

COMP 3160, CS 3: Advanced Data Structures and Intro to Algorithms – Fall 2015

Mr. Kriangsiri (“Top”) Malasri

Contact Information:

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The best way to get in touch with me is through email – I will almost always respond within 24 hours.

Office Hours:

No formal hours, but I’m usually around on weekday afternoons. Feel free to email or call to set up an appointment!

Lecture Meeting Times/Locations:

TR 1:00-2:25 pm Dunn Hall 233

Catalog Description:

COMP 3160 - Adv Data Struct/Algorithm (3) Review of data structures and object-oriented concepts; implementation of advanced data structures and related algorithms; graphs; trees, binary search trees; advanced sorting; hashing. PREREQUISITE: COMP 2150, COMP 2700.

Student Learning Outcomes:

This course focuses on the following ABET student outcomes:

- (b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
- (c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
- (i) An ability to use current techniques, skills, and tools necessary for computing practice.
- (k) An ability to apply design and development principles in the construction of software systems of varying complexity.

Course Website:

Course materials (lecture slides, assignments, etc.) and grades will be posted to the eCourseware system at <https://elearn.memphis.edu> throughout the semester. News and reminders will also be posted there.

Required Text:

Koffman and Wolfgang, *Data Structures: Abstraction and Design using Java*, 2nd ed., Wiley, 2010. ISBN-13: 978-0-470-12870-1. (Note that this was the same textbook used for COMP 2150.)

Evaluation:

Homework	200 pts. (8 @ 25 pts. each)
Programming Projects	200 pts. (2 @ 100 pts. each)
Quizzes	100 pts. (2 @ 50 pts. each)
Midterm Exam	200 pts.
Final Exam (Comprehensive)	325 pts.

Final grade: add up your point total and divide by 1000. Note that the highest possible percentage grade is 102.5% since the points add up to 1025.

Grading Scale:

 Letter grades will be determined as follows:

- A+: 96% and above; A: 90-95%
- B+: 87-89%; B: 81-86%; B-: 79-80%
- C+: 77-78%; C: 71-76%; C-: 69-70%
- D+: 67-68%; D: 60-66%
- F: Below 60%

Attendance:

Attendance doesn't officially count towards your final grade, but it's crucial that you attend class regularly to get the most from the material! If you do miss class, it is your responsibility to make sure that you are keeping up with the material and turning in assignments on time.

Email:

Please check your University of Memphis email account at least once a day, as that is my primary means of communicating with you outside of class.

Honors Section:

Some assignments will have extra portions that must be completed for honors students. Honors students may also be subject to stricter grading than regular students.

Code Submission Policy:

For all assignments that involve writing code, it is MANDATORY that your submission successfully compiles and runs. A submission that does not compile/run will receive zero credit.

eCourseware Dropbox Policy:

All code submissions should be made through the dropbox on eCourseware unless specifically indicated otherwise. The dropbox will automatically cut off submissions precisely at the deadline. It is your responsibility to submit your work with time to spare, and to double check that your submission made it into the dropbox. "I accidentally submitted the wrong file," "The dropbox was having technical issues at the last minute," "I submitted the file but somehow it never made it to the dropbox," "The dropbox wouldn't accept my submission because it was 3 seconds late," and similar statements are NOT valid excuses.

Late/Makeup Policy:

All assignments are expected to be completed and turned in on schedule. Due dates will be clearly indicated for each assignment. Late assignments are NOT accepted except in extreme circumstances. Likewise, makeup quizzes and exams will be given only under extreme circumstances. If you feel that your circumstances warrant a late work submission or a makeup quiz/exam, please get in touch with me as soon as possible. Be prepared to show some kind of documented proof of your situation.

Plagiarism/Cheating Policy:

An essential part of learning how to program is getting plenty of practice with it yourself. As such, all assignments for this class (unless specifically indicated otherwise) are expected to be individual efforts. If I determine that you have copied something directly from a book, the Internet, or some other source, you will receive a failing grade on the assignment and (at my discretion) a failing grade in the course. If I determine that you have copied another student's assignment, this will happen to both you and the person from whom you copied. The incident may also be forwarded to the Office of Student Conduct for further disciplinary action. Please don't put me in this situation.

Getting Help:

Although I expect your work for this class to be done individually, I encourage you to seek help if you get stuck:

- Come talk to me! I'm very willing to sit down and try to provide hints without giving away the solution.
- The Computer Science Learning Center (in Dunn Hall 208) will be open throughout the semester. Hours will be posted on the door, as well as online at <http://www.cs.memphis.edu/index.php?p=cslc>. The lab will be staffed by junior- and senior-level computer science students whom you can ask for help.

Student Disabilities:

If you have a disability that may require assistance or accommodations, or if you have any questions related to any accommodation for testing, note taking, reading, etc., please speak with me as soon as possible. You must contact Disability Resources for Students (<http://www.memphis.edu/drs>) to officially request such accommodations / services.

Tentative Course Schedule:

Date	Lecture Material	Text	Projects	Quizzes	Homework
8/25 8/27	Course intro / Review Big-O and data structures	Ch. 2-4			
9/01 9/03	Review recursion Recursion in linked lists, other new examples	Ch. 5			HW 1: Recursion
9/08 9/10	Trees: definitions, traversals, operations Trees: implementing BSTs in code	Ch. 6			HW 2: Trees
9/15 9/17	Trees: implementing BSTs in code, cont'd. Heaps and priority queues	Ch. 6	Project 1	Quiz 1 (9/17)	HW 3: Heaps
9/22 9/24	Huffman trees Sets and maps	Ch. 6 Ch. 7			
9/29 10/01	Hash tables	Ch. 7			HW 4: Hash tables
10/06 10/08	Review for midterm MIDTERM EXAM				
10/13 10/15	<i>NO CLASS – Fall Break</i> Developing GUIs with Swing	App. C			
10/20 10/22	GUIs, cont'd.	App. C			HW 5: GUIs
10/27 10/29	Quadratic sorts Better-than-quadratic sorts	Ch. 8	Project 2		HW 6: Sorting
11/03 11/05	Tree rotations and AVL trees	Ch. 9			
11/10 11/12	Red-black trees 2-3 trees, 2-3-4 trees, B-trees	Ch. 9			HW 7: Self-balancing trees
11/17 11/19	Graphs: definitions and representations	Ch. 10		Quiz 2 (11/19)	
11/24 11/26	Graph algorithms <i>NO CLASS – Thanksgiving</i>	Ch. 10			HW 8: Graphs
12/01 12/03	Review for final <i>NO CLASS – Study Day</i>				

FINAL EXAM: Thursday, Dec. 10, 10:30 am-12:30 pm
(same classroom as lecture)

Tentative Quiz and Exam Topics:

- Quiz 1: Recursion, binary search trees
- Midterm Exam: Chapters 5-7
- Quiz 2: Sorting, self-balancing trees
- Final Exam: Everything!