

CSCI 2720 Data Structures

Fall 2011

Tues./Thurs. 2p – 3:15p, Wed. 2:30p – 3:20p: Boyd 208

Instructor: Chris Neasbitt

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Office Hours: 1p – 4p Mon. Boyd 223B

Teaching Assistant: TBA

Email:

Office Hours:

Course Description

This course deals with the design, analysis, implementation, and evaluation of the fundamental structures for representing and manipulating data: lists, arrays, trees, tables, heaps, graphs, and their memory management.

Course Topics

The topics covered in this course include but are not limited to:

- C++ Overview
- Logs, Powers, Exponents
- Recurrence Relations
- Algorithm Analysis
 - Asymptotic Behavior
- Abstract Data Types
- Arrays
- Lists
 - Single Linked
 - Double Linked
 - Skip Lists
- Stack
- Queue
 - Priority
- Tree
 - Types
 - Binary
 - AVL
 - 2-3-4
 - Red-Black
 - B
 - Traversals
 - Pre-Order
 - In-Order

- Post-Order
- Searches
 - Depth-first
 - Breadth-first
- Sets
- Graphs
 - Bi-connectivity
 - Directionality
- Compression
 - Huffman
 - Lempel-Ziv
- Hashing
- Maps
 - Dictionaries
- Sorting
 - Bubble Sort
 - Insertion Sort
 - Merge sort
 - Quick Sort
- Memory Management and Garbage Collection

Coursework and Materials

The assignments in course will consist of homework assignments and programming projects. There will be five homework assignments and 4 projects assigned throughout the duration of the course. Homework assignments will consist primarily of assigned questions from the primary text. Completed assignments should be submitted in a digital format. No handwritten work will be accepted although scans of handwritten work are acceptable. Each programming project will consist of a coding assignment which will ask the student to implement a data structure or set of data structures and their operations based upon a predefined specification. The programming assignments will be completed in C++.

Students are allowed to use any toolset (e.g. editor, IDE, build tools) to complete their programming projects, but each programming assignment will be graded on odin.cs.uga.edu. Code that does not compile nor run on odin.cs.uga.edu will receive no credit.

All homework assignments and projects as well as all other instructional materials will be distributed through eLC, www.elc.uga.edu. All completed student work must be submitted through eLC in return. Student work submitted through other means (e.g. email) will not be accepted.

Exams

There will be two exams and one final exam given in this course. Arrangements to take any of the course exams on an alternate date must be made at least one week before the exam is scheduled to be given. No make-up exams will be given. The dates and locations for these exams are as follows.

- Exam 1: 09/22/2011, during class.
- Exam 2: 11/10/2011, during class.
- Final Exam: 12/08/2011 3:30p – 6:30p, Boyd 208

Grading Policy

Projects:	35%
Final Exam:	25%
Exam 1:	15%
Exam 2:	15%
Homework Assignments:	10%

Grading Scale

95 and above	A
90 – 94.9	A-
86 – 89.9	B+
82 – 85.9	B
78 – 81.9	B-
74 – 77.9	C+
71 – 73.9	C
68 – 70.9	C-
60 – 67.9	D
59.9 and below	F

Primary Text

Data Structures and Their Algorithms, ISBN 0-673-39736-X, Harry Lewis and Larry Denenberg

Recommended Text(s)

C++ How to Program, ISBN 0132662361, Paul Deitel and Harvey Deitel

C++ Object-Oriented Data Structures, ISBN 0-387-94194-0, Saumyendra Sengupta, Carl Phillip Korobkin

Late Work Policy

All projects and homework assignments will be accepted up to 48 hours after the original deadline for a 20% deduction in the overall assignment grade. Submissions made after 48 hours will receive no credit for the assignment.

Regrading Policy

Any request for grade adjustments to be made to any assignment including exams must be made within 3 days of when the assignment is returned either in class or via eLC. No grade

adjustments will be made after 3 days have elapsed.

Communication Policy

The primary modes of communication should be via email or in person during offices hours. The TA's and instructor's scheduled office hours are listed in the syllabus. Any appointments outside of scheduled office hours are at the instructor's or TA's discretion and must be requested at least 24 hours in advance of the desired meeting time.

The instructor and TA will try to respond to student emails within 24 hours of receipt excluding weekends. Due to UGA policy all email communication regarding this course between the TA, instructor and the students must be conducted solely through UGA email accounts. The instructor and TA will **not** respond to student emails not sent from your UGA email account.

Digital Device Policy

Students are allowed to use laptop/notebook computers during lecture as long as they do not prove to be a disruption to the class. The instructor reserves the right to eliminate the use of laptop computers in class if he deems it necessary. No cell phone use will be allowed in class. All cell phones should be silenced before coming to class and remain so for the duration of the session.

Academic Honesty

All students are responsible for maintaining the highest standards of honesty and integrity in every phase of their academic careers. The penalties for academic dishonesty are severe and ignorance is not an acceptable defense.

— UGA Student Honor Code

The University of Georgia seeks to promote and ensure academic honesty and personal integrity among students and other members of the University Community. A policy on academic honesty has been developed to serve these goals. All members of the academic community are responsible for knowing the policy and procedures on academic honesty. Please see the following web site for complete details. (<http://www.uga.edu/honesty/>).

In addition, you are expected to have read and understood the CS Academic Integrity policies. Furthermore, all your course work, including homework and project programming assignments, are to be strictly your own work. You can talk over general principles and concepts about an assignment with others, but copying, sharing materials, or even looking at, another student's solutions or code, either on paper, on the computer or whiteboard, is not allowed. These are some tips to avoid academic dishonesty:

- Read A Culture of Honesty, the UGA academic honesty policies and CS Academic Integrity policies.
- You must not allow others to copy or look at your work.
- Do not write code for others, and don't have others write code for you. All the programming assignments in this course are to be your own work --unless otherwise explicitly stated on the assignment.

- You must not give/share your homework/project assignment work to a fellow student.
- Copying significant portions of code from a fellow student or any other source (including internet) is plagiarism and will be dealt with as such.
- If you have questions about an assignment or if you run into problems, contact your instructor/TA.
- During exams, no assistance and additional materials are allowed.

All your coursework must meet the aforementioned policies and rules. Students that violate any of these rules or the UGA Academic Honesty policies will be liable to a penalty. The instructor will strictly enforce Academic Honesty policies and report any violation of the aforementioned policies and rules to the Office of Judicial Programs.

Students with Disabilities

The Department of Computer Science supports equal access and support for all individuals with disabilities. We also support the policies and procedures of the University of Georgia relating to students who have disabilities. UGA Disability Services, a part of the Office of the Vice President of Student Affairs, provides academic and support services to qualified students with disabilities to ensure equal access to all programs and activities at the University of Georgia. The mission of Disability Services is to create an accessible academic, social and physical environment for students with disabilities at UGA.

If you have a documented disability and require specific instructional adaptations you must notify me prior to the beginning of the second week of class. Your notification must be accompanied by written documentation from the UGA Disability Resource Center or the Regents Center for Learning Disabilities. The Disability Resource Center at the University of Georgia, located at 114 Clark Howell Hall, (706) 542-8719.