CS310 - Advanced Data Structures and Algorithms

Introduction

September 7, 2022
Instructor: Nurit Haspel

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Office – M-201-04

Office hours – Mo We 4:00-5:20 or by appointment.

Course schedule: Mo We 7:00-8:15PM, Y02-2330

TA: Fatemeh Afrasiabi (see course webpage for email)
Course Description (not necessarily in order)

- Methods for structuring and manipulating data in computing.
- Application program interface (API), data abstraction and encapsulation.
- Design and analysis of algorithms, including theoretical background.
- Algorithmic techniques – greedy algorithms, dynamic programming etc.
- Graph theory and applications.
- Networks, max-flow min-cut.
- Throughout the entire course we will study advanced techniques for program development and organization.
General Stuff

- The course material will be available online and updated regularly with class notes and assignments.
- Attendance is not required (but highly encouraged). **You are responsible for keeping yourselves up to date if you miss a class.**
- Don’t be afraid to ask questions in or out of class. I highly encourage it, I won’t think you are stupid and it won’t lower your grade.
- Don’t hesitate to send me e-mails. I expect e-mails. It won’t lower your grade.
- In your e-mails be as specific and give as many details as possible.
- However, don’t expect me to solve your homework for you or debug your code.
Course Requirements

- Prerequisite: CS210 (Intermediate Computing), CS240 (C and Unix), CS220 (Applied Discrete Mathematics) or equivalent.
- Homework (written, 5%) and programming assignments approx. every two weeks (15%).
- Midterm exams (25% each), final exam (30%).
- First homework posted online. Due in 9 days (Feb. 2 by 23:59 or 11:59PM).
- Most of it is review.
- Should be submitted to Gradescope (get an account if you’re not there yet!)
Your final grade should be at least D- (at least 40) to pass.
You also have to pass the final exam.
Algorithms Design, by Jon Kleinberg and Eva Tardos.
Recommended books: CLRS 3rd edition, “Algorithm design manual” by Steven Skiena (see course webpage). The CS210 Algorithms book will also be useful later on in the course.
Apply for an account with the course (recommended).
You will get a subdirectory where you can test your programming assignment offline.
You can also work on your home directory, but you need a Linux.
I’ll open a piazza group and add you all to it with your UMB account.
Post there questions or comments you think may be of interest to the class.
Announcements will be posted there. Make sure to follow it.
Look at the homework assignment.
If you have a problem solving the homework – talk to me ASAP.
I won’t answer questions you can easily look up yourselves. 
examples include, but are not limited to:
  • Date and time of final exam (it’s on WISER)
  • Anything that appears on the Linux guide referred to on the course webpage
  • In general, anything that appears on or accessible from the course webpage
  • Pre-requisite material (except for a quick review).
  • Anything answered in the CS dept. FAQ section

If you miss classes regularly I will treat you fairly but won’t go out of my way to help you make up the missing material.

Mask policy – in accordance with University regulations.

No cell phones! You may use laptop for note taking (and screenshots if needed).
Don’t Fall Asleep in Class

or else…
The homework and programming assignments are strictly individual, so are the tests.

You may consult with your friends (NOT during an exam), but the final work should be your own.

For programming assignments I use a plagiarism detection software.

I have a second-strike policy.

First strike – you get a 0 in the homework and a warning.

Second strike – you fail the course + a report to the higher administration

The no. of strikes includes plagiarism in other courses as well (we have a registry).

The homework and programming assignments should be submitted to Gradescope and will be graded there.

Tag your homework on Gradescope (ask me if you don’t know how to do it).

If you don’t tag once you’ll be warned. Twice – you will be downgraded progressively.

The homework deadline is strict. Submission will be closed after the deadline.

For programming assignments you may use a total of five (5) late days without penalty.

Plan carefully! Any extra late day will cost you five points.

Generally I do not accept submissions after I post the solutions (about a week to ten days post-deadline)