

# Algorithms (CS:3330:0002) Fall 2017

## Class Schedule

The course meets 3:30–4:45 pm Tuesday and Thursday at 110 MLH (MacLean Hall).

## Instructor and Office Hours

Kasturi Varadarajan: 101D MacLean Hall, 335-0732, [kasturi-varadarajan@uiowa.edu](mailto:kasturi-varadarajan@uiowa.edu)  
Office hours: 3:00–4:30 pm Monday and 1:30–3:00 pm Wednesday.

## Teaching Assistants

Heather Kemp, [heather-kemp@uiowa.edu](mailto:heather-kemp@uiowa.edu); Kallin Khan, [kallin-khan@uiowa.edu](mailto:kallin-khan@uiowa.edu)  
Office hours to be announced at course webpage.

## Course Web Page

[www.cs.uiowa.edu/~kvaradar/fall12017/algos.html](http://www.cs.uiowa.edu/~kvaradar/fall12017/algos.html). Homeworks and some handouts will be posted on this external site. I will place a link to this site from your ICON page for the course. Use ICON to look up grades, homework solutions, etc.

## Textbook

Our text is *Algorithm Design*, by Kleinberg and Tardos. As a reference, we may also use the lecture notes from from Jeff Erickson at <http://www.cs.uiuc.edu/~jeffe/teaching/algorithms/>

## What this Course is About

In this course, we will think about different strategies for solving precisely stated computational problems, reason about their correctness, evaluate these algorithms from the point of view of efficiency (usually running time), and develop a feel for the difficulty of problems and the applicability of various techniques we will learn. We will encounter fundamental algorithms such as basic graph algorithms. Developing algorithmic intuition and learning to communicate algorithms effectively will be emphasized. It is convenient to organize the course in terms of the following topics:

- Introduction
- Basic Graph Algorithms
- Greedy Algorithms and Analysis
- Recursive thinking: Divide-and-Conquer

- Recursive thinking: Dynamic Programming
- Network Flow and applications
- NP-completeness

These topics are essentially the first eight chapters of our textbook. Along the way, we will also encounter examples of randomized algorithms.

This course description is preliminary, and the actual course may vary somewhat.

## Prerequisites

CS:2230 (Data Structures), CS:2210, and (MATH:1850 or MATH:1550)

## Grading

The grading will be based on approximately eight homeworks (25 percent of the final grade), two in-class midterm exams (20 percent each), and a final (35 percent). Around two of the homeworks will be based on programming.

The policy on late homeworks is that you have a quota of three days for the entire semester that you may use for late submissions. For example, there will be no penalty if you submit the third homework a day late, the fifth two days late, and the rest of the homeworks on time. Once you use up your quota of three days, any homework submitted late will not be accepted and you will get no credit for that homework.

When you submit a homework  $X$  days late, your quota gets decreased by  $X$  irrevocably. You can only be late by an integer number of days – if you submit 10 hours after the deadline, for example, your quota is depleted by one day.

## Exam Dates

The midterms will be in class on Thursday, October 5, and Thursday, November 9. The final will be during finals week, and I will post the coordinates on the course web page once they become available.

## Collaboration

No collaboration is allowed on the exams. For homework problems, collaboration is fine assuming each of you has first spent some time (about 30 minutes) working on the problem yourself. However, copying and using someone else's solution is prohibited. It will be assumed that each of you is capable of explaining the solution that you turn in, so do not turn in something you don't understand.

## Departmental Information

Department of Computer Science, 14 MacLean Hall. The office of the DEO, Prof. Alberto Segre, is located here.

## **Administrative Home**

The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Academic Policies Handbook at <https://clas.uiowa.edu/students/handbook>.

## **Electronic Communication**

University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences (Operations Manual, III.15.2, k.11).

## **Accomodations for Disabilities**

The University of Iowa is committed to providing an educational experience that is accessible to all students. A student may request academic accommodations for a disability (which includes but is not limited to mental health, attention, learning, vision, and physical or health-related conditions). A student seeking academic accommodations should first register with Student Disability Services and then meet with the course instructor privately in the instructor's office to make particular arrangements. Reasonable accommodations are established through an interactive process between the student, instructor, and SDS. See <https://sds.studentlife.uiowa.edu/> for information.

## **Nondiscrimination in the Classroom**

The University of Iowa is committed to making the classroom a respectful and inclusive space for all people irrespective of their gender, sexual, racial, religious or other identities. Toward this goal, students are invited to optionally share their preferred names and pronouns with their instructors and classmates. The University of Iowa prohibits discrimination and harassment against individuals on the basis of race, class, gender, sexual orientation, national origin, and other identity categories set forth in the University's Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity, [diversity@uiowa.edu](mailto:diversity@uiowa.edu), or visit [diversity.uiowa.edu](http://diversity.uiowa.edu).

## **Academic Honesty**

All CLAS students or students taking classes offered by CLAS have, in essence, agreed to the College's Code of Academic Honesty: "I pledge to do my own academic work and to excel to the best of my abilities, upholding the IOWA Challenge. I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others; nor will I help fellow students to violate the Code of Academic Honesty." Any student committing academic misconduct is reported to the College and placed on disciplinary probation or may be suspended or expelled (CLAS Academic Policies Handbook).

## **CLAS Final Examination Policies**

The final examination schedule for each class is announced by the Registrar generally by the fifth week of classes. Final exams are offered only during the official final examination period. No exams of any kind are allowed during the last week of classes. All students should plan on being at the

UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar's web site and will be shared with instructors and students. It is the student's responsibility to know the date, time, and place of a final exam.

### **Making a Suggestion or a Complaint**

Students with a suggestion or complaint should first visit with the instructor (and the course supervisor), and then with the departmental DEO. Complaints must be made within six months of the incident (CLAS Academic Policies Handbook).

### **Understanding Sexual Harassment**

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Office of the Sexual Misconduct Response Coordinator for assistance, definitions, and the full University policy.

### **Reacting Safely to Severe Weather**

In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Department of Public Safety website.