CSCI 1320 (Principles of Computer Science I), Fall 2023: Syllabus

Course Description

This course provides an introduction to the field of Computer Science, with an emphasis on algorithmic thinking, problem solving, and programming. Computer Science as a field involves more than just coding, and this course will expose you to areas of CS theory, computational systems, cross-disciplinary applications, and the social impacts of computing. Much of the course will be focused on Computer Science as a problem solving discipline, and will develop your ability to define a problem computationally and create solutions to those problems throughout a process of design, implementation, documentation, and testing.

Learning Objectives

- **Computer Science as a Discipline.** Students will contextualize the field of Computer Science as the broad study of "complexity" and "problem solving" including defining problems, determining if problems can be solved, identifying how quickly problems can be solved, designing step-by-step solutions to problems, and finally, actually solving those problems utilizing computers and programming.
- **Collaboration.** Students will utilize collaborative problem solving and programming skills, such as pair programming, to approach CS problems.
- **Societal Impacts.** Students will identify and reason about the broader impacts of CS, including ethical, social, and historical concerns.
- **Computer Systems.** Students will identify and describe the major components of a modern computer, describe the translation of problem solutions from ideation through high-level languages assembled into machine instructions, and understand why binary logic underpins computation.
- **Data representation.** Students will differentiate between types of data (e.g. strings, numbers, Booleans) and describe how computers utilize binary information to represent these data.
- **Variables and Memory.** Students will utilize variables and parameters to track and name data utilized to solve a range of problems.
- **Conditionals.** Students will apply conditional reasoning and programming constructs to solve a range of problems.
- **Functions.** Students will develop and apply problem solving approaches that decompose larger problems into smaller ones by utilizing functions.
- **Repetition.** Students will apply multiple techniques for iterative and/or repetitive problem solving, including loops and recursion.
- **Data Collections.** Students will utilize data stored in ordered collections (e.g. arrays, lists) and key-value collections (e.g. dictionaries, maps) to solve a range of problems.
- **Interaction.** Students will create software systems that interact with input and output generated by users at runtime and by utilizing stored resources.
- **Classic Algorithms.** Students will create and utilize algorithmic approaches to "classic" CS problems, such as searching and sorting.
- **Testing and Error Handling.** Students will apply techniques to thoroughly test algorithms and programs, including gracefully dealing with errors at runtime.
- **Documentation.** Students will utilize best practices to document and explain their solutions to a range of problems.

Meeting and Contact Information

Class meeting time and location: MWF 12:30-1:20pm; CSI 388

Prerequisites

- None. However, the basics of Algebra, Geometry, and Trigonometry are expected. For example, at some point in the semester I'll bring up the Unit Circle -- you'll be happier if you know what that is.

Instructor contact information

- Dr. Matthew Hibbs
- Office: CSI 270K
- Office hours will be held regularly on:
    - Mon 2-3:30pm; Wed 2-5pm; Thurs 2:30-4pm; and Fri 1:30-2:30pm
    - If something disrupts my regular office hour schedule, I'll do my best to update my public calendar, which is linked from the course website
    - Generally, if my door is open and I'm in my office, I'm available to meet with you
    - If my regular times don't work for you, please contact me by email and we can schedule a specific time to meet
- Email: mhibbs@trinity.edu
    - Email is generally a good way to contact me or ask questions. I try to be prompt, but I'm not always available, and may take more time to respond.
- Phone: (210) 999-7482

Student contact information

- I (and many other faculty) use email as a primary form of communication with students, including announcing changes to assignments or due dates, additional explanations of course material, distributing homework grades, and other items. So, **CHECK YOUR EMAIL.**

Course materials

Textbook

"Python Programming: An Introduction to Computer Science" by John Zelle, which is available through many venues online. We will not be rigidly following the textbook, but it serves as a good introduction and reference for the Python programming language.

Web page

Most course-related information (this syllabus, schedule, homework and reading assignments, etc.) will be made available via Google Classroom. You should frequently visit the classroom site for announcements, updates, etc.

Other references

There are many great references on programming, algorithms, and python, far too many to list. The Internet is an amazing resource, especially for computer science, but as always, treat information from the web with caution.

Course Requirements

Grade overview

The grade for this course will be composed of four components, discussed below. This table summarizes the contribution of each to your grade in the course. All items turned in for a grade in this course are pledged. For code, the pledge statement should be put in a comment at the top of the code.

Homework	50%
Exams (2 midterms and 1 final, 10% each)	30%
Quizzes (6 drop 1)	10%
Class Participation	10%

Homework assignments

Homeworks (particularly programming assignments) are a crucial part of this course; much of what you learn will likely be learned in the course of completing the programming assignments. As such, the homework in this course constitutes the bulk of your grade (50%). Detailed requirements will be provided as part of each assignment; due dates are available on the course schedule, but are subject to change depending on the rate with which we cover material.

Programs submitted must compile and run to receive credit. If you submit code with syntax errors that prevent execution, you will receive no more than 25% credit for the assignment until it is fixed and resubmitted, possibly incurring a late penalty described below.

Exams

Exams are comprehensive due to the continually building nature of the course material, but will emphasize the most recent topics. The Midterms and Final exam are each worth 10% of the final grade.

- Midterm #1: Wed 9/20, in class
- Midterm #2: Fri 10/27, in class
- Final: Sat 12/14 @ noon

Quizzes

About every other week there will be a short quiz. Dates are available on the course schedule page, however they are subject to change depending on how quickly we work through course material. Quizzes will usually cover material from recent classes and readings; the questions will be similar in format to those you are likely to see on the exams. There will be six quizzes over the course of the semester, and your lowest grade will be dropped.

Class participation

Regular class attendance is expected. Class participation grades will be based on attendance, engagement, and participation in class activities. Attendance will be taken through "participation polls" online at the end of each class. NOTE: If you actually read this syllabus, use the special word of the day "bonus" one time before the first homework assignment is due to receive a 5 point bonus on that assignment. Excessive or repeated uses of cell phone texting, social media, e-mail, or other distractions in class will significantly detract from your participation grade, even if your attendance is perfect.

Late and missed work

Exams can be made up only in cases of documented conflict with a university-sponsored activity, medical emergency, conflict with a religious holiday, or with PRIOR APPROVAL from me.
Unless otherwise stated for a particular assignment, homework will be accepted up to 3 days late, with a penalty of 15 percent reduction per day late. This penalty may be waived or additional time allowed at my discretion in cases of illness, conflict with a university-sponsored activity, or religious holiday. If you submit your best effort on time and require only minor changes (e.g. fixing a small bug),

I may also waive this penalty. If you have unusual or extenuating circumstances, please discuss these with me as far in advance as possible.

Academic Integrity at Trinity

All students are covered by a policy that prohibits dishonesty in academic work. Under the Honor Code, a faculty member will (or a student may) report an alleged violation to the Academic Honor Council. It is the task of the Council to investigate, adjudicate, and assign a punishment within certain guidelines if a violation has been verified. **Students are required to pledge all written work that is submitted for a grade: "On my honor, I have neither given nor received any unauthorized assistance on this work" and their signature. The pledge may be abbreviated "pledged" with a signature.**

Collaboration and academic integrity in this course

All work submitted for a grade (homework assignments, quizzes, and exams) must represent the student's own individual effort, unless an assignment is designated for pair-programming, in which case the work must represent the work of only the 2 students involved. All graded work will be considered pledged work.

Discussion of homework assignments among students is allowed (and encouraged!), but not to the point where specific answers are being written collectively. In short, don't share answers, either in person or electronically.

Generative AI can be a powerful and helpful tool for computer science; however, it is vital to innately understand the fundamentals of CS and programming in order to responsibly use these tools. As such, unless otherwise explicitly specified in an assignment, the use of generative AI tools (such as ChatGPT, Co-pilot, Ghostwriter, etc) is prohibited.

Some examples of ***acceptable*** collaboration are:

- Discussing a general approach to a problem with a fellow student, such as deciding whether loops or recursion are best to write a program.
- Working on a pair-programming assignment with your partner in very close collaboration, taking turns working together on the same code base.
- Asking an ACM tutor for help with specific syntax questions.
- Comparing program outputs with fellow students to decide if you are getting the correct results.
- *After completion of an assignment*, comparing your code with fellow students to discuss alternative solutions.

Some examples of ***unacceptable*** collaboration are:

- Pasting any portion of your code into an email to a fellow student.
- Writing exactly the same code as a fellow student while screen sharing.
- Utilizing an approach given to you by a tutor or fellow student without understanding the rationale or logic behind that approach.
- Using an AI tool, such as ChatGPT, to draft an initial codebase.
- *Before completion of an assignment*, comparing your code with fellow students to discuss alternative solutions.

If you are uncertain about whether a particular level of collaboration is acceptable, please ask for clarification. Please also note when you turn in an assignment whether you sought help with it from other students, tutors, or faculty (e.g., "J. Random and I worked on this assignment together" or "I got help with this assignment from one of the ACM tutors"). Answers that are identical beyond coincidence (either to another student's work or to solutions from a previous semester) will be

considered to be in violation of the Honor Code, and will result in appropriate action. You are responsible for the security of your work, both electronic and hard copy.

Title IX/Sexual Misconduct Reporting

As a Responsible Employee who is committed to creating an environment where every member of our community can thrive, I want to let you know that I am a Mandatory Reporter under Texas state law. What that means is that I am am required to report any instances of sexual misconduct, including sexual harassment, non-consensual sexual intercourse, non-consensual sexual contact, sexual exploitation, intimate partner violence, stalking, and related retaliation that I am aware of to the Title IX Coordinator. So, if you share information with me about any incidents that implicate the Sexual Misconduct or Anti-Harassment Policies, I am required to report all information to the Title IX Coordinator to make sure you have information about support resources and complaint resolution options. My report does not initiate the complaint process, and you are in control over how you choose to engage with our Title IX Coordinator. If you or someone you know has experienced sexual misconduct, including sexual harassment, I encourage you to share this information directly with the Title IX Coordinator or one of the individuals who has been designated as a confidential resource on campus. Information about reporting is available here: Reporting.

Academic Support Resources

Trinity faculty hold students to the highest academic standards and also know that the very best students seek out help when necessary. The following resources are in place to support your academic success:

- Academic Success: time management, student skills, test anxiety, note taking, supplemental 1:1 tutoring
- Career Services: major exploration, career guidance
- Counseling Services: mental health concerns, mental health referrals
- Quantitative Reasoning and Skills Center: tutoring for quantitatively demanding coursework
- Student Accessibility Services: accommodations for a diagnosed disability
- Wellness Center: nutrition, sleep, stress management
- Writing Center: starting a paper, finding a thesis, drafting and editing