

Course Title	Data Structures and Algorithms Lab
Course Code	CC-213L
Credit Hours	1
Category	Computing core
Prerequisite	Object Oriented Programming
Co-Requisite	None
Follow-up	Operating Systems, Design & Analysis of Algorithms
Course Description	Implementation: the concepts studied in “CC-213 Data Structures and Algorithms”, Performance Analysis/Measurement, Sparse Matrices, N-Dimensional Arrays. Stack: Expressions Evaluation. Recursion: Backtracking. Queue: Double Ended Queue, Self-Referencing Classes, and Dynamic Memory Allocation. Linked List: Singly Linked Lists, Circular Lists, Linked Stacks and Queues (Double Ended List), Doubly Linked Lists. Trees: Binary Trees, Binary Search Tree, Introduction to Height Balanced and AVL Trees, Heaps and Heaps as Priority Queues, Double Ended Priority Queue. Searching: Linear Search, Binary Search, and Types of Indexing. Hashing: Hash Functions, Collision Resolution: Open Hashing, Chaining. Sorting: Logical and Algorithmic Implementation of Selection, Bubble, Insertion, Shell, Radix, Merge, Quick, Heap Sort. Graphs: Graph terminology, Adjacency List and Adjacency Matrix, and Adjacency list representation of Graph. Elementary Graph Operations: Breadth-First Search and Depth First Search, Spanning Trees (BFSST, DFSST).
Text Book(s)	Ellis Horowitz, Sartaj Sahni, D. Mehta, Fundamentals of Data Structures in C++, 2 nd Ed., Computer Science Press, 1995. ISBN 81-7808-792-8.
Reference Material	D. Samanta, Classic Data Structures, Prentice Hall, 2001, ISBN: 812033731X. Mark Allen Weiss, Data Structure and Algorithms in C++, 3 rd Ed., Pearson Education, 2006, ISBN: 978-0321441461. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, Introduction to Algorithms, 2 nd Ed, MIT Press, 2001, ISBN 0-07-013151-1.