KENNESAW STATE UNIVERSITY

SYLLABUS

COLLEGE OF COMPUTING AND SOFTWARE ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE

CS 5040: DATA STRUCTURES & ALGORITHMS

ACADEMIC TERM: FALL 2025

Course Information

Class meeting time: TBD
Modality: Fully Online
Location: D2L

Instructor Information

Name: Umama Tasnim
Email: utasnim@kennesaw.edu
Office Location: J-353C, Atrium Building
Office Hours: Wednesday 1.30 pm to 3.30 pm. (By Appointments).
Office phone: TBD
Preferred method of communication: Email

Course Description

Coverage of data structures including runtime analysis and big-oh notation. A modern language will be used. Topics include dynamically allocating memory, pointer declaration and use, and the implementation of data structures such as lists, stacks, queues, binary search trees, and graphs. Analysis techniques are provided, such as the growth of functions, advanced sorting techniques, elementary graph algorithms, and minimum spanning trees. Programming projects are included.

Prerequisites: CS 5000 or CSE 1322 or equivalent

Credit Hours: 3-0-3

Course Materials

Required Texts:

> Introduction to Java Programming, Comprehensive Version, 10th Edition
> By Y. Daniel Liang
> Pearson Publishing, 2015
> ISBN#: 978-0-13-376131-3

Recommended Texts: None.

Technology requirements: Java compiler and IDE. Recommended IDE is Jgrasp.

Learning Outcomes

At the end of the course students will be able to:

1. Implement standard data structures
2. Derive algorithms for data structure query, traversal and data insertion
3. Demonstrate an understanding of the memory management issues
4. Demonstrate an understanding of the concepts of data abstraction
5. Explain the concepts of runtime analysis and efficiency

Course Requirements and Assignments

Homework assignments, quizzes, and 2 tests are planned as follows:

Assignment	Percentage
Programming Assignments	40%
Quizzes	10%
Midterm	20%
Final Exam	25%
Participation and discussion	5%

Evaluation and Grading Policies

Letter grades will be determined by ranking the numerical averages of all students in the class.

Grade Evaluation	
A	90% - 100%
B	89% - 80%
C	79% - 70%
D	69% - 60%
F	59% or below

Course Policies

Attendance (section 01): For in-class students, class attendance is required and very important for successful completion of the course. Students are expected to attend and participate in every class. Excused absences must be planned for, when possible, and justified with documentation. The student is responsible for making up missed class sessions. Late arrival that causes disruption, early departure that causes disruption, excessive conversation among students (a disruption in its own right), inappropriate use of electronic devices that cause disruptions and other actions that disrupt the classroom are unacceptable.

Assignment Grading Policy: Successfully completed programs must satisfy their requirements outlined in the programming assignments. The assignment grade depends on the quality of the program. All assignments are individual work. Discussion of assignments with others is subject to the empty hands policy, which means that you leave the discussion without any record (electronic or physical) of the discussion. Submissions that show copying or paraphrasing or identical code or slightly modified code from another source will be considered plagiarism and are a violation of the Student Code of Conduct. For all homework assignments, if a student consults any resource (other than the textbook and class notes) including another individual, this consultation must be documented on the submission. This documentation must include what (or who) was consulted and what information was obtained. Due dates

for homework assignments will be specified on the assignments themselves and in D2L. All assignments are submitted to D2L. Late submission will not be accepted.

Tests: Midterm and Final exams are planned for this course as shown on the weekly schedule above. Please plan accordingly as there are NO makeup exams. All students in both sections take the same tests at the same time. For online students, the exam will be proctored in D2L using lock-down browser and a webcam. This feature of D2L records the exam session and saves if for verification. Picture ID and environment check are required at the beginning of the test session.

Classroom Behavior: In-class students are reminded to conduct themselves in accordance with the Student Code of Conduct, as published in the University Catalog. Every KSU student is responsible for upholding the provision. Students who are in violation of KSU policy will be asked to leave the classroom and may be subject to disciplinary action by the University.

Tutoring: The College of Computing and Software Engineering offers some tutoring services. You are encouraged to utilize this resource if possible. Tutoring info can be found here: http://ccse.kennesaw.edu/ccselabs/ccse-tutoring.php

Withdraw Policy: The last day to withdraw without academic penalty is **TBD.** Ceasing to attend class or oral notice thereof DOES NOT constitute official withdrawal from the course. Students who simply stop attending classes without officially withdrawing usually are assigned failing grades. Students wishing to withdraw after the scheduled change period (add/drop) must obtain and complete a withdrawal form from the Academic Services Department in the Registrar's Office.

See below for commentary on withdrawals from the 2018-2019 Graduate Catalog:

> Students may withdraw from one or more courses up to one week prior to the last day of class. To completely or partially withdraw from classes at KSU, a student must withdraw online at www.kennesaw.edu, under Owl Express, Registration and Student Records. Students who officially withdraw from courses before mid-semester will receive a "W" in those courses and receive no credit. They will not, however, suffer any academic penalty. Students who officially withdraw after mid-semester one week prior to the last day of class will receive a "WF," which will be counted as an "F" in the calculation of their grade point average. Exact withdrawal dates will be published in the official academic calendar and are subject to approval by the Board of Regents.
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> The only exceptions to these withdrawal regulations will be for instances involving unusual circumstances that are fully documented.
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> Students will receive refunds only when they withdraw from all their classes and only by the schedule outlined in the University System refund policy.

Department or College Policies

Students are expected to be aware that the Computer Science department has certain policies in place that govern practices within the department including:

1. "B" or better grade is required for CS 1321/L and CSE 1322/L and their equivalent transfers. All courses used toward any undergraduate degree in the computer science must be completed with an assessed performance grade of "C" or better. This means that all prerequisite courses from the CS Department must have been completed with a "C" or better in order for a student to enter the next course in a sequence.

2. All requests for course overloads must be made through the College advising office and with the approval of the Program coordinator and department chair. The instructor of any course is not permitted to authorize course overloads.

3. All requests for prerequisite bypasses must be made through the College advising office and with the approval of the Program coordinator and department chair. The instructor of any course is not permitted to authorize course overwrites.

4. All students are encouraged to register their current choice of major using the department major change process. Students who are not recorded under their intended major may find that they may be limited from registering for courses they require to complete their intended program of study.

Institutional Policies

Federal, BOR, & KSU Course Syllabus Policies:
http://curriculum.kennesaw.edu/resources/federal_bor_ksu_student_policies.php

Student Resources:
http://curriculum.kennesaw.edu/resources/ksu_student_resources_for_course_syllabus.php

Academic Integrity Statement:
http://scai.kennesaw.edu/codes.php

KSU Student Resources

This link contains information on help and resources available to students:
https://curriculum.kennesaw.edu/resources/ksu_student_resources_for_course_syllabus.php

Additional Resources

For CCSE Student resources: http://ccse.kennesaw.edu/student-resources.php
KSU Service Desk: The KSU Service Desk is your portal to getting assistance or access to University IT Services. Students call: 470-578-3555 or email studenthelpdesk@kennesaw.edu
Information and links to Resources for Graduate Students: http://graduate.kennesaw.edu/students/
Links to frequently used and helpful services: http://www.kennesaw.edu/myksu/

Course Schedule

Course Schedule – Subject to change

Week #	Week of	Topic
1	Mon 08/18/25	Discussion of course syllabus and policies Review of OOP classes and objects Ch-18: Review of Recursion
2	Mon 08/25/25	Ch-20: Lists and Linked-Lists
3	Mon 09/01/25	Ch-20: Lists and Linked-Lists
4	Mon 09/08/25	Ch-20: Stacks and their applications
5	Mon 09/25/25	Ch-20: Queues and their applications
6	Mon 09/22/25	Ch-22: Algorithm Complexity - Big O Notation
7	Mon 09/29/25	Ch-23: Simple Sort Algorithms
8	Mon 10/06/25	Ch-23: Advanced Sort Algorithms First Exam (Midterm): <date and Time>
9	Mon 10/13/25	Ch-25: Trees and Tree Algorithms
10	Mon 10/20/25	Ch-26: Binary Search Trees and AVL Trees

12	Mon 11/03/25	Ch-27: Hashing and Hash Functions
13	Mon 11/10/25	Ch-28: Graphs and their applications
14	Mon 11/24/25	Fall Break – No Classes
15	Mon 12/01/25	Ch-28: Graphs and their applications
16	Mon 12/08/25	Last day of classes. Wrap-up and review
17	Finals Week	Tuesday 12/9 to Monday 12/15/2025 Second Exam (Final): <date and Time>