

SES's L.S. RAHEJA COLLEGE OF ARTS AND COMMERCE(AUTONOMOUS)



BOARD OF STUDIES: Information Technology and Data Science

PROGRAMME: Bachelor of Science (Information Technology)

SEMESTER: III

NOMENCLATURE OF THE COURSE: DATA STRUCTURES LAB

NEP Vertical: VSC

Credit: 01

(As Per Choice Based Credit System (under NEP 2020) with effect from the academic year 2025-26)



Programme:	Bachelor of Science (Information Technology)
Nomenclature of the Course	Data Structures LAB
Total Marks	25
Semester:	III
Academic year	2025-26

LEARNING OBJECTIVES:

- To develop the logic of the student.
- Describe different sorting methods using programs.
- Illustration of the difficult concepts using programming examples.

COURSE OUTCOMES:

- Understand of a functional hierarchical code organization
- Debug the program
- Understand the differences between syntax errors, runtime errors, and logic errors.

Unit	Course Content	Andragogy	No of Lectures
I	<p>Implement the following:</p> <ul style="list-style-type: none"> • Write a program to store the elements in 1-D array and perform the operations like searching, sorting and reversing the elements. [Menu Driven] • Read the two arrays from the user and merge them and display the elements in sorted order.[Menu Driven] • Write a program to perform the Matrix addition, Multiplication and Transpose Operation. [Menu Driven]. 	<ul style="list-style-type: none"> • Give students problems: Provide problems for students to solve independently or in groups. • Focus on practical applications: Present knowledge and abilities in terms of their practical uses. 	6
II	<p>Implement the following for Linked List and Stack:</p> <ul style="list-style-type: none"> • Write a program to create a single linked list and display the node elements in reverse order. • Write a program to search the elements in the linked list and display the same • Write a program to implement the concept of Stack with Push, Pop, Display and Exit operations.. 	<ul style="list-style-type: none"> • Give students problems: Provide problems for students to solve independently or in groups. • Focus on practical applications: Present knowledge and abilities in terms of their practical uses. 	6
III	<p>Implement the following for Queue:</p> <ul style="list-style-type: none"> • Write a program to implement the concept of Queue with Insert, 	<ul style="list-style-type: none"> • Give students problems: Provide problems for students to solve 	6

	Delete, Display and Exit operations. <ul style="list-style-type: none"> • Write a program to implement the concept of Circular Queue • Write a program to implement the concept of Deque. 	independently or in groups. <ul style="list-style-type: none"> • Focus on practical applications: Present knowledge and abilities in terms of their practical uses. 	
IV	Implement the following sorting techniques: <ul style="list-style-type: none"> • Write a program to implement bubble sort. • Write a program to implement selection sort. • Write a program to implement insertion sort. 	<ul style="list-style-type: none"> • Give students problems: Provide problems for students to solve independently or in groups. • Focus on practical applications: Present knowledge and abilities in terms of their practical uses. 	6
V	Implement the following data structure techniques: <ul style="list-style-type: none"> • Write a program to implement merge sort. • Write a program to search the element using sequential search. • Write a program for inorder, postorder and preorder traversal of tree 	<ul style="list-style-type: none"> • Give students problems: Provide problems for students to solve independently or in groups. • Focus on practical applications: Present knowledge and abilities in terms of their practical uses. 	6

SUGGESTED READINGS

1. Necaie, R. (2016). Data structures and algorithms using Python. Wiley.
2. Langsam, S., Augenstein, M., & Tanenbaum, A. S. (2015). Data structures using C and C++. Pearson.

QUESTION PAPER PATTERN

(B)

QUESTION PAPER PATTERN FOR SEMESTER END EXAMINATION

1.	Practical	15
2.	Journal	5
3.	Viva-Voce	5