Georgia State University — CSC 4710 / 6710

Course Syllabus for CSC 4710 / 6710: *Database Systems*

Fall 2021

Time

2:45pm — 4:30pm on Tuesdays and Thursdays

Room

Aderhold Learning Center, Room 233

Instructor

Name: Murray Patterson (he/him)
Email: mpatterson30@gsu.edu
Office: 1 Park Place, Room 948E
Webex: `https://gsumeetings.webex.com/meet/mpatterson30`

Office Hours

- Fridays from 2pm — 4pm: in my office or via Webex (I'll be online: see above)
- After class: I will remain in the classroom
- By appointment: please discuss with me / send me an email to arrange a time

Teaching Assistant (TA)

Name: Kaustubh Khandai
Email: `kkhandai1@student.gsu.edu`

Name: Kushal Khatri
Email: `kkhatri1@student.gsu.edu`

Prerequisites

CSC 2720 with a grade of C or higher

Textbook

Database Systems Concepts, *7th Edition*. Silberschatz, Korth and Sudarshan. McGraw-Hill, 2019.

- ISBN 978-0-07-802215-9 (bound edition)
- ISBN 978-1-260-51504-6 (loose leaf edition)
- low-cost eTextbook also available

Online Resource — `https://db-book.com/db7/`

Course Content

Georgia State University iCollege — `https://icollege.gsu.edu`

Course Overview

Welcome to CSC 4710 / 6710 at Georgia State University! This course examines data management systems; the relational database model; domains and relational integrity; structured query language (SQL); database design; entity-relationship diagrams; normalization; and database administration.

This course focuses on the steps required to build and maintain relational database infrastructure for modern applications. It covers logical and physical design; implementation of the database; the use of the database to meet the informational needs of a software system; and the installation, operation and maintenance of the software. Students perform a number of hands-on exercises using SQL.

Course Objectives and Student Learning Outcomes

This course has the following overall objectives, with associated learning outcomes:

1. **Objective**: Learning how to model a database system from a high-level point of view, *e.g.*, with the relational model and then with the entity-relationship model.

   Learning Outcome: The student should be able to approach a complex database specification task and to employ principles such as the entity-relationship model to identify design solutions.

2. **Objective**: Gaining some practical skills about real database implementations through languages such as SQL.

   Learning Outcome: The student should be able use and implement a real database system for a given task.

3. **Objective**: Delving deeper into some of the theoretical aspects of the relational model, such as normal forms.

   Learning Outcome: The student should be able to apply theoretical background (relational model, normalization, etc.) to evaluate and refactor existing database designs.

Course Structure

- **Lecture** — Classes will be conducted in traditional lecture format.
- **Homework** — Weekly assignments building on the lecture content of the week.
- **Readings** — Course textbook pages, relevant articles and additional supporting content will be assigned for students to read.

- **Discussions** — Opportunities to share questions about key concepts, homework assignments, and more.

Course Project

An important part of this course is the course project, which will be assigned after the midterm (but described beforehand). The idea is that you will work in groups on designing, implementing, testing and ultimately demonstrating a fully functioning database system for a real-world scenario, *e.g.*, the Amazon company.

Exams

There will be a midterm and final exam in this course. The exams will involve questions, problems and some programming (SQL, etc.), which cover the lectures, homework assignments, and readings.

Grade Scale*

Grade	**Point Equivalent**
A+	≥ 97
A	≥ 90
B+	≥ 87
B	≥ 80
C+	≥ 77
C	≥ 70
D	≥ 60
F	< 60

Grading (*subject to change*)

- Homework Assignments (40%)
- Midterm Exam (20%)
- Course Project (20%)
- Final Exam (20%)

Course Schedule (*subject to change*)

Week	Topic	Reading	Homework*	Project†
1	Syllabus and System Set-up			
2	Introduction to Database Systems	Ch. 1	HW 1	
3	Introduction to the Relational Model	Ch. 2	HW 2	
4	Introduction to SQL	Ch. 3	HW 3a	
5			HW 3b	
6	The Entity-Relationship (E-R) Model	Ch. 6	HW 6a	
7			HW 6b	
8	Review and **Midterm Exam**			
9	Intermediate SQL	Ch. 4	HW 4a	groups decided
10			HW 4b	
11	Relational Database Design	Ch. 7	HW 7a	E-R design
12			HW 7b	relational design
13	Advanced SQL	Ch. 5	HW 5a	implementation
14	**Project presentations** and Exam Review			presentations/due

* Here, "Week" essentially means two consecutive class days (to allow a shift forward in the case of a holiday, for example), and homework will be assigned on the *second day* of this two-day series, and will be due at the beginning of class on the second day of the following "Week"

† See Course Project description

Make-up Policy

Exams

There are no make-up exams unless the student missed the exam due to a pre-arranged excused absence *e.g.*, participation in a GSU sports event, observance of a religious holiday (see `https://belonging.gsu.edu/religious-observances/`), or an emergency, etc. In all cases, documentation needs to be provided before or after, *e.g.*, a note from the coach, a mention of the religious holiday, or a slip from the doctor, etc. — only official excuses will be accepted. **Any uncoordinated, unexcused missed exam will result in a score of zero for that exam**.

Homework

Each homework assignment is due at the beginning of class on the due date. Late submission will result in an automatic deduction of 50% of the assignment score, with few exceptions.

Academic Honesty Policy

In academics, intellectual property is extremely important. This is one reason we hold students to the tenets of the Academic Honesty Policy — other topics related to student conduct are available at `https://codeofconduct.gsu.edu/`. But intellectual property goes beyond that when it comes to the materials created by your instructor and the publisher of your textbook. Your instructor has spent a great deal of time and energy developing materials for this course, and the publisher holds a copyright to all materials associated with the textbook. Please be aware that the GSU community takes this very seriously.

It is for this reason that GSU has a special policy regarding copyright, found at `https://cetl.gsu.edu/`

services/instructional-support/constructing-a-syllabus/. This policy implies that the selling, sharing, publishing, presenting, or distributing of instructor-prepared course lecture notes, videos, audio recordings, or any other instructor-produced materials from any course for any commercial purpose is strictly prohibited unless explicit written permission is granted in advance by the course instructor (note that this includes homework assignments, labs, exams or their solutions). This includes posting any such materials on websites such as Chegg, Course Hero, OneClass, Stuvia, StuDocu and other similar sites. Unauthorized sale or commercial distribution of such material is a violation of the instructor's intellectual property and the privacy rights of students attending the class, and is prohibited.

Sharing of any materials from the textbook, such as questions from publisher provided quizzes, is likewise prohibited.

Moreover:

- All assignments are supposed to be individual work, and any collaboration or cheating would result in a zero score for the assignment — this includes obtaining answers from search engines such as Google, generative AI tools such as ChatGPT, and websites such as Chegg, Course Hero, etc., mentioned above.
- A second incident of dishonest work will result in an automatic F grade for the class.

Course Evaluations

Your constructive assessment of this course plays an indispensable role in shaping education at Georgia State. Upon completing the course, please take the time to fill out the online course evaluation.

Extended Absences

For students, the Dean of Students' Office will continue to provide faculty with notifications when students file **Professor Notification of Absences (PNAs)**. This notification indicates that the Dean of Students office has reviewed the documentation related to a student's medical circumstances. For more information about this, and how to submit such a notification, see https://deanofstudents.gsu.edu/student-assistance/#professor.

Students with Disabilities

Students who wish to request accommodation for a disability may do so by registering with the Access and Accommodation Center. Students may only be accommodated upon issuance by the Access and Accommodation Center of a signed **Accommodation Plan** and are responsible for providing a copy of that plan to instructors of all classes in which accommodations are sought.

Basic Needs Statement

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. Furthermore, please notify the professor if you are comfortable in doing so. This will enable us to provide resources that we may possess. The Embark program at GSU provides resources for students facing homelessness and Panther's Pantry provides resources for students facing food insecurity.

Disclaimer

The course syllabus provides a general plan for the course — deviations may be necessary.