

CAS CS 131 - Combinatoric Structures

Summer-1 2015

SYLLABUS

TUESDAY, MAY 19, 2015

Course Description

Representation, analysis, techniques, and principles for manipulation of basic combinatoric data structures used in computer science. Rigorous reasoning is emphasized.

Prerequisites

Basic (high school level) calculus and algebra.

Lectures

EPC 203 (750 Commonwealth Avenue), Mon, Tue, Wed, Thu 1-3pm.

I expect you to come to lectures (on time!) and I encourage you to participate. There is no perfect textbook for the class, and lectures are your important source of information. Be sure to take good notes.

Discussion Lab

EPC 203, Wed 5-6pm.

Course Staff

Instructor: Abraham Matta

- email: matta@bu.edu (preferred)
- office hours: Mondays and Thursdays 3-4:30pm (or by appointment)
- phone: 617-358-1062
- office : MCS-271

To reach me at times other than my office hours, please send me email. I check my email regularly.

TF: Hannah Flynn

- e-mail: hmflynn@bu.edu (preferred)
- office hours: Tuesdays 5-6:30pm, Wednesdays 11:30am-1pm (or by appointment)
- location: BU CS undergraduate lab (730 Commonwealth Ave, room 302).

The Teaching Fellow will lead the discussion session. The objective is to reinforce the concepts covered in the lectures, and answer questions (or provide clarifications) regarding the homework assignments.

The purpose of the office hours of the Instructor and Teaching Fellow is to answer specific questions or clarify specific issues. Office hours are not to be used to fill you in on a class you skipped or to explain entire topics. Please come to class and to the discussion session.

Textbook

There is no perfect textbook that covers all the material of this course from a CS perspective. We will mostly make use of the following online notes. Do not print anything yet! The notes are 339 pages long, so you might consider printing them out in chapters as we get to them rather than all at once. We won't cover all chapters anyway.

- Notes for MIT's CS 6.042 course (online in PDF format), by Eric Lehman and Tom Leighton, 2004.

Together with your lecture notes, these notes should be quite sufficient, but if for some reason you want to do additional reading, you might consider some discrete mathematics book, e.g., *Discrete Mathematics and Its Applications*, by Kenneth H. Rosen, McGraw Hill. However, be warned: each discrete math book has its cons and they can be quite expensive!

Communications

This term we will be using Piazza for class discussion. The system is highly catered to getting you help fast and efficiently from classmates, the TF, and myself. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza. If you have any problems or feedback for the developers, email team@piazza.com.

Find our class page at: <https://piazza.com/bu/summer2015/cs131/home> We will also use Piazza to post announcements, homework assignments, etc.

For reporting your grades, we will use Blackboard at <https://learn.bu.edu>

Course Schedule (tentative)

Dates	Lecture	Readings
5/19, 5/20	Introduction: the Truth and nothing but ...Logic and proofs	Ch. 1 (ps0 due 5/21)
5/21 5/26, 5/27	Proofs by induction I, II Last Day to DROP without a “W” grade is 5/26 Mon 5/25: No class, holiday	Ch. 2, 3 (ps1 due 5/29)
5/28	Sums and Approximations	Ch. 10, 11
5/29	Review (This Friday is Monday schedule)	(ps2 due 6/4)
6/1	Exam 1	
6/2	Sums and Approximations	
6/3, 6/4	Asymptotics and Recurrences	Ch. 12 (ps3 due 6/10)
6/8, 6/9	Counting	Ch. 14, 15, 16
6/10	Review Last Day to DROP with a “W” grade is 6/12	(ps4 due 6/18)
6/11	Exam 2	
6/15, 6/16 6/17	Counting	
6/18 6/22	Probability	Ch. 18, 19, 20 (ps5 due 6/23)
6/23	Wrap-up	
6/24	Review	
6/25	FINAL EXAM	

Assignments

Regular homework assignments will be given, roughly one per topic, and will consist of written exercises and problems (no programming). The assignments will be posted on Piazza in PDF format, and you will have to print it for yourself or read it from the screen. See the Schedule above for the assignments and their due dates.

Unless stated otherwise, an assignment will be due at the beginning of the class on the due date - this is a particularly sharp deadline, make sure that you are not late to class. If you are not sure that you can make the class on time you can submit the problem set in the drop-off box (located in the bottom and labeled “CS 131”, near the main CS office, across MCS-137) *in advance*.

If you believe that there is a chance that your assignment will be lost by the course staff, then here is how you can protect yourself: (1) make a copy of your assignment before handing it in, and (2) have the CS office time-stamp your copy of the assignment. Claims for “lost” assignments will be considered only if accompanied by a time-stamped copy of what you handed in. There are no exceptions to this rule.

Late assignments will not be accepted - this gives me a chance to post the solutions and discuss them after the deadline (in or outside the class). Your worst homework grade will be dropped, but you should save this for emergencies.

CAS Academic Conduct Code

Course participants must adhere to the CAS Academic Conduct Code:

<http://www.bu.edu/academics/policies/academic-conduct-code/> All instances of academic dishonesty will be reported to the academic conduct committee.

Collaboration/Academic Honesty: I encourage you to discuss course material and even problem sets with other students in the class (esp. on Piazza), subject to the following rules:

1. You must write up your solutions completely on your own (and certainly without looking at other people's write-ups).
2. In your solution to each problem, you must write the names of those with whom you discussed it.
3. You must include citations of all the materials you have used beyond your class notes and the online MIT notes.
4. You may not consult solution manuals or other people's solutions from similar courses or prior years of this course.

I expect you to follow these rules as well as the academic conduct code of CAS/GRS. If you have any questions or are not sure what is appropriate, consult me before taking steps that you are afraid may violate the rules.

If you violate the academic conduct code, you will be reported to the Academic Conduct Committee.

Grading (tentative)

There will be two midterm exams and one final exam, which will include all material covered from the beginning of the semester until the day of the exam. All exams will be closed books and closed notes, except that you will be allowed to bring only a single double-sided sheet of handwritten notes ("cheat sheet"). There will be absolutely no make-up exams, except for medical emergencies. In that case, blue slips from Health Services will not be accepted; you must justify your medical problem with a letter from a doctor, specifying the period of time during which you were unable to attend one of the exams.

Short quizzes may be given throughout the semester, in the lectures or discussion sections, to make sure you are doing the readings on time, and also as a measure of attendance.

Regular homework assignments will be given, roughly one per topic, and will consist of written exercises and problems (no programming).

The course grade will be approximately 40% homework, 5% attendance/quizzes, 15% for each midterm, 25% final.

You should monitor your performance during the course by checking your grades from Blackboard <https://learn.bu.edu>

If you have any difficulty with the course, please promptly seek help (from the TF or myself).

Note that the last day to drop a class without a "W" is **May 26, 2015**. The last day to drop a class with a "W" is **June 12, 2015**.

No Late Assignments: No late assignments will be accepted. Homeworks will be posted on Piazza (in PDF format and you will have to print it for yourself or read it from the screen.) Each assignment will have a due date. Late submissions get no credit, since I will post the “official” solution after the deadline, to give you feedback. (You may still want to submit a late assignment, for no credit, just to get individual comments.) Your worst homework grade will be dropped, but you should save this for emergencies.

Attendance Is Important: We will take attendance at any time in the lectures or discussion sections. We will not provide backup lecture or discussion notes on certain additional details we will cover, so it is imperative that you attend all lectures and discussion sessions and take careful notes.

Regrading Policy: If you find a possible grading error, or just have a question about the grading, please contact the TF as soon as possible. In most cases the TF should clarify the issue. However, if you are still unhappy about the grade, you can complain to me directly. Please do inform me of any problems you may have with the grading (or the course in general) at the earliest time possible, so I can address the problems in a timely fashion.