

<p style="text-align: center;">CS5234 (Semester 1, 2002) Combinatorial and Graph Algorithms</p>

READING ASSIGNMENTS

(according to the topics)

You are expected to read the material before the corresponding classes.

A. ADVANCED DATA STRUCTURES

- **Heaps** and Graph Algorithms: *Shortest Path and MST*
(Ch. 6 of [Weiss92]; Ch. 24 of [CLRS], Ch. 3 of [Tar83])
- **Leftist Heaps** and $O(m \lg \lg n)$ *MST Alg.*
(Ch. 3 & 6 of [Tar83]; pp. 149-153, 159 of [Knu73])
- Amortized Analysis and **Binomial Heaps**
(Ch. 17 & 19 of [CLRS])
- **F-Heaps** & Fast Shortest Path Alg.
(Ch. 20 of [CLRS], [FrTa87])

B. NP-COMPLETENESS

- NP-completeness: Cook's Theorem, Reduction
(Ch. 9 of [RND]; Ch. 1-3 of [GJ])
- Approximation Algorithms
(Ch. 4.3 of [RND], Ch 35 of [CLRS])
- Local Search Methods
(Ch. 4.3 of [RND], Ch 35 of [CLRS])

C. COMBINATORIAL OPTIMIZATION

- Maximum Matching: Algorithms and Applications
(Ch. 11 of [PTW]; Ch. 10 of [PS82])
- Network Flow Problems: Algorithms and Applications
(Ch. 27 of [CLRS])
- **CASE STUDIES**: TSP, Graph Partitioning, Knapsack Problem.