CSE 102
Introduction to Analysis of Algorithms
Outline of Topics and Reading Schedule

I. Lectures 1-5: Mathematical Preliminaries
   • Asymptotic Growth Rates (Handout, CLRS 3.1)
   • Common Functions (Handout, CLRS 3.2)
   • Induction Proofs (Handout)
   • Recurrence Relations (Handout, CLRS 4.1-4.6)
   • Graph Theory (Handout, CLRS B.4-B.5)

II. Lectures 6-8: Divide and Conquer Algorithms
   • Searching, Sorting (CLRS 7)
   • Selection (CLRS 9)
   • Non-Comparison sorts (CLRS 8)
   • Strassen's Algorithm (CLRS 4.2)

III. Lectures 9-11: Dynamic Programming (CLRS 15)
   • Coin Changing Problem (Brassard & Bratley 8.2)
   • Discrete Knapsack Problem (Brassard & Bratley 8.4)
   • Matrix Chain Multiplication (CLRS 15.2)
   • All-Pairs Shortest Paths Problem (CLRS 25)

IV. Lectures 12-14: Greedy Algorithms (CLRS 16)
   • Continuous Knapsack Problem (Brassard & Bratley 6.5)
   • Minimum Weight Spanning Trees (CLRS 23)
   • Matroids (CLRS 16.4-16.5)

V. Lectures 15-17: Lower Bounds and Computational Complexity
   • Decision Trees (CLRS 8.1)
   • Adversary Arguments (Handout)

VI. Lectures 18-20: Ammortized Analysis
   • Fibonacci Heaps (CLRS 19)
   • Disjoint Sets (CLRS 21)