

Summer 2020 - Discrete Structures

CS1800 (Lecture) Dr. Laney Strange laneys@northeastern.edu https://northeastern.zoom.us/j/9054922952	CS1802 (Recitation) Dr. Jose Annunziato jga@northeastern.edu
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Discrete Structures Online

This course will be entirely online. Most pieces will be available asynchronously to accommodate everyone's schedules and timezones as best we can. Online policies include the following:

- Videos will be posted on the course website, ahead of each lecture.
- Along with the video, we'll post a Daily Problem Set; complete and submit it before the corresponding lecture.
- During scheduled lecture time (MTWR 9:50-11:30am) we'll host a real-time zoom meeting to review the exercise and go into more depth on the material. We'll also record this meeting so you can review it later.
- Office hours will be held on Zoom. We've designated the first hour to have 15-minute time slots; you can sign up in advance if you need to be sure you've got time set aside with one of us. After that first hour, you can drop in the Zoom link anytime and it'll be first-come, first-served.
- Exams will be administered during the scheduled lecture. If you need to arrange another time to take the exam due to timezone issues, please email me directly.
- Recitation will meet live during the scheduled time; these meetings will be recorded and posted later.

Lecture <http://northeastern.zoom.us/j/97571582741>

- MTWR 9:50-11:30am (we probably won't use the entire time).
- Join the real-time meeting to ask questions; we'll also go into greater depth on the material.
- We'll record this meeting for later viewing.

Recitation

- Join the real-time meeting to work on the recitation and go over solutions. We'll record this meeting for later viewing.
- Wed: Graded recitation assignment
- Mon: Work on current homework
- MW 1:30-3:10pm (Section 1)
- MW 3:20-5:00pm (Section 2)

Office Hours

Office hours will be hosted on Zoom. The first hour of each office hours slot will have 4 15-minute individual time slots available to sign up. The remainder of the slot will be first-come, first-served (just join the meeting link anytime).

Instructor Office hours

- Laney: MR 11:30am-1:30pm
- Jose: TRF 4:00-6:00pm

TA Office Hours

- We have office hours all week long. Please check the website for the schedule, and keep an eye on Piazza for any updates.

Required Textbook:

- Discrete Structures by Harriet Fell and Javed A. Aslam. You can buy the textbook [online](#) or in the Northeastern University bookstore.

Software and Communication

There is no software to download for this course, but you do need to sign up for our Piazza page (<https://piazza.com/northeastern/summer2020/cs1800/>) and Gradescope course (<https://www.gradescope.com/courses/107345>).

Course Description

The purpose of this course is to understand and use (abstract) discrete structures that are backbones of computer science. We begin with mathematical notation, logic, and sets. We will then study proof techniques, combinatorics (counting), probability, asymptotic notation, recurrences, and the beginnings of graph theory. By the end of this course, you will have become familiar with a number of discrete structures that are used throughout computer science.

The major topics within the course will be covered in roughly the following order, but we may spend more or less time on a topic than the below outline indicates.

Topics
Propositional Logic and Truth Tables
Binary Numbers; Two's Complement
Sets, Set Operations
Counting; Combinatorics
Pigeonhole Principle
Modular arithmetic
Divisibility + Encryption
Mathematical Induction

Functions
Asymptotic Time Complexity
Search and Sort
Recurrence relations
Graph theory

Evaluation

Your grade in CS1800 will be evaluated based on the following factors:

Factor	Number	Weight
Homework Sets (one dropped)	5	40%
Daily Problem Sets (4 dropped)	3x/week	20%
Exam #1	1	15%
Exam #2	1	15%
Recitation	6	10%

Homeworks and Problem Sets

Five homeworks will be assigned during the semester -- released Thursday and due the following Monday at 11:59pm. We do not accept late submissions, but we drop your lowest homework and it will not count towards your overall average.

We will also assign **very short** Daily Problem Sets. These will be released along with lecture videos, and you'll complete and submit the DPS before the official scheduled lecture begins at 9:50am.

All homeworks and DPS assignments will be submitted on [Gradescope](#). You can type up your solutions and submit a PDF, or you can write them by hand and take a picture to submit.

Recitation

The recitation for this class, CS1802, has two meetings per week, but we will use only the Wednesday meeting for a graded recitation section. We will give you problems to work on, and you will receive a grade for your participation and effort. Your lowest recitation grade will be dropped.

We will use the Monday recitation time to work on the current homework. Monday's recitation time will

not have a separate assignment to work on, and will not be graded.

Exams

Two short exams will be given during the semester. They will be administered during the scheduled lecture.

If you need to arrange another time to take the exam due to timezone issues, please email me directly.

Notes, books, phones, and other devices are not permitted during the exam. We have instituted an honor code for this course and expect everyone to take it as seriously as we do. You will be asked to write the following pledge on every page of your exam: **I pledge on my honor that I did not give or receive help on this exam.**

Piazza

Sign up for the course piazza page: <https://piazza.com/northeastern/summer2020/cs1800>

Piazza is here for you to ask clarifying questions on homework assignments, which the course staff is happy to answer. It is also used for discussions among students about the approach you might take to solving problems in the class.

Because this is a theory course, and solutions sometimes rely on one particular, specific insight, we have a few rules governing our Piazza page:

- You may not post solutions to problems.
- You may not post a single, simple insight that enabled you to solve a problem (e.g., “Use Cantor’s diagonalization”), but you may post general approaches (e.g., “I thought this homework problem related to the class discussion on infinite binary sequences”).
- You must be respectful of and courteous towards your fellow students and the teaching staff.

Violations of these rules will result in our closing the Piazza page.

Academic Integrity

We expect that you might study with friends and work out solutions to problems together, but you must write up your own solutions, in your own words.

Here are some concrete guidelines.

- Never look at someone else's homework solutions. Otherwise you might turn in overly similar work.
- If you produce a solution together on a whiteboard, don't simply copy it down afterwards. You must, on your own, write your own solution by hand.
- If someone explains an answer to you, do not write down their exact words; instead, on your own write up your solution afterwards.
- If you collaborate with (or get help from) any other student, then write their name on the first page of your assignment at the top.

The university's academic integrity policy discusses actions regarded as violations and consequences for students: <http://www.northeastern.edu/osccr/academic-integrity>

Accessibility

Students who have disabilities who wish to receive academic services and/or accommodations should call the Disability Resource Center at (617) 373-2675. If you have already done so, please provide your letter from the DRC to me early in the semester so that I can arrange those accommodations.