CSE 373
Data Structures & Algorithms
Autumn 2012

Instructor:	Ruth Anderson
Email:	rea at cs.washington.edu
Office Location & Phone:	Allen Center (CSE) 360, (206)-616-1742
Office Hours:	TBA

Teaching Assistants: (See course web page for office hours times and locations)

> Tanvir Aumi (tanvir at cs.washington.edu),
> Jacob Gile (jjgile at cs.washington.edu)
> David Swanson (swansond at cs.washington.edu)
> Zhiting Zhu (zzt0215 at cs.washington.edu)

Lecture: MWF 2:30-3:20, EEB 105

Course Web Page: http://www.cs.washington.edu/373/

Overview and Goals: Achieve an understanding of fundamental data structures and algorithms and the tradeoffs between different implementations of these abstractions. Theoretical analysis, implementation, and application. Lists, stacks, queues, heaps, dictionaries, maps, hashing, trees and balanced trees, sets, and graphs. Searching and sorting algorithms.

Prerequisite: CSE 143

Course Text: *Data Structures and Algorithm Analysis in Java* 3rd Ed., Mark Allen Weiss, Addison Wesley: 2012, ISBN-10: 0132576279. (We will also try to support the 2nd edition: Addison Wesley: 2007, ISBN: 0-321-37013-9.) Readings (and occasionally homework problems) will be assigned from the textbook. As lecture does not provide enough time to cover all material in detail, you will be expected to read the textbook to clarify topics and find more examples as well as to examine Java implementations of the data structures and algorithms discussed during lecture. Copies will also be on reserve at the Engineering library.

Assignments: Assignments will be a mix of written exercises and programming projects in Java. Programming assignments will generally be due Thursday evenings and will be submitted electronically via the web. Exact dates and deadlines will be specified on each assignment.

Exams: We will have two midterm exams and a final exam. The final exam is scheduled for 2:30-4:20pm Tuesday, December 11, 2012. Makeup exams will only be offered under extraordinary circumstances; you should plan to attend the exams when they are given. Exams will normally be closed-book, closed-notes, and calculators will not be allowed.

Late Policy: ALL parts of an assignment must be received by the stated deadline in order for the assignment to be counted as on time. Each student in the class will be given a total of two "late days" (a late day is 24 hours of lateness). There are no "partial days", so assignments are either on time, 1 day late, 2 days late, etc. Once a student has used up all of his or her late days, each successive late day will result in a loss of 20% on the assignment. Note: In the case of written assignments that are due at 2:30pm on Friday, you would need to create an electronic version and email it to us by 2:30pm on Saturday to be considered 1 day late. **You may not submit any portion of any assignment more than 3 days after its original due date**.

If unusual circumstances that are truly beyond your control prevent you from submitting an assignment or attending an exam on time, you should discuss this with the instructor, preferably in

advance. (Even if you're sick in bed at home, you should still be able to make a phone call or send an email.)

Grading and Evaluation: Grades will be computed *approximately* as follows (weights may be modified):

- 50% - Assignments (Written Exercises and Programming Projects)
- 15% - Midterm Exam 1
- 15% - Midterm Exam 2
- 20% - Final Exam

Academic Integrity: Unless otherwise specified, you are to complete assignments individually. You may discuss the assignment in general terms (see description of Gilligan's Island rule on course web page and first day slides), but the code you write must be your own. You are encouraged to discuss ideas, approaches, concepts, bugs, etc., in English, but you may not show or give your code to anyone except this course's TAs and instructor. You are not allowed to write code with another student on an assignment or to show another student your solution to an assignment. Referring to solutions from this or other courses from previous quarters is also considered cheating.

Communications: The course message board is a good medium for discussing the course, getting help on assignments, and staying in touch outside of class hours. You can also email the instructor or TAs or go to office hours. In addition, the course staff will occasionally post announcements to the course email list. You will be automatically subscribed to the course email list if you are registered for the course and will be held responsible for anything posted there.

Computing Resources: We will use Java 7 for programming assignments. We recommend although will not require that you use the Eclipse development environment. The College of Arts & Sciences Instructional Computing Lab is the designated lab for this course; they have the above software installed, but the software should also be available in public campus labs. Links for downloading and installing Java and Eclipse can be found on our course web page.

Topic List:

- Review: data structure concepts, arrays, simple linked lists, different implementations of lists, stacks and queues, binary trees
- Introduction to complexity: O-notation
- Balanced search trees
- Heaps, priority queues
- Sets, including union/find algorithms
- Sorting and searching
- Dictionaries/maps, hashing
- Graphs

CS 373 – First Day Assignments

0) **Review Java and explore Eclipse** – These are available in the College of Arts & Sciences Instructional Computing Lab and other labs on campus. Instructions for installing on your home machine are on our course web page. Now would be a good time to review material from CSE 143!

1) **Assignment #1** – Your first programming assignment will be posted soon. Look for an email announcing its arrival to verify you are on the course mailing list!

2) **Preliminary Survey**: Please fill out the preliminary survey posted on our course web page by the evening of Thursday Sept 27th. (Course home page = http://www.cs.washington.edu/373/)

3) **Information Sheet**: Please bring a sheet of paper with the following information with you to lecture on Friday Sept 28th.

A Picture of you!
Student ID is o.k. but something more
interesting or readable is nice too.

Name (and what you like to be called)
Email address
Year (1,2,3,4 i.e. freshman, sophomore, grad, etc.)
Major
Hometown
Interesting Fact about yourself and/or what you did over break.

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4) **Reading** in *Data Structures and Algorithm Analysis in Java*, by Weiss (Reading is same in both 2nd Edition and 3rd Edition)
- For this week:
  - › (Wed) Weiss 3.1-3.7 –Lists, Stacks, & Queues (Topic for Assignment #1)
  - › (Fri) Weiss 1.1-1.6 –Mathematics Review and Java
  - › Weiss 2.1-2.4 –Algorithm Analysis (Topic for next week)