CS 46B
Introduction to Data Structures

GREEN SHEET
Summer Semester 2015

Department of Computer Science
San Jose State University
Instructor: Ron Mak

Class:	TuTh 9:00-10:55 AM, Sweeney Hall, room 414
Office hours:	TuTh 2:00-3:00 PM
Office location:	MacQuarrie Hall, room 413
E-mail:	ron.mak@sjsu.edu

Catalog description

"Stacks and queues, recursion, lists, dynamic arrays, binary search trees. Iteration over collections. Hashing. Searching, elementary sorting. Big-O notation. Standard collection classes. Weekly hands-on activity." *4 units*

Student learning outcomes

Upon successful completion of this course, students should be able to:

- Use and work with basic structures such as linked lists, stacks, queues, binary search trees and iterators.
- Implement from specifications Java classes that embody data structures.
- Use and work with pre-existing implementations such as the Java collections framework.
- Make relative estimates between alternative algorithms of the running time of algorithms using big-O estimates.
- Formulate and test for pre- and post-conditions.
- Distinguish between different types of program defects and understand how testing and debugging are used to correct them.
- Implement simple sorting algorithms such as insertion sort and selection sort.
- Implement the sequential search and binary search algorithms.
- Implement simple recursive algorithms such as binary tree traversals
- Use hash tables when appropriate.
- Understand the overhead involved in method invocation and return.
- Work competently with commonly used tools for software development.

Course requirements

- Exams

  Two in-class exams (15% per exam) and a final exam (25%). You cannot make up exams, except for reasons of illness as certified by a doctor or documentable extreme emergency.

- Programming assignments

  Two assignments per week (30%). Schedule your time well to protect yourself against unexpected problems. Suggestion: Ignore the official deadlines and complete the assignments 48 hours earlier. Late work is not accepted, and there is no extra credit or makeup work.

- Class attendance, preparation, and participation (15%)

  Each student is expected to be present, punctual, and prepared at every scheduled class and lab session. You will be graded on participation in lab work, class and online discussions, and on your performance on quizzes that check the assigned pre-class reading.

- Laptops

  You are required to bring a wireless laptop to all classes and exams.

Prerequisites

Math 30 or Math 30P	Calculus I *eligibility or instructor's consent*
Math 42	Discrete Mathematics
CS 46A or CS 49J	Programming in Java *or equivalent knowledge of Java*

A grade C- or better is required for each prerequisite class. **The Department of Computer Science strictly enforces prerequisites.** If you are not already pre-enrolled, you must come to the first class meeting and pick up an Add Form from the instructor. You must show proof that you have met the perquisites, such as a copy of our transcript. If applicable, show the instructor your card that indicates you're a graduating senior. It will be the instructor's and the department's decision whether or not to send you an add code by email.

The instructor may drop any student who does not show up during the first two class meetings.

Required text

CS 46B students will use a special edition of the following text:

Title:	**Big Java Early Objects,** *5th edition*
Author:	Cay Horstmann
Publisher:	Wiley
ISBN-13:	978-1-118-43111-5
Errata:	http://www.horstmann.com/bigj5/bugs.html

Schedule

Subject to change! Do the chapter readings before coming to class.

Week	Dates	Topics and activities	Chapters
1	June 2 June 4	Review of inheritance and polymorphism Interfaces	9 10
2	June 9 June 11	I/O Exception handling	11
3	June 16 June 18	Object-oriented design	12
4	***June 23*** June 25	***Midterm 1*** Recursion	 13
5	June 30 July 2	Selection sort Merge sort	14
6	July 7 July 9	Searching Estimating algorithm running time Sorting and searching in the Java library	14
7	***July 14*** July 16	***Midterm 2*** Java collections framework	 15
8	July 21 July 23	Linked lists Array lists	16
9	July 28 July 30	Stacks and queues Hash tables	16
10	Aug 4 ***Aug 6***	Trees ***Final exam***	17

Grading policy

You will receive a letter grade for each of the exams, the finals, the total homework performance, and the total participation in labs/discussions/quizzes. When determining a curve, the cutoffs are guided by the university definitions for letter grades:

A+, A, A-	Excellent
B+, B, B-	Above average
C+, C, C-	Average
D+, D, D-	Below average
F	Failure

Your final class grade will be weighted as follows:

30%	Assignments
15%	Class attendance, preparation, and participation
15%	Midterm exam 1
15%	Midterm exam 2
25%	Final exam

Classroom protocol

It is important for each student to attend classes and to participate. Cell phones in silent mode, please.

Individual work

All homework and exams must be your own individual work. It is OK to have general discussions about homework assignments, or read other material for inspiration. You may never copy anything from anyone without attribution, with one exception—you may copy from the textbook. For homework assignments and exams, you may not copy anything from any other student at all, and you may not collaboratively produce results in pairs or teams.

Publicly viewable work

Your class work (including homework, exams, and project work) may be viewable by other students of this course. Your grades will not be viewable by others.

Academic integrity

Your own commitment to learning, as evidenced by your enrollment at SJSU, and the University's Academic Integrity Policy requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the Office of Student Conduct and Ethical Development. The policy on academic integrity can be found at http://www.sjsu.edu/studentaffairs/.

University policies

If you need course adaptations or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations register with the SJSU Disability Resource Center to establish a record of their disability.

Please familiarize yourself with SJSU policies and procedures at http://info.sjsu.edu/static/catalog/policies.html, particularly the add/drop policy. It is your responsibility to know and observe these policies. However, if there is something about a policy that you don't understand, please feel free to ask! You can also find answers to many questions at the Academic Advising and Retention Services web site.

The Summer Session Calendar contains important dates and deadlines: http://www.sjsu.edu/summer/.

Recording lectures

Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor's permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.

Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor-generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent.

You may transcribe or record lectures or copy course materials for the use of yourself and other students registered in this course. You may not sell or give transcriptions or recordings of lectures or copies of course materials to others without the prior written consent of the instructor.