# CS 2316: Data Manipulation for Science and Industry
# Summer 2026 GT-Europe

## Instructor

Aaron Hansen
- Office Hours: TBD
- Office Location: TBD
- Email: aaron.hansen@gatech.edu
  - Please begin email subject lines with "CS2316:".

Instructor Office Hours and TA information will be also provided on Canvas.

## Lecture

Day 1 and 3 (typically Mon./Wed.) 10:25 - 12:20

## Course Description

This course will provide background and experience in reading, manipulating, and exporting data for engineering, business and scientific applications. Specific topics include file I/O, string processing, web scraping, API accessing, and interfacing with SQL databases. Students will learn to build programs controlled by basic graphical user interfaces. Assignments will be modeled after business, engineering, and scientific problems.

## Grading

- Participation Exercises: 30%
- Exams: 35%
- Final Project: 35%
  - Milestones (Phases 1 and 2) 10% each
  - Final Submission (Phase 3) 15%

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

## Coding Assignments

There will be roughly 10 weekly Participation Exercise (read: Homework) assignments totaling 30% as well as a Final Project worth 35% of your total grade. Code demos may be required (either in-person or via Microsoft Teams) for the final project and some of the other coding projects. These code reviews, which assess how well you can explain your code, will count for a portion of the relevant assignment grade.

Assignments must be turned in before the date and time indicated as the assignment's due date on Canvas. **No late Participation Exercises will be accepted**.

**Midterm Exams**

There will be two in-class written midterm exams that will be given during the officially assigned lecture time.

**Final Project**

A project that will be similar to, but more extensive than, the regular homework assignments. It will consist of two Milestones Phases (Phases 1 and 2), followed by a third and Final Submission (aka Phase 3).

The Final Submission (Phase 3) will be due during Final Exam Days (in-lieu of a Final Exam). Exact timing will be determined during the semester and communicated well before the due date.

**No late Final Projects (or Milestone Phases) will be accepted.**

**Attendance**

In order to encourage attendance, daily mini-quizzes will be administered in class (simple 1 or 2 question quizzes in Canvas). **These quizzes will be worth 2% extra credit** on your overall course grade but the access code will only be provided in class (bring your laptop!) and the quiz will only be open for a few minutes.

**Attendance Mini-Quizzes will not be eligible for make-up and will not be accepted late.**

If you are sick and still feel up to attending, please wear a mask to protect those around you. If you are too ill to attend class, please email the instructor ***in advance*** of the absence, particularly if there is an Exam that day.

If illness or other life events will cause you to be absent for >24 hours (and/or if you are absent for an Exam), please work with GTE administration to validate your absence and facilitate possible accommodations:

- paul.voss@ece.gatech.edu,
- laila.abou_dahab@georgiatech-metz.fr, or
- sarah.rucho-ghezal@georgiatech-metz.fr

## Academic Integrity and Collaboration

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 homework assignments 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 are expressly forbidden to supply a copy of your homework to other students via electronic means. If you supply an electronic copy of your homework to another student, and they are charged with an academic integrity violation, you will also be charged. Collaboration with other students currently in this class is an important learning method. The following explanation will help you understand collaboration. Students may only collaborate with fellow students currently taking CS 2316, the TAs, and the instructor. Collaboration means talking through problems, assisting with debugging, explaining a concept, etc. You should not exchange code or write code for others. **Each individual assignment must be coded by you.** Your submission must not be substantially similar to another student's submission. Collaboration at a reasonable level will not result in substantially similar code. **Students that turn in submissions that are not fundamentally unique will receive a zero (0) and will be referred to the Office of Student Integrity (OSI).**

We expect academic honor and integrity from students. Please study and follow the academic honor code of Georgia Tech: http://www.honor.gatech.edu/content/2/the-honor-code. You may collaborate on homework assignments and daily work, but your submissions must be your own. You may not collaborate on exams. We will turn students into the Office of Student Integrity if we suspect that the honor code has been violated.

## 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 exam was first made available for students to pick up or the grade was posted on Canvas. A week after the grade is available, regrade requests will no longer be accepted.

## 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

Programming Language and IDE

The language used in this class is Python which can be used in many environments. We will edit our Python code using a text editor such as Sublime and run it from the command line. Instructions to set up your environment will be available on **Canvas**.

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 each lecture will be posted on Canvas under the Files tab by the end of the following day.

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

Free online books

Think like a computer scientist
Think like a computer scientist - Interactive Edition
Python Data Science Handbook

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/.