Course Information

Welcome to CS323.001, Data Structures and Algorithms. We meet 10:00am to 11:15am Mondays and Wednesdays in W303 (no lab meetings). Since our first meeting was snowed out, that leaves 27 scheduled meetings: 14 before spring break, and 13 afterwards. Two of those meetings (February 19 and April 2) will be midterm exams, the remaining meetings will be lectures. We will have a cumulative final exam at 8:00am on May 7 (a time set by the registrar). We could also have a “review session” during the reading period before finals.

This course continues CS171, where you should have already seen Java (with interfaces and inheritance), some elementary data structures (stacks, queues, basic binary search tree), sorting (mergesort and/or quicksort), and some graphs (adjacency lists, BFS). Our other prerequisite is CS224, for mathematical background (big-Oh, probability, loop invariants). Compared to CS171, this course considers somewhat harder topics, and our approach will be a bit more analytic.

Online Support: Most course resources will be available via our public page:

http://mathcs.emory.edu/~cs323001/

In particular there should be a subdirectory with files relevant to each lecture. This will include some notes, slides, and blackboard images. On Math/CS lab machines, the same materials are in directory /home/cs323001/share/.

We will also use the Emory Canvas service, mainly for announcements, discussions, and the submission of written work. Programming assignments will instead be submitted via CS lab machines (which can be done remotely).

Book: Our textbook is Algorithms (4th edition) by Sedgewick and Wayne. We will use resources (slides, demos, code) from the textbook website:

http://algs4.cs.princeton.edu/

Staff: Your instructor (writing this!) is Michelangelo Grigni. You may contact me via Canvas, by e-mail as mic@mathcs.emory.edu, or in my office (W426). My office hours are posted on the web. We should also have a graduate TA (probably Harshita Sahijwani) to help with grading and technical issues.

Graded Work: There will be two midterm exams, on the dates noted above, and a final exam. The exams will count for half of your grade (13%, 13%, 24%). Each exam will be curved so that the median mark is at least a B (85 of 100). We will also have a series of written assignments and programming assignments, about five each. These will be weighted equally, and count for the remainder of your grade. Any other graded activities (if we have quizzes, etc) will altogether count as at most one more assignment. If you finish your work on time, I think you’ll find it easier to get an A on the assignments than on the exams.
Syllabus: Our main topics are mostly in the textbook. They are: union-find (Section 1.5), the sorting lower bound (2.2), priority queues (2.4), red-black trees (3.3), hashing (3.4), basic graph and digraph algorithms (4.1, 4.2), minimum spanning trees (4.3), shortest paths (4.4), string sorting (5.1), tries (5.2), and substring search (5.3). As time permits, we will also add a few more interesting topics: persistent data structures, the Burrows-Wheeler transform, Cuckoo hashing, network flow (Chapter 6), and NP-hard problems (Chapter 6).

Policies: It is your responsibility to know what has been covered in class, to read along in the book, to turn in your work, and to attend the exams. Having missed a class is not a sufficient excuse for late work. You need an OUE dean’s note to makeup a missed examination.

Unless I instruct you otherwise, you should have no outside help on homeworks. You should not share solutions with other students, nor seek solutions from other sources. On the other hand, the following kinds of collaboration are allowed: interpreting the statement of a problem, understanding an error message, learning features of a language or software tools, reviewing the textbook and course notes. If you are in doubt about what is allowed, ask your instructor.

Your work for this class is governed by the Emory Honor Code[^1] and the Math/CS SPCA[^2] (Statement of Policy on Computer Assignments). In particular, this means you should take care to protect the confidentiality of your homework files. Apparent honor code violations will be referred to the Emory Honor Council. We may use an automated system to help detect plagiarism.

See the **OUE Addendum**[^3] for further information on college policies.

[^1]: http://catalog.college.emory.edu/academic/policies-regulations/honor-code.html
[^2]: http://www.mathcs.emory.edu/site/undergraduate/general-information/spca.php