**Course Contents:**

**Unit 1**

Basic Concepts: Pointers and Dynamic Memory Allocation, Algorithm Specification, Data Abstraction. Arrays and Structures: Arrays, Dynamically Allocated Arrays, Structures and Unions, Polynomials, Sparse Matrices, Representation of Multidimensional Arrays, Strings.

**Unit 2**

Stacks And Queues: Stacks, Stacks Using Dynamic Arrays, Queues, Circular Queues Using Dynamic Arrays, Evaluation of Expressions, Multiple Stacks and Queues

**Unit 3**

Linked Lists: Singly Linked lists and Chains, Representing Chains in C, Linked Stacks and Queues, Polynomials, Additional List operations, Sparse Matrices, Doubly Linked Lists.

**Unit 4**

Trees: Introduction, Binary Trees, Binary Tree Traversals, Additional Binary Tree Operations, Threaded Binary Trees, Heaps, Binary Search Trees, Selection Trees, Forests, Representation of Disjoint Sets, Counting Binary Trees.

**Unit 5**

Graphs: The Graph Abstract Data Type, Elementary Graph Operations. Priority Queues: Single- and Double-Ended Priority Queues, Leftist Trees. Efficient Binary Search Trees: AVL Trees.

**Text Books:**

1. Horowitz, Sahni, Anderson-Freed: Fundamentals of Data Structures in C, 2nd Edition, Universities Press, 2008.

**Reference Books:**

1. Yedidyah, Augenstein, Tannenbaum: Data Structures Using C and C++, 2nd Edition, Pearson Education, 2003.

2. Data Structures, Seynour Lipschutz and GAV Pai, Schaum’s Outlines, McGraw Hill, 2008.

3. Richard F. Gilberg and Behrouz A. Forouzan: Data Structures A Pseudocode Approach with C, Cengage Learning, 2005

**Course Delivery:**

The course will be delivered through lectures, class room interaction and programming exercises