	Course Name :	Data Structure and Algorithm Laboratory

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Course Code   :   CS(EE)491

Course Credit: 3

Contact Hour: 4L

Prerequisite: Computer Programming

Course Objective

The objectives of this course are

1. Analyze Problems of Electrical Network.

2. Apply important algorithmic design paradigms and methods of analysis.

3. Synthesize efficient algorithms in common engineering design situations.

Course Outcome

On completion of the course students will be able to

1. Analyze the problem complexity.

2. Use design systematic approach to solve various problems related to computation

3. Manage large amounts of data efficiently, such as large databases of electrical circuit input.

4. Use efficient data structures which are a key to designing efficient algorithms.

5. Use some formal design methods and programming languages which emphasize on data structures, rather than algorithms, as the key organizing factor in Electrical system automation software design.

6. Approach developing small software that can help solving Electrical Engineering problems.

CO Mapping with departmental POs

H: High, M: Medium, L: Low

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	H	H	H	H					H		H	
CO 2	H	H	H	H					H		H	
CO 3	H	H	H	H					H		H	
CO 4	H	H	H	H					H		H	
CO 5	H	H	H	H					H		H	
CO 6	H	H	H	H					H		H	

Course Content:

Module I: **4P**

Write Program using Array, Pointers, Functions and Structures.

Module II: **12P**

Writing program using Singly and Doubly Linked List-insertion, deletion, display, search etc.

Module III: **8P**

Write Program using Stack-(push, pop) and Queue- (enqueue, dequeue).

Module IV: **4P**

Write Program to implement tree (Traversal – BFS, DFS).

Module V: **4P**

Write Program to implement graph (Shortest Path algorithm implementation).

Module VI: **8P**

Write Program for Sorting - Bubble sort, Selection Sort, Insertion Sort, Quick Sort and Searching (Linear, Binary and Ternary Search).

Module VII: **8P**

Write Program to implement indexing (B+ tree) & hashing(open, quadratic, separate-chaining).

Text Books:

1. Data Structures and Algorithms – O.G. Kakde & U.A. Deshpandey, ISTE/EXCEL BOOKS

2. Aho Alfred V., Hopperoft John E., UIlman Jeffrey D., "Data Structures and Algorithms", Addison Wesley

3. Drozdek- Data Structures and Algorithms, Vikas

Reference Books:

1. Data Structures Using C – M. Radhakrishnan and V. Srinivasan, ISTE/EXCEL BOOKS

2. Horowitz Ellis & Sartaj Sahni, "Fundamentals of Data Structures", Galgotria Pub.

3. Ajay Agarwal: Data structure Through C. Cybertech