CS 284 - Data Structures
Spring 2024 Syllabus

Instructor

Dr. Zumrut Akcam-Kibis
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Office: Gateway South 242
Office Hours: M/W 2:00 PM-3:00 PM (in-office), Th 11:00 AM-12:00 PM (online-Zoom)
Zoom link for online office hours: `https://stevens.zoom.us/my/zakcamki`

Course Information

Section A: MWF 10:00 AM-10:50 AM, Kidde 228
Section B: MWF 11:00 AM-11:50 AM, Kidde 228
Section C: MWF 12:00 PM-12:50 PM, Kidde 228
Prerequisite(s): CS 115 , **Corequisite(s):** CS 135
Labs: You must be registered for one of the labs from CS 284-RA, CS 284-RB, CS 284-RC, CS284-RD, CS284-RE, CS284-RF and attend that lab every week (in-person).
Course Assistants: Bryan Chan, Cecilia Esteban, Dylan Faulhaber, Kian Holden, Amartya Kalra, Milind Kathiari, Matthew Mammano, Zakariyya Scavotto, Ethan Silverstein.
Their office hours and locations will be posted on Canvas.

Course Description

This course is an introduction to fundamental data structures in Computer Science. These data structures, and the algorithms that go with them, make up the standard toolkit for programmers regardless of language and application. We will use the Java programming language for representing both the data structures and also for developing simple programming projects that put them to use. Expect to do a significant amount of programming, as well as paper and pencil exercises.

Learning Objectives

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

- (Abstract Data Types) Understand the importance of Abstract Data Types and Data Structures. Use UML to represent ADTs.
- (Complexity) Calculate the Big O of diverse non-recursive algorithms and use it to compare efficiency.
- (Collections) Use and understand Collection class in Java, with major emphasis on Lists, Stacks and Queues. Implement double linked lists in Java.
- (Trees) Implement Binary Search Trees, Max/Min-Heaps, Priority Queues in Java, and understand the basic concepts of self-balancing Binary Search Trees such as Red-Black and AVL trees.

- (Sets-Maps) Understand what are Sets and Maps, and more specifically implement hash tables in Java.
- (Sorting) Program basic sorting algorithms (such as Insertion, Selection, Merge and Quick) in Java using the Comparable interface.
- (Programming) Combine different classes together to implement big programming assignments in Java, including a final project that combines some of the data structures studied in class.
- (Testing) Use JUnit to create unit tests for each project.

Teaching Approach

There are three lectures per week and lectures will be delivered by going over the topics on board and coding live in class.

Course Materials

Required Textbook:	Zybooks - Code: STEVENSCS284Akcam-KibisSpring2024, ISBN: 979-8-203-27455-7
Supplemental Textbook:	Elliot B. Koffman & Paul A.T. Wolfgang, Data Structures: Abstraction and Design Using Java, 4th Edition, Wiley, ISBN: 978-1-119-70359-4
Other Materials:	To be given in class.

Course Requirements

Attendance Students are required to attend all classes. Students must pay attention to the lecture and not engage in discussion with each other or engage with their digital devices other than the class-related-work during class time.

Participation The participation will be measured with the PollEverywhere questions, which will be given to the students during class time. Considering the emergency situations and health-related issues, **1 week worth of lowest participation grades will be eliminated from the overall grade**.

Homework There will be five (5) to eight (8) homework (programming) assignments throughout this course. Code that does not compile will NOT be accepted. Policy for late submissions: 2 points off for every hour past the deadline. If urgent or unusual circumstances prohibit you from submitting a homework assignment in time, please e-mail the instructor. For emergency situations/health-related issues, there will be **one-time only extension available for 2 days for a single homework**.

Quizzes There will be quizzes throughout the semester. Quizzes will be graded for accuracy. If a student is absent on a day that a quiz is given s/he will receive an automatic 0 for that quiz, **no make-up for the quizzes . One lowest quiz grade will be eliminated from the quiz grades.**

Recitations Labs/Recitations will must be finished during the lab/recitation time. It will be posted at the beginning of recitation time and it must be finished at the end of recitation time. There will **not be late or make-up submissions for the labs. Two lowest lab submissions will be dropped from your grade**.

Reading Exercises These assignments will be given from Zybooks as a preperation for the upcoming lectures. There will **not be late submission or make-up submissions for the reading exercises. Two lowest reading exercise submissions will be dropped from your grade**.

Exams There will be two exams in this course, a midterm, covering the first half of the course, and a final, covering the second half of the course. **Make-up exams can only be given for valid and documented reasons.**

Grading Procedures

There are 100 possible points that a student can earn in this course. Percentages are listed below.

Reading Exercises	(10%)
Quizzes	(5%)
Participation	(5%)
Lab	(10%)
Homework	(20%)
Midterm	(25%)
Final	(25%)

TENTATIVE COURSE SCHEDULE

See schedule in Canvas.

Academic Integrity

Undergraduate Honor System

Enrollment into the undergraduate class of Stevens Institute of Technology signifies a student's commitment to the Honor System. Accordingly, the provisions of the Stevens Honor System apply to all undergraduate students in coursework and Honor Board proceedings. It is the responsibility of each student to become acquainted with and to uphold the ideals set forth in the Honor System Constitution. More information about the Honor System including the constitution, bylaws, investigative procedures, and the penalty matrix can be found online at `http://web.stevens.edu/honor/`

The following pledge shall be written in full and signed by every student on all submitted work (including, but not limited to, homework, projects, lab reports, code, quizzes and exams) that is assigned by the course instructor. No work shall be graded unless the pledge is written in full and signed.

> "I pledge my honor that I have abided by the Stevens Honor System."

Reporting Honor System Violations. Students who believe a violation of the Honor System has been committed should report it within ten business days of the suspected violation. Students have the option to remain anonymous and can report violations online at `www.stevens.edu/honor`.

Generative AI Technologies

Use generative AI technology, e.g. ChatGPT, with care. Please note that the material generated by these programs may be inaccurate, incomplete, or otherwise problematic. Beware that use may also stifle your own independent thinking and creativity. Treat these programs like a virtual fellow student: you are allowed to "discuss" with them at a conceptual level, but you cannot share solutions or code in either direction.

You may not submit any work generated by an AI program as your own. If you include material generated by an AI program, it should be cited like any other reference material (with due consideration for the quality of the reference, which may be poor).

Any plagiarism or other form of cheating will be dealt with under relevant Stevens policies.

Exam Room Conditions

The following procedures apply to quizzes and exams for this course. As the instructor, I reserve the right to modify any conditions set forth below by printing revised Exam Room Conditions on the quiz or exam.

1. Students may use the following devices during quizzes and/or exams. Any electronic devices that are not mentioned in the list below are not permitted.

Device	Permitted?	
	Yes	No
Laptops		x
Cell Phones		x
Tablets		x
Smart Watches		x
Google Glass		x
Other (specify)		x

2. Students may use the following materials during exams. Any materials that are not mentioned in the list below are not permitted.

Material	Permitted?	
	Yes	No
Handwritten Notes Conditions: 1 A4-page (double-sided)	x	
Typed Notes Conditions: 1 A4-page (double-sided)	x	
Textbooks		x
Readings		x

3. Students are *not* allowed to work with or talk to other students during quizzes and/or exams.

Learning Accommodations

Stevens Institute of Technology is dedicated to providing appropriate accommodations to students with documented disabilities. The Office of Disability Services (ODS) works with undergraduate and graduate students with learning disabilities, attention deficit-hyperactivity disorders, physical disabilities, sensory impairments, psychiatric disorders, and other such disabilities in order to help students achieve their academic and personal potential. They facilitate equal access to the educational programs and opportunities offered at Stevens and coordinate reasonable accommodations for eligible students. These services are designed to encourage independence and self-advocacy with support from the ODS staff. The ODS staff will facilitate the provision of accommodations on a case-by-case basis.

For more information about Disability Services and the process to receive accommodations, visit `https://www.stevens.edu/office-disability-services`. If you have any questions please contact: Phillip Gehman, the Director of Disability Services Coordinator at Stevens Institute of Technology at pgehman@stevens.edu or by phone 201-216-3748.

Disability Services Confidentiality Policy

Student Disability Files are kept separate from academic files and are stored in a secure location within the Office of Disability Services. The Family Educational Rights Privacy Act (FERPA, 20 U.S.C. 1232g; 34CFR, Part 99) regulates disclosure of disability documentation and records maintained by Stevens Disability Services. According to this act, prior written consent by the student is required before our Disability Services office may release disability documentation or records to anyone. An exception is made in unusual circumstances, such as the case of health and safety emergencies.

Inclusivity Statement

Name and Pronoun Usage

As this course includes group work and class discussion, it is vitally important for us to create an educational environment of inclusion and mutual respect. This includes the ability for all students to have their chosen gender pronoun(s) and chosen name affirmed. If the class roster does not align with your name and/or pronouns, please inform the instructor of the necessary changes.

Inclusion Statement

Stevens Institute of Technology believes that diversity and inclusiveness are essential to excellence in academic discourse and innovation. In this class, the perspective of people of all races, ethnicities, gender expressions and gender identities, religions, sexual orientations, disabilities, socioeconomic backgrounds, and nationalities will be respected and viewed as a resource and benefit throughout the semester. Suggestions to further diversify class materials and assignments are encouraged. If any course meetings conflict with your religious events, please do not hesitate to reach out to your instructor to make alternative arrangements.

You are expected to treat your instructor and all other participants in the course with courtesy and respect. Disrespectful conduct and harassing statements will not be tolerated and may result in disciplinary actions.

Mental Health Resources

Part of being successful in the classroom involves a focus on your whole self, including your mental health. While you are at Stevens, there are many resources to promote and support mental health. The Office of Counseling and Psychological Services (CAPS) offers free and confidential services to all enrolled students who are struggling to cope with personal issues (e.g., difficulty adjusting to college or trouble managing stress) or psychological difficulties (e.g., anxiety and depression). Appointments are can be made by phone (201-216-5177).

Emergency Information

In the event of an urgent or emergent concern about the safety of yourself or someone else in the Stevens community, please immediately call the Stevens Campus Police at 201-216-5105 or on their emergency line at 201-216-3911. These phone lines are staffed 24/7, year round. For students who do not reside near the campus and require emergency support, please contact your local emergency response providers at 911 or via your local police precinct. Other 24/7 national resources for students dealing with mental health crises include the National Suicide Prevention Lifeline (1-800-273-8255) and the Crisis Text Line (text “Home” to 741-741). If you are concerned about the wellbeing of another Stevens student, and the matter is not urgent or time sensitive, please email the CARE Team at care@stevens.edu. A member of the CARE Team will respond to your concern as soon as possible.