

San José State University
College of Science/Department of Compute Science
CS 46B_02(30930): Introduction to Data Structures, Section 2

Instructor(s):	Dr. Chung-Wen (Albert) Tsao
Telephone:	N/A
Email:	chung-wen.tsao@sjsu.edu (Once the class starts, use Canvas Inbox)
Class Days/Time:	T/R 10:30 – 11:45 am
Classroom:	Live lectures take place using the Zoom Meeting at https://sjsu.zoom.us/j/86808710522?pwd=WFJyZnBVT0VJR1hKNWswWXJUQWxhZz09 at the class time. Live lectures will be recorded and available on the same day.
Office Hours:	<ul style="list-style-type: none"> • T/Th: 3:00pm – 3:45pm online using Zoom meeting at https://sjsu.zoom.us/j/83077541390?pwd=a2NMKytaU00xaS9CZ0VEemFyMFRwUT09 • By appointments
<u>Prerequisites:</u>	<ol style="list-style-type: none"> 1. Knowledge of Java equivalent to CS 46A (in Java) or CS 49J (with grade of C- or better). 2. Math Enrollment Category M-I or M-II and a satisfactory score on the Precalculus Proficiency Assessment (70 or higher), or MATH 19 with a C- or better, or MATH 18A and MATH 18B with C- or better.
Class Meeting Dates:	Jan 26, 2022- May 16, 2022
Units:	3

Course 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.

Course Format

- Lectures: Traditional lecture format. Most lectures will be recorded and posted to Canvas.
- Labs: Brief introduction by lab TA, followed by lab exercises.

Course Learning Outcomes (CLO)

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

1. Use and work with basic structures such as linked lists, stacks, queues, binary search trees, and iterators.
2. Implement Java classes that embody data structures.
3. Use pre-existing implementations such as the Java Collections framework.
4. Make relative estimates of the running times of alternative algorithms using Big-O analysis.
5. Formulate and test for pre-and post-conditions.

6. Distinguish between different types of program defects and understand how testing and debugging are used to correct them.
7. Implement simple sorting algorithms such as Insertion Sort and Selection Sort.
8. Implement the Sequential Search and Binary Search algorithms.
9. Implement simple recursive algorithms such as binary tree traversal.
10. Work competently with commonly used tools for software development.
11. Create custom data structures when appropriate pre-existing classes are not available

Required Text Textbook

Big Java: Early Objects, 7e Abridged Print Companion with Wiley E-Text Reg Card Set 7th Edition by Cay S. Horstmann

ISBN-10 : 1119499534

ISBN-13 : 978-1119499534

For a book purchase reference at SJSU: [link](#) or you can find it at Amazon or at some other online bookstore of your choice. You can rent the textbook as well, but just make sure you rent it for the entire semester through the final exam. Earlier editions are fine. There aren't specific reading assignments from the text.

Technology

Students are required to have an electronic device (laptop, desktop or tablet) with a camera and built-in microphone. If you do not have access to an electronic device, SJSU has a free equipment loan program available for students ([link](#)). You will need a reliable WIFI connection to attend class. If you run into issues with technology or WIFI, please reach out to the instructor.

Course Requirements and Assignments

Lecture: Students are expected to attend lectures and participate.

Lab: The lab projects are an opportunity to put the concepts learned in lecture into practice and to improve students' Java programming. Lab projects will be posted by noon before the lab (Thursday) and are due by 11:59PM the day after the lab (Saturday). Usually students will finish during the allotted time. Lab projects will be completed in pairs. Lab projects aren't graded, but if you miss or submit inadequate lab work more than twice you will fail the course. If a student missed or submitted inadequate lab work two times, they must schedule a meeting with the instructor.

Homework: Homework will be assigned approximately once a week on Sunday. Homework will be due after either one or two weeks depending on the assignment. Homework must be submitted by 11:59PM on the due date. There are 8 substantial programming assignments along with other written assignments. Students are allowed two 24 hour extensions (the assignment must be submitted by 11:59PM the day after the due date). Graders will keep track of these extensions. For one or two of programming assignments 2, 3, 4, 5, 7, or 8 chosen at random students will participate in an interview with a grader. These interviews will be about 10 minutes and are designed for students to demonstrate the knowledge of the programs they produced. These interviews will be virtual on Zoom. Students will receive a message the day after the assignment is due to sign up for an interview grade.

Midterm Exams: Midterms will only be given during class time. Makeup midterm exams will only be given in cases of verifiable emergency. Midterm exam dates in this syllabus are approximate and are subject to change.

Final Exam: Friday, May 20, 2022 from 9:45am to 12:00pm. The final exam will be cumulative. Makeup exams are only given if there is a verifiable emergency or illness OR if a student has more than two final exams within a 24 hour period and notifies the instructor 2 weeks before the last class meeting.

Quizzes: There will be weekly quizzes throughout the semester. The quizzes are designed to help students stay on top of the material and illustrate areas of confusion for both students and the instructor.

Per [University Policy S16-9](#), success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practice. Other course structures will have equivalent workload expectations as described in the syllabus.

CoS COVID-19 Safety Training

All students registered for a College of Science (CoS) class with an in-person component must view the [CoS COVID-19 Training](#) slides and the [SJSU Phased Adapt Plan](#) website and acknowledge reading them according to their instructor's directions. By working together to follow these county and SJSU safety practices, we can keep our college safer. Students who do not follow COVID-19 Safety practice(s) outlined in the training, the SJSU Phased Adapt Plan, or instructions from their instructors, TAs or CoS Safety Staff may be dismissed from CoS buildings, facilities or field sites. Please review this training as needed throughout the semester, as updates will be implemented as changes occur (and posted to the same links).

Grading:

- Pop Quizzes (10%)
- Midterm exam 1 (15%)
- Midterm exam 2 (15%)
- Final exam (20%)
- Homework (40%)

The grading scale is as follows:

Final grades will not be adjusted in any way - so an 89.99% is still a B+.

No incomplete grades will be given.

<u>Grading System:</u>	Score Range	Grade	GPA
	≥ 97	A+	4.0
	≥ 93	A	4.0
	≥ 90	A-	3.7
	≥ 87	B+	3.3
	≥ 83	B	3.0
	≥ 80	B-	2.7
	≥ 77	C+	2.3
	≥ 73	C	2.0
	≥ 70	C-	1.7

≥ 67	D+	1.3
≥ 63	D	1.0
≥ 60	D-	0.7
Below 60	F	0.0

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Classroom Protocol and Other Notes

- Students may be dropped from the class by the instructor for either one of the following reasons:
 - absence for 1st day of class without informing you before 2nd day of class
 - lack of prerequisites.
- Do not ask for special treatment. The rules for this course apply to everyone equally.
- Cheating will not be tolerable; a ZERO will be given to any cheated assignment/exams, and it will be reported to the Department and the University.
- Do NOT share/post online any course materials, PPT slides, or homework solutions.
- Use of electronic devices during exams is NOT allowed unless stated otherwise.
- You are required to check Canvas for reading/assignments.
- The information on this syllabus is subject to change; changes, if any, will be clearly explained in class, and it is your responsibility to become aware of them.
- Once the class starts, use Canvas Inbox to email me for a faster response. I check the Canvas Inbox emails much more often than my school emails.

Attendance

University policy F69-24 at <http://www.sjsu.edu/senate/docs/F69-24.pdf> states that students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class.

Consent for Recording of Class and Public Sharing of Instructor Material:

University Policy S12-7, <http://www.sjsu.edu/senate/docs/S12-7.pdf>, requires students to obtain instructor's permission to record the course: 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 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's consent.

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at <http://www.sjsu.edu/gup/syllabusinfo/>". Make sure to review these policies and resources.

Tentative Course Schedule (This schedule is subject to change with fair notice via Canvas)

Week	Date	Topics
1	28-Jan	Introduction to the Course
2	Feb 1,3	Inheritance
3	Feb 8,10	Interface
4	Feb 15,17	I/O and Exception Handling
5	Feb 22,24	Algorithm Complexity and Big O

6	Mar 1,3	Recursion
7	Mar 8,10	Review, Midterm Exam 1
8	Mar 15,17	Sorting and Searching
9	Mar 22,24	Java Collections Framework
	Mar 29,31	Spring Recess
10	Apr 5,7	Basic Data Structures – Linked/Array List
11	Apr 12,14	Basic Data Structures – Stack, Queue, Hash Table
12	Apr 19,21	Review, Midterm Exam 2
13	Apr 26, 28	Trees
14	May 3,5	Trees
15	May 10,12	Trees (Heaps)
	20-May	Final Exam, 9:45am–12:00pm

[SJSU ACADEMIC YEAR CALENDAR 2022](#)