CS010 403: Data Structures and Algorithms

Teaching scheme Credits: 4

Module I (10 hours)

Principles of programming – System Life Cycle - Performance Analysis and Measurements- Time and Space complexity-Complexity calculation of simple algorithms. Hashing:- Static Hashing-Hash Tables-Different Hash Functions-Mid Square - Division-Folding-Digit Analysis, Collision-Collision Resolution Techniques.

Module II (12hours)

Study of basic data structures – Arrays- Structures-Sparse matrix – Stacks – Queues- Circular queues-Priority queues - Dqueues. Evaluation of expressions – Polynomial representation using arrays.

Module III (12hours)

Linked Lists - Linked stacks and queues - Doubly linked lists – Polynomial representation using linked lists, Garbage collection and Compaction.

Module IV (14 hours)

Trees - Binary Trees – Tree Traversal – Inorder - Preorder and Postorder, Search trees - AVL Trees, height balanced trees, Multiway search Trees- B Trees-B+ Trees. Graphs – Depth first and breadth first search.

Module V (12 hours)

Sorting methods: Selection sort, Bubble sort, Insertion sort, Merge sort, Quick sort, Heap sort, Radix sort, External sorting methods.