



# Muzaffarpur Institute of Technology (MIT), Muzaffarpur

(Under the Department of Science & Technology Govt. of Bihar, Patna)

## Department of Information Technology

**COURSE NAME: DATA STRUCTURES LABORATORY**

**COURSE CODE: 051403**

### List of Experiments(Mandatory):

1. Implementation of the basic operations performed on an Array: Insert, Delete, Search, Display.
2. Implementation of searching algorithms: **a) Linear & b) Binary Search**
3. Implementation of Sorting algorithms:  
**a) Bubble Sort      b) Insertion Sort      c) Selection Sort      d) Merge Sort      e) Quick Sort**
4. Implementation of Stack and its basic operation using Array.
5. Implementation of a valid expression conversion to polish notation
6. Implementations of Infix to Postfix Transformation and its evaluation using stack.
7. Implementation of Simple & Circular Queue and its basic operation using Array.
8. Implementation of Single, Double & Circular Linked List and its basic operations.
9. Implementation of different operations on linked list – copy, concatenate, split, reverse, count etc.
10. Implementation of Stack using Linked List.
11. Implementation of Queue using single & Circular linked list.
12. Implementation of Complete Binary Tree using arrays.
13. Implementation of Heap Tree and Heap sort using array.
14. Implementation of Binary Search Tree (BST) and its recursive traversal methods using linked list.
15. Implementation of non-recursive BST traversals using stack and queue.

### List of some advance Experiments:

1. Implementation of sparse matrix.
2. Implementation of two stack in one Array.
3. Implementation of Stack using two Queues.
4. Implementation of Queue using two Stacks.
5. Implementation of Fibonacci Search.
6. Implementation of sorting algorithms: Radix, Bucket & Shell Sort.
7. Implementation to search for an element in linked list in one traversal
8. Implementation to check a cycle and merging point in a linked list.
9. Implementation of Skip list and cloning a list.
10. Implementation of a threaded binary tree & its traversal.
11. Implementations of AVL, Red-Black & B tree.
12. Implementations of DFS & BFS algorithms.
13. Implementation of Huffman's Tree & Huffman Code.
14. Implementation of Spanning tree algorithms: Prim's Algorithm & Kruskal's Algorithm.
15. Implementation of Shortest path algorithms: Bellman Ford's Algorithm & Dijkstra's Algorithm.