EE 360C - ALGORITHMS
Course Syllabus
Fall 2021

Instructor	Prof. Santacruz	Prof. Soloveichik
Section	18005	18010
Lecture	TTH 2:00pm-3:30pm	TTH 5:00pm-6:30pm
Location	ECJ1.214 or online	EER 1.516 or online
Email(@utexas.edu)	`pedro.santacruz@`	`david.soloveichik@`

TEACHING ASSISTANTS

Graduate TAs:
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Undergraduate TAs:
Alejandro Neff: `alejandro.neff@utexas.edu`
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OFFICE HOURS

Please check the Canvas Home page for office hours information.

COURSE DESCRIPTION

This course studies combinatorial algorithms. Students will learn proof-based reasoning about algorithms; asymptotic complexity analysis; algorithm design principles; common types of algorithms and their applications; and the nature, impact, and handling of intractability. Please see the separate Course Plan for the tentative schedule of topics covered in the course.

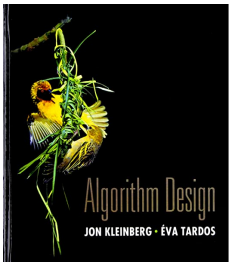
The principle focus of the lectures will be theoretical, in the style of the ***Algorithm Design*** text listed below. There will also be a number of programming assignments, in which you will be required to implement algorithms.

PREREQUISITES

This course is intended for undergraduate students who have taken at least EE312 and discrete math. You should be comfortable writing, compiling, and debugging programs of a moderate complexity (i.e., hundreds of lines of code). Course programming will be done in Java; lectures will not include instruction in any programming language, but preparation from EE312 should be sufficient for the course. Students concerned about programming capabilities are recommended to peruse the recommended Java text below (or any other good Java text). You should be comfortable with basic proof techniques such as proof by induction, contradiction, etc, as well as basic mathematical objects such as sets, graphs, etc.

REQUIRED TEXT

- J. Kleinberg and E. Tardos. *Algorithm Design.* Addison Wesley 2005.



Recommended Texts

- T. H. Cormen, C. E. Leiserson, R. H. Rivest, and C. Stein. *Introduction to Algorithms.* The MIT Press, 2009 (Third Edition).
- B. Eckel. *Thinking in Java.* Prentice Hall, 2006 (Fourth Edition).

Evaluation and Grading

There will be daily quizzes, regular quizzes, and programming assignments.

- The weekly homeworks will be 30% of your final grade. Your homework average will be computed by dropping the two lowest homework scores (e.g., if you miss a homework, you will receive a 0, but you can drop that homework; if you don't miss any homeworks, we will just drop the two lowest scores). **There will be no late homeworks.**
- The programming assignments will be a total of 20% of your final grade.
- The two Midterm Exams are worth 15% of your final grade each.
- The final exam is 20% of your final grade.

Final grades will be assigned based on a curve. The curved grades cannot be lower than the standard numerical criteria:

< 59	60-63	64-66	67-69	70-73	74-76	77-79	80-83	84-86	87-89	90-93	94+
F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A

Assignments

Homework assignments will be given out weekly. Completed assignments must be submitted on Gradescope by the stated deadline as no late homework is accepted. Typed homework is strongly preferred. Academic Integrity Policy for this course explicitly makes the use of solutions from previous semesters unauthorized, and prohibits sharing solutions. Doing the homework yourself will be essential to mastering the course material. After the homework is submitted, a single problem will be chosen by the TAs to be graded and your entire grade for that homework will be based on the one graded problem. Since you do not know in advance which problem will be graded, you must solve every problem.

Programming assignments will be required to be submitted electronically following a specific set of guidelines. Not following these instructions will result in a loss of some credit even if your programming implementation is correct. Please note that these guidelines will be **strictly** followed, so make sure your submission is properly submitted.

Academic Integrity

The University and the Department are committed to preserving the reputation of your UT degree. To guarantee that every degree means what it says it means, we must enforce a strict policy on academic honesty: Every piece of work that you turn in with your name on it must be yours. As an honest student, you are responsible for enforcing this policy in three ways:

1. You must not turn in work that is not yours, except as expressly permitted. **You are not allowed to copy someone else's homework solutions or program code.** This is plagiarism. (See below for more details on the collaboration policy for programming assignments.)

2. You must not enable someone else to turn in work that is not his or hers. Do not share your work with anyone else. Make sure that you adequately protect all your files. Even after you have finished a class, do not share your work or published answers with the students who come after you. They need to do their work on their own.

3. You must not allow someone to openly violate this policy because it diminishes your effort as well as that of your honest classmates.

Students who violate University rules on scholastic dishonesty in assignments or exams are subject to disciplinary penalties, including the possibility of a lowered or 0 grade on an assignment or exam, failure in the course, and/or dismissal from the University. Changing your exam answers after they have been graded, copying answers during exams, or plagiarizing the work of others will be considered academic dishonesty and will not be tolerated. Plagiarism detection software may be used on the programs submitted in this class. **Any academic integrity violations will be reported to the Dean of Students following University policy (**http://deanofstudents.utexas.edu/conduct/reportanincident.php**).**

Collaboration on programming assignments

Programming assignments are to be done individually. Any programs that violate the class's academic honesty policy will receive a 0. **Do not make your code publicly available (e.g., github repo) as this enables others to cheat and you will be held responsible.** Do not cheat. We will catch you. Circumventing our strategies for detecting cheating is (much) more difficult than the assignments themselves.

Integrity is a crucial part of your character and is essential for a successful career. We expect you to demonstrate integrity in this course and elsewhere. In particular, your assignments must represent your own work and understanding. Academic misconduct such as plagiarism is grounds for failing the class. The following guidelines apply unless an assignment specifically states otherwise. If you have any questions about acceptable behavior, please ask the course staff. We will be happy to answer your questions!

You are encouraged to talk to your classmates about solution ideas, and you may reuse those ideas, but you may not examine nor reuse any other student's code. You are not allowed to copy code from any source—other students, acquaintances, the Web, etc. (Copying is forbidden via cut-and-paste, via dictation or transcription, via viewing and memorizing, etc.) You are encouraged to use books, the Internet, your friends, etc to get solution ideas, but you may not copy/transcribe/transliterate code: get the idea, close the other resource, and then (after enough time that the idea is in your long-term, not short-term, memory) generate the code based on your own understanding. It is your responsibility to understand everything that you turn in. We reserve the right to ask you to explain any part of your homework assignment. If you are not able to explain what it means and why you chose it, that is presumed evidence of copying/cheating.[1]

Course Resources

[1] The collaboration policy is adopted from Michael Ernst of University of Washington, and is used with permission.

⋆CANVAS
Course materials (e.g., the syllabus, lectures, assignments, etc.) and grades will become available via postings on this course's Canvas web page as the semester progresses. These will be the main sources of current class information: (i) class announcements, (ii) the homework and other assignments, (iii) recorded lectures. Please check this page regularly; you are responsible for everything that is posted on Canvas.

⋆PIAZZA
We will use Piazza (linked from the Canvas page) for a common discussion forum across all sections of this course. **We encourage you to both post and answer other student questions on Piazza.**

⋆GRADESCOPE
We will use Gradescope for submission of class assignments. Since you will mostly be uploading PDF files to Gradescope, you should also find a scanner/scanning application you feel confortable with to generate appropriate PDFs from handwritten paper.

⋆ZOOM
We may use Zoom for Lectures and Office Hours. The appropriate links to the Zoom meetings will be available on Canvas.

STATEMENT ON STUDENT SUCCESS

Your success in this class is important to me. We will all need accommodations because we all learn differently. If there are aspects of this course that prevent you from learning or exclude you, please let me know as soon as possible. Together we will develop strategies to meet both your needs and the requirements of the course. I also encourage you to reach out to the student resources available through UT. Many are listed on this syllabus, but I am happy to connect you with a person or Center if you would like.

STATEMENT ON RIGHTS AND RESPONSIBILITIES

- You have a right to a learning environment that supports mental and physical wellness.
- You have a right to respect.
- You have a right to be assessed and graded fairly.
- You have a right to freedom of opinion and expression.
- You have a right to privacy and confidentiality.
- You have a right to meaningful and equal participation, to self-organize groups to improve your learning environment.
- You have a right to learn in an environment that is welcoming to all people. No student shall be isolated, excluded or diminished in any way.

With these rights come responsibilities: ∗You are responsible for taking care of yourself, managing your time, and communicating with the teaching team and with others if things start to feel out of control or overwhelming. ∗You are responsible for acting in a way that is worthy of respect and always respectful of others. ∗Your experience with this course is directly related to the quality of the energy that you bring to it, and your energy shapes the quality of your peers' experiences. ∗You are responsible for creating an inclusive environment and for speaking up when someone is excluded. ∗You are responsible for holding yourself accountable to these standards, holding each other to these standards, and holding the teaching team accountable as well.

Grade disputes and corrections

The grade you are given on an exam, a quiz, an assignment, or as your class grade, is final unless a concrete error has been made. Do not come to see the instructors for a better grade because you want one or you feel you deserve it. Come only if you can document a specific error in grading or in recording your scores. Errors can certainly be made in grading, especially when many students are involved. But keep in mind that errors can be made either in your favor or not. So it's possible that if you ask to have a piece of work re-graded your grade will go down rather than up.

Remember that the most important characteristic of any grading scheme is that it be fair. Keep this in mind if you're thinking of asking, for example, for more partial credit points on a problem. The important thing is not the exact number of points that were taken off for each kind of mistake. The important thing is that that number was the same for everyone. So it can't easily be changed once the grading is done and the exams or assignments have been returned.

If you are dissatisfied with a grade you receive, you must submit your complaint briefly in writing or by email, along with supporting evidence or arguments, within one week of the date that we first attempted to return the exam or assignment results to you. Complaints about grades received after the one-week deadline will be considered only if there are extraordinary circumstances for missing the deadline (e.g., student hospitalization). No new disputes will be accepted after 11:59AM two days before the course grade sheets must be turned in.

Use of Email

You cannot expect to get last-minute help on assignments by email. More generally, you cannot expect to get detailed answers to technical questions by email. Students are encouraged to discuss important matters during office hours. If you must send an email, spend extra time to ensure that you are both brief and clear. Please include your name in the email message, not just your email address. Email is a valuable tool for communicating, but be sure to use it properly, and follow the rules of good email etiquette (e.g., no flaming, spamming, etc.). Although it's easy for you to dash off an email question, it takes time to answer it. In general, you should not ask email questions to which you can find the answer somewhere else (e.g., class notes, Piazza).

Learning Disabilities

If you have a learning disability that requires special attention, either during class or during an exam, please submit the instructor a letter from the Dean of Students describing what needs to be done. You should do this during the first week of classes. (The University of Texas at Austin provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-4641.)

Religious Holidays

A student who is absent from an examination or cannot meet an assignment deadline due to the observance of a religious holy day may take the examination on an alternate day, submit the assignment up to 24 hours late without penalty, or be excused from the examination or assignment, ONLY if proper notice of the planned absence has been given to the instructor at least fourteen days prior to the classes scheduled on dates the student will be absent. For religious holy days that fall within the first two weeks of the semester, notice should be given on the first day of the semester. A student who fails to complete missed work within the time allowed will be subject to the normal academic penalties.

Online Privacy

Web-based, password-protected class sites are associated with all academic courses taught at The University. Syllabi, handouts, assignments and other resources are types of information that may be available within these sites. Site activities could include exchanging e-mail, engaging in class discussions and chats, and exchanging files. In addition, electronic class rosters will be a component of the sites. Students who do not want their names included in these electronic class rosters must restrict their directory information in the Office of the Registrar.

Online Lectures

Recorded lectures may be posted in lieu of a live lecture or a part of a live lecture. Live lectures may be recorded; class recordings are reserved only for students in this class for educational purposes and are protected under FERPA. The recordings should not be shared outside the class in any form. Violation of this restriction by a student could lead to Student Misconduct proceedings.

Classroom Safety and COVID-19

Due to the fast-changing nature of the COVID pandemic, following university and department policies, the instructors may have to make adjustments to the course delivery method. Such adjustments may include moving parts of the class to online delivery.

For the in-person parts of the course, the university recommends the following.

- Adhere to university mask guidance.
- Vaccinations are widely available, free and not billed to health insurance. The vaccine will help protect against the transmission of the virus to others and reduce serious symptoms in those who are vaccinated.
- Proactive Community Testing remains an important part of the university's efforts to protect our community. Tests are fast and free.
- Visit protect.utexas.edu for more information.

Course Policies Caveat

This document covers policies shared across the different sections of this course, but different instructors may provide additional instructions particular to their section. Make sure you follow the directions appropriate to your section. **Please read all class emails and announcements.**

As departmental, college and UT policies change, we reserve the right to alter the effected course policies stated herein during the course of the semester.