CS 2005 : Data Structures and Algorithms

Winter 2016. Lecture Room: ELHC 203/ELHC 401.
Timings: Mon 8:00 – 9:00, Tue: 10:15-11:15, Thu: 11:15-12:15, Fri: 9:00-10.
Instructor: K. Murali Krishnan, A. Ibrahim.

Course Outcomes:

At the end of the course, the student is expected to:
1. Perform asymptotic time and space complexity of simple algorithms.
2. Analyze the asymptotic performance of standard data structures and write algorithms to mainpulate these data structures.
3. Select appropriate data structures for standard algorithmic solutions to graph problems.

Summary of Contents Covered:

Complexity Analysis: Time and space complexity analysis, introduction to recurrances, worst, and average case analysis.

Data Structures: Linked Lists, Stack, Queue, Heap, priority Queue, Hashing, Binary Search Tree, External storage data structures – B.Tree.

Searching and Sorting: Binary Search, Quick Sort, Heap sort, External Sorting – Merge sort.

Graph Algorithms: DFS, BFS, Kruskal, Prim, Dijkstra, Floyd algorithms and application of data structures to improve algorithmic efficiency.

Storage Allocation: Introduction to run-time and dynamic storage allocation methods.

Evaluation:

There will be two internal examinations, each exam carrying 30% weightage and a final exam carrying 40% weightage. Assignement questions will be given to the students and the students are expected to have solved the assignment problems before appearing for the tests. However, no explicit weightage will be given for the assignments.