is subject to change in the event of severe weather or if class discussions go long. Audio and video recording is not allowed without the instructor's written permission.

Date	Class Plan
Tues, 8/22	Introduce the course objectives and expectations, meet our classmates, and discuss the concept of databases. Brief history of database technology, then discuss how databases are used in the (real) world.
Thur, 8/24	In-Class Lab & Discussion: Identifying entities and attributes in the real world
Tue, 8/29 Thur, 8/31	Relational Database Concepts, Semantic Modeling and Entity Relationships. Suggested Reading: Murach's, pages 4-21 Assignment Due: Logging into the class database server
Tue, 8/30	In-Class Lab & Discussion: Applying what we learned to real-world entities and attributes
Thur, 9/1	Review of relational databases and introduction to the Structured Query Language Suggested Reading: Murach's, pages 22-33, 66-69
Tue, 9/5	UNC Wellness Day - No Class
Thur, 9/7 Tues, 9/12	SQL Operators: SELECT info FROM instructor WHERE will_be_on_exam = 'Yes' AND (importance > 10 OR is_boring = 'No'); Suggested Reading: Murach's, pages 74-103
Thur, 9/14	No class – office hours available
Tues, 9/19	SQL Clauses, Order-by, Limit, Grouping (Aggregation) Suggested Reading: Murach's, pages 104-109 and 170-183
Thur, 9/21 Tues, 9/26	Table Joins along with Keys and Indexes. Suggested Reading: Murach's, pages 114 - 139 and 356-357

Thur, 9/28	DML - SQL for creating, updating and deleting data. Suggested Reading: Murach's, pages 152 - 163
Tues, 10/3	Schemas Design / Column Data Types and SQL for defining tables (DDL) Suggested Reading: Murach's, pages 232-247 and 344-345 Assignment Due: SQL Exercises I
Thur, 10/5 Tues, 10/10	Creating Table Views (virtual tables) and how to write slow SQL: Unions and sub-selects Suggested Reading: Murach's, pages 382-397; 200-211
Thurs, 10/12	Review / Q&A Session for Midterm Exam Assignment Midterm exam opens after class.
Tues, 10/17	1:00pm Midterm exam assignment is due.
Thur, 10/19	Fall Break / No Class
Tues, 10/24 Thur, 10/26	The Three, Four, or Maybe Seven Forms of Database Normalization Suggested Readings: Murach's, pages 306-331 https://blog.udemy.com/normalization-in-database-with-example/
Tues, 10/31 Thur, 11/2	ACID compliance and Database Transactions Suggested Reading: Murach's, pages 430-443; 42 -63
Tues, 11/7	In-Class Design Lab #1
Thur, 11/9	SQL as Code: Stored Procedures, Functions and Triggers & Date/Time Functions Suggested Reading: Murach's, pages 402-425 Assignment Due: SQL Exercises II
Tues, 11/14	In-Class Design Lab #2
Thur, 11/16	Database Integrity and System Security Assignment Due: Creating Normalized Tables
Tues, 11/22	In-Class Design Lab #3
Thur, 11/24	Thanksgiving Break - No Class

Tues, 11/28	Not Only SQL: Document Databases / NoSQL / JSON
Thur, 11/30	Advanced Topics for IT Professionals Assignment Due: Database Design Project
Tues, 12/5	Review / Q&A Session for Final Exam Assignment Final exam assignment opens after class.
Tues, 12/12	2:00PM - FINAL EXAM ASSIGNMENT IS DUE - NO EXCEPTIONS