Course Information

Welcome to CS323.001, Data Structures and Algorithms. We meet 2:30pm to 3:45pm Tuesdays and Thursdays in N304 (no lab meetings). Two of those meetings will be midterm exams (tentatively February 14 and March 28), the remaining meetings will be lectures. We will have a final exam at the time set by the registrar, 3:00pm–5:30pm on May 2.

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 is 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 whiteboard 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 may instead be submitted outside Canvas (possibly using the CS lab machines).

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

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

We really do use this book, please get access to a copy.

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

Graded Work: There will be two midterm exams, on the dates noted above, and a final exam. The exams will count for 55% of your grade (15%, 15%, 25%). 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 homework assignments, both written and programming assignments (I’m not sure how many, maybe seven). These assignments will be weighted equally, and count for the remainder of your grade. Any other graded activities (quizzes, etc) will count as at most one more homework assignment (so they will not dilute the exam marks). If you finish your work on time, and always submit something, 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), balanced search 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). If time permits, we may add a few more topics: persistent data structures, the Burrows-Wheeler transform, Cuckoo hashing, network flow (Chapter 6), NP-hard problems (Chapter 6). For a rough guide, you can see a past version of this course in the share/spring2018/subdirectory.

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 deadlines and 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