Algorithms and Theory of Computation
Syllabus

Effective: August 2015

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2. Divide and conquer algorithms: quick sort, insertion sort, heap sort, linear time selection. (BB:7, CLRS:4 & 6-8)

3. Union-find problems, priority queues. (CLRS:6.5 & 19, 21)


5. Dynamic Programming. 0-1 knapsack problems, shortest paths, optimal binary search trees, matrix chain products. (BB:8, CLRS:15)

6. Graph Algorithms: breadth-first, depth-first-search, topological sort, strongly connected components, All pair shortest paths, Maximum flow & Branch and Bound. (BB:9, CLRS:22, 24, 25, 26)

7. Probabilistic Analysis and Randomized Algorithms. (CLRS:5)

8. NP-completeness: the classes P and NP, NP-complete problems, Cook’s Theorem, Hamiltonian Circuit and other examples of NP-complete problems, dealing with NP-complete problems. NP-hard problems. (CRLS:34, BB:12.5)
Algorithms and Theory Bibliography
