

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