Jamhuriya University of Science & Technology	
Faculty of Computer & Information Technology	
Department: Computer Applications	
Year: 2023/2024	**Semester: I**

Course Information	
Course Title	Data Structures Using Java
Course Number	CA314
Prerequisites	Java Programming, I
Instructors	Mohamed Ahmed Mohamud, Mohamed Abdirahman Khalif, Mohamed Abdullahi Mohamud, Shueib Ahmed, Mohamed Abdullahi
Coordinator	Mohamed ABDULLAHI Mohamud

Textbook(s)	
Title(s)	Java Software Structures *Designing and Using Data Structures*
Author	John Lewis & Joseph Chase
Publisher	Pearson Education
Year	2014
Edition	4th Edition
Reference Book	Data Structures & Problem-Solving Using Java Author: mark allen Weiss Edition: 4th edition,

Assessment Policy		
Assessment Type	**Expected Due Date**	**Weight**
Midterm Exam	TBD	30%
Final Exam	TBD	40%
Lab Assignments	Weekly	20%
Quizzes	Weekly	10%

Course Description
CA314 covers analysis, design and implementation of fundamental data structures using JAVA; and engages students to use data structures and algorithms as a tool to design efficient programs that will cope with the complexity of actual applications. The course focuses on basic and essential topics in data structures including collections, stacks, queues, linked lists, recursion, sorting and searching algorithms.

Teaching & Learning Methods
• Class Lectures and Labs are designed to achieve the course objectives. • You should read the assigned chapters in the book, complete assignments on time and ask many questions. • You should attend assigned Lab hours to practice the course. • You are responsible for all materials covered in the class and in the Lab.

Course Content

Number of Weeks	Topics	Chapter in Text
3 Weeks	Objects and Classes	Chapter 9 (Java I Book)
2 Weeks	Introduction to Collections - Stacks	Chapter 3
2 Weeks	Linked Structures -Stacks	Chapter 4
2 Weeks	Queues	Chapter 5
2 Weeks	Recursion	Chapter 8
3 Weeks	Searching and Sorting	Chapter 9

Learning Outcomes
• Apply abstract data types and JAVA OOP Principles in designing data structures. • Design, analyze and implement the different data structures such as stacks, queues, linked list and the best use of each structure. • Being able to use essential algorithms, such as recursion, searching and sorting algorithms, to solve real world problems. • Write JAVA programs to efficiently manipulate, store and retrieve data. • Have the basic knowledge to analyze the performance of different algorithms and data structures.