

CSCI 270 Fall 2018 Syllabus

Course Logistics

There are three lectures:

- MW 10:00 - 11:20 in WPH B27
- TuTh 9:30 - 10:50 in SOS B46
- TuTh 12:30 - 1:50 in GFS 116

There are three discussions:

- Friday 10:00 - 11:50 in WPH B27
- Friday 12:00 - 1:50 in SLH 102
- Friday 2:00 - 3:50 in SLH 102

The first lecture of each week for each grouping will cover roughly the same material as the other two; similarly for the second one. You are responsible for all material covered in lecture and discussion and are encouraged to attend the one in which you are enrolled. However, if you miss or will miss that one, you are welcome to attend another one.

Course Announcements and Forum: we have a Piazza forum. Announcements will be made via Piazza and sent to your email. Questions that do not require the attention of any particular member of course staff should be posted on Piazza with the appropriate privacy setting. Emails sent to course staff should come from your USC email address, include your ID number, and have a meaningful subject line that begins with the substring "CSCI 270"

Grades

Your percent grade at the end of the semester will be based on the following calculation:

- 20%, five take-home quizzes, weighted equally
- 5%, one programming assignment
- 5%, fundamentals quiz on September 13 at 7pm
- 10%, your score on the midterm exam on October 25 at 7pm
- 60%, performance on five key concepts related to algorithms and theory of computing:
 - 13% - the *better* of your two dynamic programming exam questions
 - 13% - the *better* of your two greedy algorithm exam questions
 - 11% - the *better* of your two divide and conquer exam questions
 - 12% - the *better* of your two network flow exam questions
 - 12% - the *better* of your two **NP**-complete proof exam questions

The first three topics will have one question each on the midterm. The other two will have one question each on the week 15 quiz (held November 29, 7pm). All five topics will have one question each on the final exam, held Wednesday December 12, 2-4pm.

Letter grades will be assigned based on the above relative weights. We will neither have a straight scale nor a straight curve. It is guaranteed that 90% of the available points will constitute an A, although the cut-line for an A *may* be lower than that. Similarly, collecting at least 80% of the available points will be at least a B, and 70% will be sufficient (but might not be necessary) for at least a C.

Homework and take-home quizzes

Five times during the semester, you will be given a take-home quiz and one week to complete it. Two grace days will be available for your use to extend the due date by 24 hours. Note that these are in place of, not in addition to, “excused late” submissions. If your anticipated cause of late submission will require more than two grace days, such as due to religious observations, please let me know so we can accommodate this. *Grace days will not be able to be used for the third or fifth take-home quizzes due to their due date’s proximity to in-class exams.*

All take-home quizzes will be submitted via the Desire2Learn system. You will need to turn your submission into a PDF in order to do this; free scanner apps are available for most smartphones and physical scanners are available at the library. Unless you tell us otherwise, we will grade the *last* submission you make within the submission period. You are encouraged to submit *something* on time, even if you plan to use late days; that can then be replaced with your late submission if you so choose.

Homework : in addition to the take-home quizzes, every unit of the class will have an associated set of homework problems. These will not be collected, nor does anything about them *directly* figure into grade calculations. However, you are strongly encouraged to do these problems. Solutions will be made available, but you are cautioned that the learning experience with these lies in *solving* the problems, not in merely seeing the solution. To that end, every member of course staff is available to help you solve these problems. Because we will not be collecting your solutions for credit, you may also receive assistance from your classmates to whatever extent you are collectively comfortable.

We do make one request: if you are going to ask about a solution on Piazza, please title the post in such a way that you do not spoil the solution for someone who has yet to solve it for themselves.

In-class Exams: We have four in-class exams, marked in the “grades” section above. You will be provided with paper on which to take the exam. Exams will be individual effort, closed-book and closed-notes. You will be allowed one 8.5”x11” handwritten note sheet (front & back) on the exams. *These are not “cheat sheets”; please do not label them as such.*

Students requiring alternate exam arrangements must make such requests within the first two weeks of the term, or as soon as possible after knowing of the conflict or requirement.

Grade Reconsideration: Reconsideration requests for any graded artifact must be made within one week of our first attempt to return the item or the grade to you. Once the reconsideration period has passed, grades are considered final. Reconsideration requests should be made directly to the instructor after filling out the form available on Piazza.

Tentative Schedule. All reading references are in the textbook *Algorithm Design and Applications* by Goodrich and Tamassia; similar topics are in the other texts as well.

Week	Lecture Topics	Reading	Due Dates and Exams
1 Aug 20	Introduction, Graph Fundamentals	Chapter 13; 14.1, 14.2, 15.1, 15.3	
2 Aug 27	Union-Find Data Structure, Skip Lists	Chapter 7; 15.2 19.4, 19.6	
3 Sep 3	No lecture Sep 3 or 6, Number-Theory Cryptography	19.4, Chapter 24	
4 Sep 10	Number-Theory Cryptography, Dynamic Programming	Chapter 24, 12.1, 12.2	Quiz: Sept 13 (Thursday evening)
5 Sep 17	Dynamic Programming	12.5, 12.6	
6 Sep 24	Dynamic Programming, Greedy Algorithms	14.3, 14.5 10.3,	THQ 1 due Sep 27
7 Oct 1	Greedy Algorithms	10.1, 10.2	
8 Oct 8	Greedy Algorithms, Divide and Conquer	20.4, 8.1, 8.3, 11.1	THQ 2 due Oct 11
9 Oct 15	Divide and Conquer	11.2, 11.3 ; 8.2, 9.2	
10 Oct 22	Divide and Conquer Network Flow	11.4, 22.4 ; 16.1, 16.2	THQ 3 due Oct 23 Midterm: Oct 25 (Thursday evening)
11 Oct 29	Lazy programming Network Flow	16.3, 16.4	
12 Nov 5	Network Flow, Limits of Knowledge	17.1, 17.2	THQ 4 Due Nov 8
13 Nov 12	NP-complete Problems	17.3, 17.4	
14 Nov 19	NP-complete Problems No lecture Nov 21 or 22	17.5, 17.6	
15 Nov 26	Undecidable Problems		THQ 5 due Nov 27 Quiz: Nov 29 (Thursday evening)

CSCI 270 Academic Honesty Guide

For any portion of this class that is not collected, you may work with your classmates and tutors to whatever extent you and they wish. I encourage students to, for example, take the homework assignments, work on the problems individually, and then discuss with one another.

For items we collect to grade, it is still important to be able to seek out helpful information and collaborate, but it is clearly wrong to pass off work by others as your own. Navigating these two principles can be tricky, as it is possible to enter the danger zone between them unintentionally.

To help guide you, follow this principle:

The “Kenny Loggins” Rule:

You may discuss high-level ideas, and give hints to other students regarding how to solve take-home quiz problems. Any time you seek help on, or discuss with someone else, a take-home quiz question that you have yet to solve, do not keep any written record of the discussion. Afterwards, take a 30-minute break and do something unrelated to the course (watching a 30-minute episode of your favorite cartoon show, for example). You may now return to your assignment.

This is less an ironclad rule as a guideline. It is a guideline to help you determine what is and is not appropriate collaboration and to avoid trouble from the “danger zone.” Flouting the spirit of the Rule while following its letter does not excuse cases of cheating which arise. For example, it is clearly **not** ok to study and memorize your friend's solution, watch a cartoon for half an hour, and then write out your friend's answer from memory and submit it. The spirit of the rule includes that what you write and submit for take-home assignments must reflect *your* work and *your* understanding at the time of submission. Do not submit anything that does not reflect *your* understanding of the material, no matter its origin.

You are responsible for understanding what is allowed, and what is not. It is possible to violate these guidelines without being malicious, and we still are required to report this to Student Judicial Affairs and Community Standards.

We have very observant graders who tend to notice inappropriate collaboration and plagiarism. Follow the above guidelines to make sure you never fall afoul of this.

You should never:

- Show your take-home assignment to someone else.
- Write your solutions from notes taken outside of lecture or discussion.
- Seek solutions from sources outside to this class -- this includes the general internet.
- Tell a student specifically how to solve part of a take-home problem.
- Submit anything that includes what you do not understand or could not explain to the instructor.

If someone copies your work, both of you are culpable! **Remember: friends that pressure you for unreasonable help are not really friends.**

You should never need to get a solution elsewhere. You can get nearly unlimited help for similar questions on not-collected homework problems and apply your knowledge to solving the required problem. Furthermore, academic dishonesty carries a penalty of F in the class; it isn't worth the risk!

CSCI 270 Academic Success Guide

1. Go to lecture -- and participate!
There are some students who can skip a lecture and still do well. They are a small subset of the students who do skip lecture though. You will get the most out of lecture if you are well rested, nourished, have at least looked through the reading, and ask questions.
2. Go to Office Hours and Discussion!
Your TAs will present the material in such a way to reinforce the knowledge for you. Their presentation is likely to differ from how your lecturer presents it; this is a good thing. Furthermore, ending your school week by reviewing the material will help you long-term.
3. Do your homework and the take-home assignments.
I mean two things by this point. First, do your assignments as in "do not skip doing your take-home assignments and turn in nothing." These are worth 25% of your grade. Every semester, there are students who miss passing classes by less than that margin who neglected at least one homework. Do not be one of those students this semester!
Second, do your homework as in "take the time necessary to do well on it." You will need to devote a significant amount of time to do well on the assignments.
4. When homework solutions are posted, review them: twice!
Take-home quiz solutions are typically posted very shortly after the last time to submit them. Review once while what you did is fresh in your mind and once when you get the graded artifact feedback. Be sure you know why you missed the points you did; that feedback will be valuable to you in learning the material and preparing for exams.
5. Plan your semester.
There are 10 dates you will need this semester for CSCI 270. They are listed on the syllabus. Put them on your calendar and do this for your other courses (if any) too. If you see that a due date is near when you have a deadline in another class, plan to start that preparation even earlier.
6. Understand this is not a middle school math class.
We are not looking for a number as an answer and showing your work isn't just for partial credit. your work isn't limited to repeating exercises from lecture or homework with different numbers either. We will be expecting you to explore ideas using class as a starting point. Many times you will be expected to write a proof or a new algorithm to solve a problem using techniques related to what we have discussed.
7. If you find yourself falling behind, let someone know.
The instructor, TAs, and course producers are around and able to help you get caught up
8. If you need a particular grade, the time to act upon this is now, not after the final.
Every semester, I get requests based on students' need to have a particular grade reported. The only factor in your grade is demonstrated knowledge in the class, and the only reconsideration requests granted are based on marking error. There is plenty of opportunity for help, practice, and credit during the semester. On a related note, there are no opportunities for extra credit. Make the most of your regular credit.