CS 3510: Algorithms

Spring 2024 Schedule

Day	Topic	Reading	Work Due
Jan 8	Course introduction, algorithms, complexity	Ch 0	
Jan 10	Experimental measurement of algorithms		**Chapter 0**
Jan 12	Experimental measurement of algorithms		**Chapter 0**
Jan 15	*Martin Luther King Jr. Day (no classes)*		
Jan 17	Divide and conquer, Recurrence relations	Ch 2.1,2.2	**Chapter 0**
Jan 19	Mergesort	Ch 2.3	
Jan 22	Selection	Ch 2.3	**Chapter 2**
Jan 24	Matrix multiplication	Ch 2.5	**Chapter 2**
Jan 26	Closest Pair	Ch 2	**Chapter 2**
Jan 29	Graphs and representations	Ch 3.1	**Chapter 2**
Jan 31	Graphs and representations	Ch 3.1	**Chapter 2**
Feb 2	Depth first search and connectivity	Ch 3.2	**Chapter 2**
Feb 2-7	**Examination I**	Ch 0,2	**Examination I**
Feb 5	Directed graph search	Ch 3.3	
Feb 7	Strongly connected components	Ch 3.4	**Chapter 3**
Feb 9	Paths, distances, breadth first search	Ch 4.1-4.3	**Chapter 3**
Feb 12	Dijkstra's algorithm for shortest paths	Ch 4.4	**Chapter 3**
Feb 14	Paths with negative edges	Ch 4.6	**Chapter 3**
Feb 16	Paths in DAGS	Ch 4.7	**Chapter 4**
Feb 19	*President's Day Holiday (no classes)*		
Feb 21	Arrays vs. heaps for priority queues	Ch 4.5	**Chapter 4**
Feb 23	Trees, minimum spanning trees, Cut property	Ch 5.1	**Chapter 4**
Feb 26	Kruskal's algorithm for MST	Ch 5.1	**Chapter 4**
Feb 28	Disjoint sets and amortized analysis	Ch 5.1	**Chapter 4**
Mar 1	Prim's algorithm for MST	Ch 5.1	**Chapter 4**
Feb 29-Mar 6	**Examination II**	Ch 3,4	**Examination II**
Mar 4	Huffman encoding	Ch 5.2	
Mar 6	SAT algorithm with horn formulas	Ch 5.3	**Chapter 5**
Mar 8	Set cover	Ch 5.4	**Chapter 5**
Mar 11-15	*Spring Break (no classes)*		
Mar 18	Shortest paths in DAGs (again)	Ch 6.1	**Chapter 5**
Mar 20	Longest increasing subsequence	Ch 6.2	**Chapter 5**
Mar 22	Edit distance	Ch 6.3	**Chapter 5**
Mar 25	Knapsack	Ch 6.4	**Chapter 5**
Mar 27	Chain matrix multiplication	Ch 6.5	**Chapter 6**
Mar 29	All pairs shortest paths	Ch 6.6	**Chapter 6**
Apr 1	Traveling sales person	Ch 6.6	**Chapter 6**
Apr 3	Practical programming with dynamic programming	Ch 6	**Chapter 6**
Apr 5	Linear programming	Ch 7.1	**Chapter 6**
Apr 8	Duality	Ch 7.4	**Chapter 6**
Apr 8-14	**Examination III**	Ch 5,6	**Examination III**
Apr 10	Simplex	Ch 7.6	
Apr 12	NP-complete problems	Ch 8	**Chapter 7**
Apr 15	Branch-and-bound	Ch 9.1	**Chapter 7**
Apr 17	Approximation algorithms	Ch 9.2	**Chapter 7**
Apr 19	2-Approximation of TSP	Ch 9.2	**Chapter 7**
Apr 22	Local Search for TSP	Ch 9.3	**Chapter 9**
Apr 24	Quantum Algorithms	Ch 10	**Chapter 9**
Apr 26	Reading Day (no classes)		

May 1	Final Exam 9:00 am - 10:50 am	Ch 0,2,3-7,9	**Final Exam**

Class announcements may modify schedule from that listed above.