

6.006 at a Glance - Introduction to Algorithms. Profs. Erik Demaine, Piotr Indyk, Manolis Kellis. Spring 2011

Unit	Pset	Week	Date		Lecture (Tuesdays and Thursdays)		Recitation (Wed and Fri)	
Intro	PS1	1	Tue Feb 01	1	Introduction and Document Distance	1	Python and Asymptotic Complexity	
Binary	Out: 2/1		Thu Feb 03	2	Peak Finding Problem	2	Peak Finding correctness & analysis	
Search	Due: Mon 2/14	2	Tue Feb 08	3	Scheduling and Binary Search Trees	3	Binary Search Tree Operations	
Trees	HW lab: Sun 2/13		Thu Feb 10	4	Balanced Binary Search Trees	4	Rotations and AVL tree deletions	
Hashing	PS2 Out: 2/15 Due: Mon 2/28 HW lab: Sun 2/27	3	Tue Feb 15	5	Hashing I : Chaining, Hash Functions	5	Hash recipes, collisions, Python dicts	
			Thu Feb 17	6	Hashing II : Table Doubling, Rolling Hash	6	Probability review, Pattern matching	
	4	Tue Feb 22	-	President's Day - Monday Schedule - No Class	-	No recitation		
		Thu Feb 24	7	Hashing III : Open Addressing	7	Universal Hashing, Perfect Hashing		
Sorting	PS3. Out: 3/1 Due: Mon 3/7 HW lab: Sun 3/6	5	Tue Mar 01	8	Sorting I : Insertion & Merge Sort, Master Theorem	8	Proof of Master Theorem, Examples	
			Thu Mar 03	9	Sorting II : Heaps	9	Heap Operations	
	6	Tue Mar 08	10	Sorting III: Lower Bounds, Counting Sort, Radix Sort	10	Models of computation		
		Wed Mar 09	Q1	Quiz 1 in class at 7:30pm. Covers L1-R10. Review Session on Tue 3/8 at 7:30pm.				
Graphs and Search	PS4. Out: 3/10 Due: Fri 3/18 HW lab: W 3/16	7	Thu Mar 10	11	Searching I: Graph Representation, Depth-1st Search	11	Strongly connected components	
			Tue Mar 15	12	Searching II: Breadth-1st Search, Topological Sort	12	Rubik's Cube Solving	
			Thu Mar 17	13	Searching III: Games, Network properties, Motifs	13	Subgraph isomorphism	
Shortest Paths	PS5 Out: 3/29 Due: Mon 4/11 HW lab: Sun 4/10	8	Tue Mar 29	14	Shortest Paths I: Introduction, Bellman-Ford	14	Relaxation algorithms	
			Thu Mar 31	15	Shortest Paths II: Bellman-Ford, DAGs	15	Shortest Path applications	
	9	Tue Apr 05	16	Shortest Paths III: Dijkstra	16	Speeding up Dijkstra's algorithm		
		Thu Apr 07	17	Graph applications, Genome Assembly	17	Euler Tours		
Dynamic Programming	PS6 Out: Tue 4/12 Due: Fri 4/29 HW lab: W 4/27	10	Tue Apr 12	18	DP I: Memoization, Fibonacci, Crazy Eights	18	Limits of dynamic programming	
			Wed Apr 13	Q2	Quiz 2 in class at 7:30pm. Covers L11-R17. Review Session on Tue 4/13 at 7:30pm.			
			Thu Apr 14	19	DP II: Shortest Paths, Genome sequence alignment	19	Edit Distance, LCS, cost functions	
		11	Tue Apr 19	-	Patriot's Day - Monday and Tuesday Off	-	No recitation	
			Thu Apr 21	20	DP III: Text Justification, Knapsack	20	Saving Princess Peach	
Numbers Pictures (NP)	PS7 out Thu 4/28 Due: Fri 5/6 HW lab: Wed 5/4	12	Tue Apr 26	21	DP IV: Piano Fingering, Vertex Cover, Structured DP	21	Phylogeny	
			Thu Apr 28	22	Numerics I - Computing on large numbers	22	Models of computation return!	
			Tue May 3	23	Numerics II - Iterative algorithms, Newton's method	23	Computing the nth digit of π	
			Thu May 5	24	Geometry: Line sweep, Convex Hull	24	Closest pair	
Beyond		14	Tue May 10	25	Complexity classes, and reductions	25	Undecidability of Life	
			Thu May 12	26	Research Directions (15 mins each) + related classes			
		15	Finals week	Q3	Final exam is cumulative L1-L26. Emphasis on L18-L26. Review Session on Fri 5/13 at 3pm			