

**22C : 021 (CS : 2230) Computer Science II: Data Structures
Fall 2011**

Class Schedule

2.30–3.20 am Monday, Wednesday, and Friday at 125 TH (Trowbridge Hall).

Instructor and Office Hours

Kasturi Varadarajan: 101D MacLean Hall, 335-0732, kasturi-varadarajan@uiowa.edu
Office hours: 3.30–4.30 Mon and 3.00–5.00 Thu.

Discussion Section

Each of you is also enrolled in a discussion section that meets once a week and will be led by one of our TA's:

- 22C:021:A01: Meets 8:30-9:20 Th, in 14 SH (Schaeffer Hall), led by Daniel Squires.
- 22C:021:A02: Meets 9:30-10:20 Th, in 110 MLH (MacLean Hall), led by Rajeev Penmatsa.
- 22C:021:A04: Meets 2:00-2:50 Th, in 118 MH (MacBride Hall), led by Rajeev Penmatsa.

Teaching Assistants

We have Daniel Squires for the students in the section 22C:021:A01 and Rajeev Penmatsa for the students in sections 22C:021:A02 and 22C:021:A03. Their office hours and coordinates:

- Daniel Squires: 101C MLH, 2.00–3.00 Tue, and 2.00–3.00 Thu, daniel-squires@uiowa.edu.
- Rajeev Penmatsa: 201G MLH, 9.00–10.00 Wed, and 10.30–11.30 Thu, rajeevvarma-penmatsa@uiowa.edu.

Course Web Page

www.cs.uiowa.edu/~kvaradar/fall2011/ds.html, accessible via your ICON page for this course.

Departmental Information

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

Content

Programs, in the course of performing computation, often need to store, query, and update large, or somewhat large, amounts of information. There are usually different ways in which the program can be designed to do this information processing. Some of these ways are good, and others not so good. In several contexts, this distinction is crucial – it can determine whether an application is useful or completely useless. In brief, then, the goal of this course is to learn that there are usually these different ways of doing the information processing, which are called data structures, and to learn to be increasingly sensitive to the distinction between the good and the bad ways.

That is a lofty goal, but we will begin in a modest way, by first acquiring familiarity with the constructs in Java, the programming language we will use. We will then learn some rather neat things to do, like solving problems using recursion and building linked lists.

We will then dive into several data structures, such as stacks, queues, lists, trees, priority queues, hash tables, and binary search trees. Each of these is a good way of processing information in some contexts, as we will see. Finally, assuming time permits, we will finish off by discussing graphs and basic algorithms on graphs, which illustrate quite well the idea of a good data structure.

For our textbook, we will use “Data Structures and Algorithms in Java”, by Goodrich and Tamassia, ISBN 978-0-470-38326-1.

Prerequisites

Computer Science I (22C:016). Discrete Structures (22C:019) is a corequisite if not taken as a prerequisite.

Grading

The grading will be based on several homeworks (35 percent), quizzes (5 percent), two in-class midterms (15 percent each), and the final (30 percent).

There will be a quiz every friday that will take no more than five minutes. I expect there to be twelve to fourteen quizzes overall. Each quiz will be worth 1 point. Your overall grade on the quiz will be

$$5 * \min \left\{ 1, \frac{\text{total points on quizzes}}{10} \right\}.$$

Notice that you can do 10 quizzes perfectly and get the maximum grade on the quizzes. So you will not be allowed to make up missed quizzes.

Roughly speaking, there will be a homework every week, and I will try to make these due on Monday. This way, you may make greater use of the TA discussion sections on Thursday. Most of the homeworks will involve programming in Java.

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. So for example, there will be no penalty

if you submit the fifth homework a day late, the seventh 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 0 points 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 quote is depleted by one day.

Exam Dates

The midterms will be in our usual classroom and during our class on Wednesday, Sep 21 and on Wednesday, Oct 19. The final will be at 7.30 am – 9.30 am on Tuesday, December 13, in our usual classroom. (The final is scheduled by the Office of the Registrar.)

Collaboration

No collaboration is allowed on the exams and quizzes. For homework problems, collaboration is alright. We even encourage it, assuming each of you has first spent some time (about 30 minutes) working on the problem yourself. However, no written transcript (electronic or otherwise) of the collaborative discussion should be taken from the discussion by any participant. It will be assumed that each of you is capable of orally explaining the solution that you turn in, so do not turn in something you don't understand.

Teaching Assistant

We have Daniel Squires for the students in the section 22C:021:A01 and Rajeev Penmatsa for the students in sections 22C:021:A02 and 22C:021:A03.

Course Accounts

You will be assigned an account on the computer science department machines shortly, if you do not already have one. In addition, you will need your HawkId and password to access information about this course on icon and to submit the programming assignments.

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 Student Academic Handbook.

Accomodations for Disabilities

A student seeking academic accommodations should first register with Student Disability Services and then meet privately with the course instructor to make particular arrangements.

Academic Fraud

Plagiarism and any other activities when students present work that is not their own are academic fraud. Academic fraud is a serious matter and is reported to the departmental DEO and to the Associate Dean for Undergraduate Programs and Curriculum. Instructors and DEOs decide on appropriate consequences at the departmental level while the Associate Dean enforces additional consequences at the collegiate level. See the CLAS Academic Fraud section of the Student Academic Handbook.

Making a Suggestion or a Complaint

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