CSCI E-121:
Introduction to Theoretical Computer Science

Course Overview and Contact Information

Course Overview

Semester and Year:	Fall 2021
Day/Times:	MW 12:45-2pm (lecture), sections and 3 exams (flexible)
Format:	Lecture.

Instructors' Contact Information
Name: Adam Hesterberg and Madhu Sudan
Office hours: MW 2-3pm (Zoom+in-person), more TBD
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TA(s) Contact Information
Name: Ife Omidiran (head)+TBD
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Course Description and Learning Objectives

Computation occurs over a variety of substrates including silicon, neurons, DNA, the stock market, bee colonies and many others. In this course we will study the fundamental capabilities and limitations of computation, including the phenomenon of universality and the duality of code and data. Some of the questions we will touch upon include: Are there functions that cannot be computed? Are there true mathematical statements that can't be proven? Are there encryption schemes that can't be broken? Is randomness ever useful for computing? Can we use the quirks of quantum mechanics to speed up computation?

Course Materials

- The course calendar has information about the course outline and schedule.
- Assignments and exams will be submitted on Gradescope.
- Some course materials will be on Canvas.
- Course discussion and some announcements will be on Ed.
- The course uses Barak's free textbook. Some students also use Sipser's book, which isn't required. We strongly recommend that you read at least one.
- An internet connection good enough to run Zoom and a shared whiteboard is required for office hours, and a tablet and stylus are recommended.

Grading

- 0% homework zero (math background check)
- 40% exams: 10% first midterm, 15% second midterm, 15% final (open notes)
- 50% problem sets (weekly/biweekly, due Mondays)
- 5% participation
- 5% lecture quizzes

Expectations and Policies

- Recorded videos of each lecture will be posted, generally within 24 hours of the date in the course calendar. Students are expected to watch the recorded videos within 24 hours of posting. In-person attendance is not allowed.
- Each week has an hour's worth of section material for review and practice. Students in the extension class do not attend sections in person, but are strongly recommended to work through the section materials each week.
- Office hours on Zoom are available for students to engage further in the material and to get help on material.
- The class discussion board, Ed, is another way to participate. Please use the forum not only to ask questions, but also answer others' questions! Course announcements will be made on Ed, which students are expected to check.
- Participation points can be earned by (self-reported) participation in any of the four components above: weekly participation in at least two of them is sufficient for full participation credit.
- Problem sets: There are detailed instructions on problem sets on what collaboration is and is not allowed. In brief, you are encouraged to collaborate when thinking about solutions, but you must wait one hour between any collaboration and writing your own solutions.

Accommodation Requests

We're committed to supporting diversity, inclusion and belonging, and accessibility. The University Disability Office and Extension School Accessibility Office offer a variety of accommodations and services to college and extension school students, respectively, with documented disabilities. We seek to create a learning environment that supports a diversity of thoughts, perspectives and experiences: if you feel uncomfortable sharing your thoughts with the class, please tell us. We include and support students and staff of many identities (including race, gender, class, sexuality, socioeconomic status, religion, and ability), and ask that you similarly support your fellow students. If something was said in class (by us or anyone else) that made you feel uncomfortable, please talk to us about it. If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with us. (Credit: based on the statements of Professor Boaz Barak and Dr. Monica Linden at Brown University.).

Academic Integrity

You are responsible for understanding Harvard Extension School policies on academic integrity and how to use sources responsibly. Stated most broadly, academic integrity means that all course work submitted, whether a draft or a final version of a paper, project, take-home exam, online exam, computer program, oral presentation, or lab report, must be your own words and ideas, or the sources must be clearly acknowledged. The potential outcomes for violations of academic integrity are serious and ordinarily include all of the following: required withdrawal (RQ), which means a failing grade in the course (with no refund), the suspension of registration privileges, and a notation on your transcript.