College of Science · Computer Science

Introduction to Data StructuresCS 46B

- Fall 2026
- Section 01
- In Person
- 4 Unit(s)
- 08/19/2026 to 12/07/2026
- Modified 08/11/2026

Contact Information

Instructor(s):	Frank Luo
Email:	zhiqiang.luo@sjsu.edu
Class Days/Time:	M/W 9:00AM - 10:15AM
Classroom:	Science Building 164
Office Hours:	M/W 2:45 – 3:45pm at DH282
Class Meeting Dates:	Aug 19, 2026- Dec 7, 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

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 Goals

Intermediate concepts of Java: Classes, Inheritance, Polymorphism, Memory management, Exceptions

Introductory concepts of Data Structures: 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 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 Materials

Big Java: Early Objects, 7e

- **Author:** Cay S. Horstmann,
- **Publisher:** Wiley
- **Edition:** 7/e,
- **ISBN:** ISBN-10 : 1119499534 ISBN-13 : 978-1119499534
- **Optional**

Course Requirements and Assignments

The course is delivered in person.

- All students are required to have access to a wireless laptop (running OSX, Windows, or some version ofUNIX), with a camera and microphone, upon which you can install the required software.
    - You will need it for all classes, labs, and exams.
- The technology used will include Canvas, programming in Java, and an IDE (Integrated Development Environment)

Lab:

- The lab projects are an opportunity to put the concepts learned in lecture into practice and to improve students' Java programming.
- Most Fridays, there will be a lab.
- Lab projects will be posted before the lab due by 11:59PM the day on the same day
- Usually students will finish during the allotted time.
- Lab projects will be completed in pairs.

- if you miss or submit inadequate lab work more than twice you will fail the course.
    - If you missed or submitted inadequate lab work two times, you must schedule a meeting with the instructor.
- To receive credit for the lab, your group will participate in a short exit interview addressing questions from both the lab and the quiz with the lab instructor or learning assistant.
- If you cannot attend the lab due to illness, verified emergency or school events, please notify both the lab instructor and me before your lab section begins to make alternate arrangements. Otherwise, no makeup lab can be provided.
    - To make up for a missed lab, you must contact your lab instructor and must complete the exit interview within a week from the date you missed the lab.
    - You can get at most half the credit (5/10) from the make-up labs.
    - Note that the make-up for a missed lab will still counts as a missed lab and you fail the course for more than 2 missed labs.

Midterm Exams (2 lecture midterm and 2 lab midterms):

- 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:

- 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

HomeWork:

- There will be weekly Homework throughout the semester.

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.

Grading Information

- Final grades will not be adjusted in any way - so an 89.99% is still a B+.
- No incomplete grades will be given.
- No late submission of assignments will be accepted except for the verified emergency such as doctor's notes or family death certificates.

Breakdown

- Homework (10%)
- Lab exam1 (15%)
- Lab exam2 (15%)
- Lab work (10%)
- Quizzes (5%)
- Exam 1 (15%)
- Exam 2 (15%)
- Final (15%)

Criteria

100% - 97.00%	A+
96.99% - 94.00%	A
93.99% - 90.00%	A-
89.99% - 87.00%	B+
86.99% - 84.00%	B
83.99% - 80.00%	B-
79.99% - 77.00%	C+
76.99% - 74.00%	C
73.99% - 70.00%	C-
69.99% - 67.00%	D+
66.99% - 64.00%	D

63.99% - 60.00%	D-
below 60.00%	F

University Policies

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

Course Schedule

Week	Lecture Date(s)	Topics	Lab	Lab Date	Lab Activity
W1	8/19 (Wed)	**Introduction**	—	—	No Lab
W2	8/24 & 8/26	**Classes and Methods**	W2	8/28	Classes and Methods
W3	8/31 & 9/2	**Inheritance, Polymorphism**	W3	9/4	Inheritance
W4	9/9 (9/7 Labor Day – No Class)	**Generics, Converting and Casting**	W4	9/11	Converting and Casting
W5	9/14 & 9/16	**I/O & Exceptions**	W5	9/18	I/O and Exceptions
W6	9/21 & 9/23	**Exceptions & JUnit**	W6	9/25	JUnit Tests, Exceptions
W7	9/28 & 9/30	**Recursion Big O, Sorting & Searching**	W7	10/2	Recursion
W8	10/5 & 10/7	Review & *Exam 1*	W8	10/9	Lab Exam 1
W9	10/12 & 10/14	**Memory & Linked Lists**	W9	10/16	Sorting
W10	10/19 & 10/21	**Linked Lists**	W10	10/23	Linked List (1)
W11	10/26 & 10/28	**Stacks, Queues**	W11	10/30	Linked List (2)
W12	11/2 & 11/4	**Trees, BSTs**	W12	11/6	Stacks
W13	11/9 (11/11 Veterans Day – No Class)	**Sets & Collections**	W13	11/13	Trees/BST
W14	11/16 & 11/18	**Hash Tables, Review**	W14	11/20	Custom Collection
W15	11/23 (11/25 Non-Instructional Day – No Class)	**Exam 2**	W15	11/27	Thanksgiving Holiday – No Lab
W16	11/30 & 12/2	**Final Review / Course Wrap-up**	W16	12/4	Lab Exam 2
W17	12/7	**Final Review**	—	—	Optional Help / Make-up Lab
Final	**Monday, December 14**	**8:30–10:30 AM**			

https://www.sjsu.edu/classes/calendar/2026-2027.php

https://www.sjsu.edu/classes/final-exam-schedule/fall-2026.php