VNR Vignana Jyothi Institute of Engineering & Technology

I Year B.Tech CSE –II Sem	**L**	**T/P/D**	**C**
	0	**3**	**2**

(5IT52) DATA STRUCTURES LABORATORY
(Common to EEE, ECE, CSE, EIE and IT)

Course Objectives:

- To **understand** storage mechanism and implement related programs
- To **develop** skills to design and analyze simple linear and nonlinear data structures
- To **Strengthen** the ability to identify and apply the suitable data structure for the given real world problem
- To **gain** knowledge in practical applications of data structures

Course Outcomes:

After completion of the course the student is able to:

- **implement** storage mechanism and to implement related programs
- **Design and analyze** the time and space efficiency of the data structure
- **Identity** the appropriate data structure for given problem
- Gain practical **knowledge** on the application of data structures

Week 1:
1. Programs on files-Implementation of file handling functions, file error handling.
2. Programs on command line arguments.

Week 2:
3. Programs on dynamic memory allocation.
4. Write a program to perform creates, insert, delete and search operations in Single Linked List.

Week 3:
5. Write a program to perform create, insert , delete and search operations in Circular Linked List

Week 4:
6. Write a program to perform create, insert and deletion operations in Double Linked List

Week 5:
7. Write a program to implement stack using Arrays
8. Write a program to implement stack using Linked List

Week 6:
9. Write a program to convert infix expression to postfix expression using stack
10. Write a program to evaluate postfix expression

Week 7:
11. Programs using recursion
12. Write a program to convert infix expression to prefix expression using stack

Week 8:
13. Write a program to implement Linear queue using Array
14. Write a program to implement Linear queue using Linked List

Week 9:
15. Write a program to implement insertions and deletions in a Circular Queue.
16. Write a program to implement insertions and deletions in a Dequeue.

Week 10: **Midterm Exam**

Week 11:
17. Write a program to implement Linear search, Binary search
18. Write a program to implement Bubble sort, Selection sort

Week 12:
19. Write a program to implement Insertion sort
20. Write a program to implement Merge sort

Week 13:
21. Write a program to implement Quick sort.

Week 14:
22. Implementation of a binary tree representation using Arrays
23. Write a program to implement tree traversals.

Week 15:
24. Implementation of a Graph representation using Adjacency Matrix
25. Write a program to implement graph traversals.

Week 16: **Final Internal Lab Exam**

TEXT BOOKS:

1. C Programming & Data Structures, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage Learning.
2. Data Structures Using C (Paperback) by Aaron M. Tenenbaum

REFERENCES:

1. C& Data structures – P. Padmanabham, Third Edition, B.S. Publications.
2. Data Structures using C – A.M.Tanenbaum, Y.Langsam, and M.J. Augenstein, Pearson Education / PHI
3. C Programming & Data Structures, E. Balagurusamy, TMH.
4. C Programming & Data Structures, P. Dey, M Ghosh R Thereja, Oxford University Press
5. C& Data structures – E V Prasad and N B Venkateswarlu, S. Chand&Co.