VNR Vignana Jyothi Institute of Engineering & Technology

I Year B.Tech CSE –II Sem	**L**	**T/P/D**	**C**
	3	**1**	**4**

(5IT02) DATA STRUCTURES

(Common to EEE, ECE, CSE, EIE and IT)

Course Objectives:

- To **summarize** efficient storage mechanisms of data for an easy access.
- **Implementation** of various basic and advanced data structures.
- To **introduce** various techniques for representation of the data in the real world.
- To **develop** application using data structures.

Course Outcomes:

After completion of the course the student is able to

- **Explore** and analyze the working of linear data structures like list, stack and variations of queue in both static and dynamic implementation.
- **Relate** and **demonstrate** the application of linear data structures.
- **Illustrate** and **implement** basic non linear data structures like trees, graphs and their operations.
- **Identify** and **implement** basic and advanced comparison based sorting and searching techniques.

UNIT-I

File Management:

File I/O – Basic concepts, text files and binary files, file input / output operations, file status functions (error handling), C programming examples, command-line arguments.
Data Structures – Introduction to data structures, abstract data types, dynamic memory allocation.

UNIT –II

Linear list – Singly linked list implementation, insertion, deletion and searching operations on linear list, circular linked list implementation, double linked list implementation, insertion, deletion and searching operations. Applications of linked lists.

UNIT-III

Stacks-Operations, array and linked representations of stacks, stack applications-infix to postfix conversion, postfix expression evaluation, recursion implementation.
Queues-operations, array and linked representations. Circular queue operations, dequeuers, applications of queue.

UNIT-IV

Trees – Definitions, binary tree representation, binary search tree, binary tree traversals.
Graphs – Definitions, graph representations, graph traversals.

UNIT-V

Searching and Sorting – Big O Notation, Sorting- selection sort, bubble sort, insertion sort, quick sort, merge sort,
Searching-linear and binary search methods.

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
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.