College of Science · Computer Science

Introduction to Data StructuresCS 46B

- Spring 2026
- Section 02
- In Person
- 4 Unit(s)
- 01/22/2026 to 05/11/2026
- Modified 01/10/2026

Contact Information

Instructor(s):	Frank Luo
Email:	zhiqiang.luo@sjsu.edu (Once the class starts, use Canvas Inbox)
Class Days/Time:	M/W 12:00 – 01:15 pm
Classroom:	Science Building 311
Office Hours:	M/W 3:30 – 4:30pm at DH282
Prerequisites:	· Knowledge of Java equivalent to CS 46A (in Java) or CS 49J (with grade of C- or better).

	· 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. • CS 46A or CS 46AX (with grade of C- or better). • 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 22, 2026 – May 22, 2026

Course Description and Requisites

Fundamental data structures including lists, stacks, queues, and trees, with algorithms for inserting, deleting, searching, and sorting information within them efficiently. Additional topics include Big-O analysis, exceptions, hashing, Java collections framework, generics, iterators, interfaces, recursion, and debugging. Weekly hands-on activities.

Lecture 3 hours/lab 3 hours.

Prerequisite(s): CS 46A or CS 46AX (with grade of C- or better). (If CS 46A was not in Java, then CS 46AW also required.) Math Enrollment Category M-I or M-II and 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; Allowed Majors: Computer Science, Data Science, Computer Science and Linguistics, Stats, Applied/Computational Math, Software Engineering or Forensic Science: Digital Evidence.
Grading: Letter Graded

Classroom Protocols

Students are expected to assist in maintaining a classroom environment that is conducive to learning. Inappropriate behavior in the classroom that leads to the distraction of others shall not be tolerated under any circumstances.

Instruction will begin at or within several minutes of the official published start time for the course. Please make sure that cell phones, beepers, and texting devices are turned off during the entire scheduled class time. Excessive audible discussions with fellow students are prohibited so that others are not disturbed. If any subject matter is not understood,

please do not hesitate to ask for clarification. If an extended response is necessary to remove doubts, then a request to follow up outside of scheduled classroom instruction time might be made.

1. *Per University Policy S12-7(Links to an external site.), course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without permission. Students may not publicly share or upload instructor-generated material for this course such as exam questions, lecture notes, or homework solutions, without the instructor's consent. This includes unauthorized recording or posting of recordings of lectures. Students who record, distribute, or post these materials will be referred to the Student Conduct and Ethical Development office. These policies are designed to protect student privacy and ensure academic integrity.*
2. *If a student is caught cheating on a homework assignment, the student will receive a 0 on that assignment. If a student is caught cheating on an exam, the student will receive an F in the course. The instructor must report any incidents of cheating or plagiarism to the University per University Policy F15-7(Links to an external site.).*

University Policies

- Per University Policy S16-9 ,relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for the recording of the class, etc., and available student services (e.g., learning assistance, counseling, and other resources) are listed on Syllabus Information web page (https://www.sjsu.edu/curriculum/courses/syllabus-info.php). Make sure to visit this page to review and be aware of these university policies and resources.

- 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 ensure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading." However, attendance will be required in order to complete and submit many in-class exercises, quizzes, and exams.

- It is the aim of the faculty of SJSU to foster a spirit of complete honesty and a high standard of integrity. The University Academic Integrity Policy S07-2 at http://www.sjsu.edu/senate/docs/S07-2.pdf requires you to be honest in all your academic coursework. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The attempt of students to present as their own any work that they have not honestly performed will be considered a violation. During quizzes and exams, communication with other individuals via any means is strictly prohibited without the express permission of the instructor. Violations will be met with the full impact of SJSU's academic integrity policy and procedures.

Program Information

Diversity Statement - At SJSU, it is important to create a safe learning environment where we can explore, learn, and grow together. We strive to build a diverse, equitable, inclusive culture that values, encourages, and supports students from all backgrounds and experiences.

Course Learning Outcomes (CLOs)

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.*

Course Requirements and Assignments

Textbook

Cay S. Horstmann, Big Java: Early Objects, 7/e, 2018, Wiley. https://www.wiley.com/en-

us/Big+Java%3A+Early+Objects%2C+7th+Edition-p-9781119499091 .

Technology

You will need a wireless laptop with internet access and a camera and built-in microphone, for all classes, labs, and exams.

- **Lecture:** Students are expected to attend lectures and participate in group or individual exercises. I reserve the right to increase this grade based on your participation in class activities, discussions, surveys, etc.
- **Homework:** Weekly Homework will be assigned and must be submitted based on the due date. Grade deduction will apply to late submissions.
- **Lab exams:** There will be two lab exams during the semester.
- **Lab:** The lab projects are an opportunity to put the concepts learned in lectures into practice and to improve students' Java programming. Lab projects will be completed in groups and individually. To get credit for completing the lab, you or your group must complete an exit interview. If you miss more than two labs, you will fail the course. **To make up for a missed lab, you must contact your lab instructor to complete the exit interview during their office hours to get the points for the missing lab.**
- **Exams:** There will be two exams during the semester.
- **Final Exam:** The final exam will be cumulative.

Grading Information

- Homework , Quizzes/Class Activity (20%)
- Lab exam1 (10%)
- Lab exam2 (10%)
- Lab (10%)
- Exam 1 (15%)
- Exam 2 (15%)
- Final (20%)

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.

Grading Scale					
A+	97%	A	93%	A-	90%
B+	87%	B	83%	B-	80%
C+	77%	C	73%	C-	70%
D+	67%	D	63%	D-	60%
F	below 60.0%				

“This course must be passed with a C- or better as a CSU graduation requirement.”

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Course Schedule

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

Main section - Mondays			**Lab section - Fridays**		
Week/ session	**Date**	**Topics**	**Lab**	**Date**	**Lab activity**
W1/s1,2	1/26 & 1/28	Intro to Java/ Classes and methods	W1/s1	1/30	Classes and methods
W2/s3,4	2/2 & 2/4	Inheritance	W2/s2	2/6	Inheritance
W3/s5,6	2/9 & 2/11	Generics converting and casting	W3/s3	2/13	converting and casting
W4/s7,8	2/16 & 2/28	I/O & Exceptions	W4/s4	2/20	I/O and exceptions
W5/s9,10	2/23 & 2/25	Exceptions & Junit	W5/s5	2/27	JUnit tests and exceptions
W6/s11,12	3/2 & 3/4	Recursion	W6/s6	3/6	Recursion
W7/s13,14	3/9 & 3/11	Review & First exam	W7/s7	3/13	Lab Exam1
W8/s15,16	3/16 & 3/18	Big O & sort &search	W8/s8	3/20	Sort 1&2

W9/s17,18	3/23 & 3/25	Memory management & Linked List	W9/s9	3/27	Linked List (1)
w10/s19,20	3/30 & 4/3	Spring Recess	W10/s10	4/5	Spring Recess
w11/s21,22	4/6 & 4/8	Linked List	W11/s11	4/10	LinkedList (2)
w12/s23,24	4/13 & 4/15	Stack, Queue	w12/s12	4/17	Stack
w13/s25,26	4/20 & 4/22	Trees, BST	w13/s13	4/24	BST
w14/s27,28	4/27 & 4/29	Sets & collections	w14/s14	5/1	Custom collection
w15/s29,30	5/4 & 5/6	Review & Second Exam, Hash Tables	w15/s15	5/8	Hash Tables
w16/s31	5/11	Hash Tables & Review	w15/s15	5/15	Lab Exam2
Final Exam: Wednesday, May 18 1:00-3:00 PM https://www.sjsu.edu/classes/final-exam-schedule/spring-2026.php					

- Other important dates.
  - Mon, Feb 19: Last Day to Drop Classes without a "W" Grade
- Spring 2026 calendar:
  - https://www.sjsu.edu/registrar/calendar/spring-2026.php