

# CS 4400 Introduction to Database Systems

## Summer 2023 GT Europe

### Instructor

Aaron Hansen

- Office Hours: TBD
- Office Location: TBD
- Email: [aaron.hansen@gatech.edu](mailto:aaron.hansen@gatech.edu)
  - Please begin email subject lines with "CS4400:".

### Course Description

We introduce the fundamental concepts necessary for the design and use of modern database systems in today's large-scale enterprise applications. We examine the concepts in the order that we typically encounter them in the actual database design process. We start with the problem of conceptually representing data that is to be stored in a database. From there, we see how the data in a conceptual data model can be converted to a database-specific model (e.g., the relational data model). We also discuss various forms for relations that possess good properties. We see how to use the relational database Structured Query Language (SQL) to define the relations and to write statements to insert, delete, retrieve and update the data. We also examine some of the fundamental storage structures that are used in relational database systems. We end the course with a discussion of some advanced topics in the database management area.

### Grading

- Team Projects: 30%
  - In 3 phases, not equally weighted.
- Quizzes: 50%
- Peer reviews: 10%
- Class Participation: 10%

Grade Cutoffs: A: 90, B: 80, C: 70, D: 60 (grades will not be rounded)

### Team Project

You will design and implement a database application using the MySQL relational database system, which is freely available online. A more detailed project description will be given out early in the semester. A complete database design and implementation will be developed by each team of students in three phases over the course of the semester.

We will organize teams of four (4) students each early in the semester -- team preferences may be accommodated, where possible. It is important to understand that we expect the high quality that can come from a team working together, coordinating, and thoroughly testing their system. Good teamwork requires strong collaboration and does not equate to simply dividing the work across the team and expecting a good result.

We will follow a typical database design methodology for the Project. Notes describing the methodology will be available. The Project will consist of 3 phases (deliverables) as well as a final video demonstration. Switching teams will only be possible with the approval of the course instructor.

**No late project submissions will be accepted.**

### **Team Peer Evaluation**

For each phase of the project, each team member will submit a peer evaluation of the other team members using the provided feedback system. Peer evaluations must be fully submitted within the allotted time and feedback from your team peers will account for 10% of your course grade.

Exact details about how teammate evaluations will translate into your grade will be provided. We will likely use the following (or similar):

<https://info.catme.org/instructor-faq/what-is-the-adjustment-factor/>

**Late feedback submissions will result in a 1% deduction in your overall course grade per feedback cycle, per day. (E.g.: 2 late surveys that are each 2 days late will result in a 4% penalty)**

### **Quizzes**

There will be roughly six (6) written quizzes that will be given during the officially assigned lecture time. Your lowest quiz grade will be dropped at the end of the semester.

### **Class Participation**

Attendance in class is mandatory and may be taken each day. Students are expected to pay attention in class. Your participation grade will be determined by activities you will complete either in class or outside of class using Canvas as well as your contribution to in-class discussions. Participation grades can be improved by contributing to the online discussion board or other means that will be listed during the first week of class.

### **Regrade Policy**

To contest any grade you must contact the instructor **within one week of the assignment's original return date**. The original return date is the date the assignment grade was first made available to students (on paper or posted on Canvas / Gradescope). A week after the grade is available, regrade requests will no longer be accepted.

### **Academic Honesty / Collaboration**

Students within a project team obviously will collaborate closely with each other to work as a team for each phase of the project. They will also be allowed to ask questions of the instructor or post questions on Ed Discussion. No collaboration of any other kind whatsoever is allowed outside the team. Students are expressly forbidden to collaborate across teams or to collaborate with others outside of the course (except using the aforementioned means). Any violation of this policy will be reported to the Dean of Students without exception.

Every student is expected to read, understand and abide by the [Georgia Tech Academic Honor Code](#). Academic misconduct is taken very seriously in this class. Your assignment submissions may be evaluated via demo or code review. During this evaluation, you will be expected to be able to explain every aspect of your submission. You should not exchange code or write code for other teams. **Each team project must be coded by the members of that team.**

You may not collaborate on quizzes. Academic misconduct issues will be referred to the **Office of Student Integrity**.

### **Professionalism**

I expect every student to behave in a professional manner befitting Georgia Tech. Your behavior matters and poor behavior can result in a letter grade drop for the course. I expect you to be aware of and abide by Georgia Tech's Faculty Expectations and Georgia Tech's Code of Conduct. Lack of professionalism that crosses over into academic misconduct or violations of the Code of Conduct may be more severe and will likely require that the matter be referred to the Dean of Students Office.

### **Prerequisites**

At least one of:

- Undergraduate Semester level CS 1301 Minimum Grade of D
- Undergraduate Semester level CS 1315 Minimum Grade of D
- Undergraduate Semester level CS 1371 Minimum Grade of D

### **Course Materials**

**Required: Fundamentals of Database Systems**, 7th (or 6th) edition, Elmasri & Navathe, Addison-Wesley, 2016.

An electronic version of the text is acceptable. There will be required readings from this book so you will need to have access to a copy.

### Canvas / Gradescope

All course information and resources can be found in Canvas. This includes: Syllabus, Assignments, Submissions, Announcements, Grades & Feedback, Resources, etc.

The code from lecture examples will be posted on Canvas under the Files tab by the end of the following day. Canvas assignment due dates and times are firm -- assignments will close at the deadline and you are not allowed to turn in your work any other way.

Quizzes will most likely be scanned and grades returned via Gradescope (accessible via Canvas). Gradescope is also where regrade requests for quizzes will be submitted / processed.

Other online resources (in the form of handouts) will be made available on Canvas and will be required reading.

### **Internet Connectivity and Computer Ownership Expectations**

You must have a reliable internet connection available for your use in order to take this course. Lecture videos will be recorded so that they may be watched at any time, but exams will be given during the official class time and will require a continuously functioning internet connection. We reserve the right to use Georgia Tech's lockdown browser software if we decide upon that, and a video proctoring service if it one made available for Georgia Tech.

We will be using large, real-world data sets in order to better teach the use of data manipulation techniques, therefore your computer must meet the requirements laid out by the Georgia Tech computer ownership policy which may be found at <https://sco.gatech.edu/>.