CSCI 241 Data Structures Fall 2012

Course Instructor: Dr. Yudong Liu
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Classes: MTWF 9 – 9:50 am, CF 420
Office Hours: MTWF 11:00 am – 12:00 pm and by appointment
Credit Hours: 4
Prerequisite: CS 145 or CSCI 146; MATH 124 or MATH 157

Course Description

Introduce the student to design and implementation of some of the most commonly used data structures including binary trees, heaps, balanced trees and graphs. We will demonstrate not only how to use these data structures, but also what algorithms they use internally. Other topics include sorting and hashing. Programming in Ada is required in implementation of concepts.

Course Outcomes

On completion of this course, students will demonstrate:

- Basic understanding of classic data structures including trees, hash tables and graphs.
- Basic understanding of various sorting algorithms.
- Thorough understanding of recursion in definition and operations in these data structures.
- The ability to select and design the proper data structures to problems requiring complex data structures (combinations of lists, stacks, queues, trees, and hash tables).
- The ability to select the proper sorting algorithms for a problem.
- The ability to make judgments about the selected data structures for a problem.
- The ability to implement the introduced data structures and sorting algorithms.

References

Text: None.

Online Resources:

- Lecture notes.
- WikiBook: http://en.wikibooks.org/wiki/Data_Structures/All_Chapters
- http://users.cis.fiu.edu/~weiss/ada.html

Course Website:

The course web site is accessible through the Blackboard.

All the homework will be posted on the Blackboard. Programming assignments will also be submitted online to the Blackboard.

Assessment

Assessment for the course will comprise 5 assignments -- 4 programming assignments and 1 written assignment, 5 quizzes, one midterm and a final exam. The contribution of each assessment item to the final grade is as shown below:

Final Exam	27%
Midterm Exam	13%
Assignment 1-5	50% (10% each)
Quiz 1-5	10% (2% each)
Total	100%

- Assignments are due as indicated on the assignment description.
- Show your work when you answer questions. An answer alone will not get you full credit. Clarity and organization of presentation count.
- Each assignment is individual work. **You are required to submit your original work.**

The final exam is a comprehensive written examination. It will be held on Monday, Dec 10 8-10:00 AM. No makeup exam will be given; you must take the exam at the scheduled time.
The midterm exam will be tentatively held on the week of Oct 22 in class. No makeup exam will be given; you must take the exam at the scheduled time.

Homework Late Submission Policy: Late submission is usually not acceptable. Under special circumstances (please come to talk to me), it could be accepted up to a maximum of 3 days past the deadline but has to take penalty of 10% per day deduction from your score of that assignment. One hour late counts one day late.

Grade Disputes: If you have any questions about a grade you received on homework or an exam, return the homework or exam to me with written questions within 48 hours of the time the graded work is returned to you.

Grading Policy

Percentage of Points	Grade
90-100	A
80-89	B
70-79	C
60-69	D
< 60	F

The use of "+" and "-" is at my discretion.

Alternatively, your grade will be assigned based upon a class curve and consistent with the letter grade definitions found in WWU Bulletin (A = excellent, B = good, C = fair, D = poor, and F = failure). Under this scheme, I expect the class average to be a B; however, it could be either higher or lower depending on the quality of the work submitted.

Academic Honesty Policy

Each student is expected to submit only original work. Any person who violates the academic dishonesty policy will receive a grade of F for the course and a letter will be added to the student's permanent academic record. Please read the policy in the 2011-2012 Bulletin on page 398, Appendix D. http://www.wwu.edu/wwu_catalog/index.shtml

Tentative Weekly Schedule (subject to change)

WEEK	DATE	TOPICS	ASSIGNMENT
1	Sept 26-28	Course policies and organization Trees	
2	Oct 1-5	Trees Binary Trees	Assn1 released
3	Oct 8-12	Binary Search Trees Balanced Search Trees	
4	Oct 15-19	Balanced Search Trees	Assn2 released
5	Oct 22-26	Priority Queue Heaps Midterm examination	
6	Oct 29-Nov 2	Dictionaries and Hashing	Assn3 released
7	Nov 5-9	Sorting Algorithms	
8	Nov 13-16	Veteran's Day Sorting Algorithms Graphs and graph algorithms	Assn 4 released
9	Nov 19-20	Graphs and graph algorithms Thanksgiving Holiday	
10	Nov 26-30	Graphs and graph algorithms	Assn5 released
11	Dec 3-7	Wrap up and review	