

EE 360C - ALGORITHMS
Course Syllabus
Fall 2019

Instructor	Dr. Pedro Santacruz	Dr. David Soloveichik
Section	16395	16400
Lecture	TTH 2:00pm - 3:30pm in ECJ 1.214	TTH 5:00pm - 6:30pm in EER 1.516
Email	pedro.santacruz@utexas.edu	david.soloveichik@utexas.edu
Office	EER 3.812	EER 7.814

TEACHING ASSISTANTS

Isidoros Tziotis: isidoros_13@hotmail.com

Eftychia Vakaliou: eftychia@utexas.edu

Melanie Feng: melanie.feng@gmail.com

Yash Parakh: yash.parakh111@utexas.edu

Suhas Raja: sraja@utexas.edu

OFFICE HOURS

Please check the Canvas Home page for our office hours each week you wish to see us. We will highlight any changes for that week in red.

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 regular quizzes and programming assignments. The programming assignments will be a total of 20% of your final grade, and the weekly quizzes will be 30% of your final grade. Your quiz average will be computed by dropping the two lowest quiz scores (e.g., if you miss a quiz, you will receive a 0, but you can drop that quiz; if you don't miss any quizzes, we will just drop the two lowest scores). **There will be no makeup quizzes.** Three exams will count for the other 50%: each of the two exams is 15% of your final grade, and 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 (e.g., 94-100 = **A**, 90-93 = **A-**, 87-89 = **B+**, etc).

ASSIGNMENTS

Homework assignments will be given out weekly. **They will not be collected. Instead, a quiz of great similarity to the homework will be given every week.** The intention is that, if you have done the homework assignment, the quiz should be straightforward. After the quiz, solutions to the entire homework assignment will be posted on Canvas. For this reason, no late quizzes will be administered. While the homework assignments are not collected and graded, you should do them on time and on your own. This will be essential to mastering the course material. **You must take the quiz in the section you are registered** (the section quizzes will be different).

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.

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. **Specifically, you are not allowed to copy someone else's program code.** This is plagiarism. (See below for more details on the collaboration policy.)
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 (eg 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 WEBSITE

Course materials (e.g., the syllabus, lecture notes, 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) the daily class announcements, (ii) the homework and programming assignments, (iii) model solutions to programming assignments and exams, and so on. Please check this page regularly; you are responsible for everything that is posted on Canvas. 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.**

ATTENDANCE

Attendance is expected. Whether you come to class or not, you are responsible for keeping up with what happens in class. If you miss a class (other than for illness or an emergency), it is not reasonable for you to expect us to repeat the material that was covered in the class that you missed just for you. This applies both to the content of the class as well as to announcements about class policies, events, deadlines, etc.

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

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

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 in person, typically 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.

CLASSROOM BEHAVIOR

You have the right to learn in every class you attend. But you also have the responsibility to help assure that every other student shares that right. Specifically:

1. Under normal circumstances, class will start on time and end on time.
2. Come to class on time. Do not leave early. These things are very disruptive. Recognize that the buses

and the parking space situation are unpredictable elements and allow for that.

3. Don't be disruptive during class. Don't chat with your neighbors.
4. Don't allow your electronic devices to be disruptive. Turn off your cell phone.
5. Don't leave your mess lying on the classroom floor when you leave—pick it up and throw it in a trash can.

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.

COURSE POLICIES CAVEAT

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