2014

CSCI 220 Data Structures and Algorithms

Michael Goldweber

Follow this and additional works at: http://www.exhibit.xavier.edu/computer_science_syllabi_fall_2014

Recommended Citation
http://www.exhibit.xavier.edu/computer_science_syllabi_fall_2014/1

This Restricted-Access Syllabus is brought to you for free and open access by the Computer Science Syllabi 2014 at Exhibit. It has been accepted for inclusion in Computer Science Syllabi Fall 2014 by an authorized administrator of Exhibit. For more information, please contact exhibit@xavier.edu.
Data Structures and Algorithms (CS 3)
CSCI 220

Instructor: Michael Goldweber
Office: 134 Hinkle, 745-3936  email: mikeyg@cs.xu.edu  home page: http://www.cs.xu.edu/~mikeyg

Office hours/Personal Schedule: http://www.cs.xu.edu/~mikeyg/schedule14s.html

Schedule: Lectures are Mondays, Wednesdays, and Fridays 1:00-1:50 in CLC 406.


Prerequisites: CSCI 180 (CS 2) and MATH 225 (Foundations of Higher Mathematics).

Course Objectives: We will be studying in more depth the fundamental data structures of computer science, introduced in CSCI 180, along with many of the algorithms to manipulate these data structures. More advanced algorithms involving these data structures, and more sophisticated data structures, are covered in Advanced Algorithms (CSCI 350). The goal is to include those algorithms that are important to all computer scientists, regardless of specialization. In addition to the mechanics of these fundamental algorithms, significant attention is paid to analyzing the running time of these algorithms on different types of input, and methods for initially designing these algorithms. Particular attention is paid to the use of recursion as a general technique for algorithm design.

Required Work: In addition to 3-4 major programming/project assignments, there will also be paper & pencil assignments and one paper. All submitted programs are expected to operate correctly on reasonable data sets.

All assignments will be due at the beginning of class time on the announced due date, AND WILL BE COLLECTED AT THE BEGINNING OF CLASS. No late work will be accepted. It is recommended that you submit your best work on time than to give an answer to all the problems. If you cannot solve a problem you should indicate as such and also provide some statement of what your ideas were, where you got stuck, and where you were hoping to take your ideas to.

The exception to this rule are the programming projects. Projects are due at 11:59 pm on their due date. Each person has four free late days (24-hour periods) total for the projects. You should save these for emergencies. Once these late days have been exhausted, you will lose 5% of the possible points for the assignment for each late day. Late days are counted as 24-hour periods. For example, if an assignment is due on Tuesday at 11:59 pm and you turn it in at 4 am on Wednesday morning, you have used one late day. Weekend days are also counted. No programming assignment older than 5 days late will be accepted.
**Exams:** There will be two non-cumulative midterm exams. Each will be scheduled with at least one week advance lead time. The cumulative final exam is scheduled for Friday December 19, 12:00-1:50. Use this date to make your travel plans accordingly.

**Attendance and Classroom Participation:** While there is no formal attendance policy, you are expected to arrive prepared to ALL course sessions. Furthermore you are expected to participate in the classroom discussions and activities to the best of your abilities. Given the difficult nature of the material and the interactive lecturing approach that will be used, it is difficult to envision a student missing and/or arriving unprepared to a number of the class sessions and still succeed in the course.

**Grading:** Grades on all assigned work and exams will be based on correctness, clarity, quality of exposition, and style. Your grade for the course will depend primarily on the assignments; 70% - split approximately 45%-25% between the programming assignments and the paper & pencil assignments respectively. The exams will contribute 30%.

The Department of Computer Science and Mathematics has adopted the following grading standards:

A: Exceptional. The student’s attainments are out of the normal course, unusual and special.

B: Good. The student’s performance is done rightfully or skillfully and is commendable.

C: Satisfactory. The student’s accomplishments are sufficient for the needs of the course.

D: Minimal passing.

F: Failure.

A more detailed explanation can be found at: http://www.cs.xu.edu/~mikeyg/gradingStandards.html.

Also see http://www.cs.xu.edu/~mikeyg/CourseEngagementStandards.html for a description of the “Course Engagement Standards.”

**Exceptions to the Rules:** Almost all rules are designed to be broken under the correct set of extraordinary circumstances. It is strongly recommended that you communicate to the instructor at the earliest possible time any circumstances you feel warrant an exception (e.g. illness, religious holiday, personal and/or family crisis, etc.). Remember that going into hiding is probably the worst strategy you can adopt! There is a direct relationship between the amount of sympathy you can anticipate from an instructor and the amount of time remaining until a given assignment’s due-date. Finally, remember that if you are uncomfortable discussing something directly with an instructor (e.g. personal problems) you can always contact someone in the Dean of Students Office and have that individual contact the instructor.

**Honor Code:** Homework can be challenging – it’s where you find out what confuses you. You are strongly encouraged to discuss the homework with your classmates or with the instructor (and where appropriate, the math tutoring lab). In the end though, all work submitted must be your own. You must work out, write up, create, or program your own solutions. Work you hand in must be conceived, created, and fully understood by you.
The best way to ensure this is to craft your solutions/answers/programs when you are by yourself rather than during your discussions with others. This will insure that your work is based on your own understanding rather than on that of your classmates. To do otherwise is a violation of the college’s policy on academic honesty and will be handled accordingly. Please refer to the rules described in the Student Handbook.

I encourage you to follow these two guidelines, stated on many course websites, but perhaps originating most recently at Duke University.

- **The Gilligan’s Island Rule**: Essentially, the idea is that when you meet to discuss problems, it is fine to have a communal board or paper to work out your ideas, but this record should be destroyed at the end of the session. Then, everyone should spend at least thirty minutes doing a relatively mindless task (like watching reruns of a brainless show – e.g. Gilligan’s Island). This rule helps everyone be sure that the work they create truly represents their understanding of the material.

- **List of Collaborators**: If you discussed the problems with others, include their names in your writeup, either at the beginning or end of the problem, or in a section specifically designated as the list of collaborators. (If you have the same collaborators on all problems, a single listing is fine. If it varies by problem, list on a problem-by-problem basis.)

Remember, un-noted collaboration or any form of cheating will be dealt with harshly to protect the integrity of everyone involved.

Always remember:

**Don’t Panic**