Course Calendar

September

Wed	5	**Lecture 1** Administrivia; Introduction: analysis of algorithms, insertion sort, mergesort *Reading:* Chapters 1–2.	Quiz 0 out
Fri	7	**Recitation 1** Correctness of algorithms	Quiz 0 due PS 1 out
Mon	10	**Lecture 2** Asymptotic notation. Recurrences: substitution, iteration, master method *Reading:* Chapters 3–4, excluding §4.4	
Tue	11	**Videoconferencing 1** (Singapore only.) *Singapore time:* Wed 12, 7am.	
Wed	12	**Lecture 3** Divide and conquer: Strassen's algorithm, Fibonacci numbers, polynomial multiplication *Reading:* §28.2 and §30.1	
Fri	14	**Recitation 2** Recurrences, sloppiness (Akra-Bazzi) *Reading:* Akra-Bazzi handout	
Mon	17	**STUDENT HOLIDAY — NO CLASSES**	
Wed	19	**Lecture 4** Quicksort, randomized algorithms *Reading:* §5.1–5.3, Chapter 7	PS 1 due PS 2 out
Fri	21	**Recitation 3** Sorting: Heapsort, dynamic sets, priority queues *Reading:* Chapter 6	
Mon	24	**Lecture 5** Linear-time sorting, lower bounds, counting sort, radix sort *Reading:* §8.1–§8.3	PS 2 due PS 3 out
Tue	25	**Videoconferencing 2** (Singapore only.) *Singapore time:* Wed 26, 7am.	
Wed	26	**Lecture 6** Order statistics, median *Reading:* Chapter 9	

Fri	28	**Recitation 4** Applications of median, bucket sort *Reading:* §8.4	

October

Mon	1	**Lecture 7** Hashing, universal hashing *Reading:* §11.1–§11.3	PS 3 due PS 4 out
Tue	2	**Videoconferencing 3** (Singapore only.) *Singapore time:* Wed 3, 7am.	
Wed	3	**Lecture 8** Hash functions, perfect hashing *Reading:* §11.5	
Fri	5	**Recitation 5** Quiz 1 review	PS 4 due
Mon	8	**COLUMBUS DAY — VACATION**	
Tue	9	Graded PS 4 available by noon	
Wed	10	**Quiz 1** in class	Quiz 1
Fri	12	**Recitation 6** Binary search trees, tree walks *Reading:* §12.1–§12.3	
Mon	15	**Lecture 9** Relation of BST's to quicksort; analysis of random BST *Reading:* §12.4	PS 5 out
Tue	16	**Videoconferencing 4** (Singapore only.) *Singapore time:* Wed 17, 7am.	
Wed	17	**Lecture 10** Red-black trees, rotations, insertions, deletions *Reading:* Chapter 13	
Fri	19	**Recitation 7** 2-3 trees, B-trees *Reading:* §18.1–18.2	
Mon	22	**Lecture 11** Augmenting data structures, interval trees *Reading:* Chapter 14	PS 5 due PS 6 out
Tue	23	**Videoconferencing 5** (Singapore only.) *Singapore time:* Wed 24, 7am.	

Wed	24	**Lecture 12** Computational geometry, range queries *Reading:* §33.1–33.2	
Fri	26	**Recitation 8** Convex hulls *Reading:* §33.3	
Mon	29	**Lecture 13** van Emde Boas, priority queues *Reading:* van Emde Boas handout	PS 6 due PS 7 out
Tue	30	**Videoconferencing 6** (Singapore only.) *Singapore time:* Wed 31, 8am **(Note the time change)**.	
Wed	31	**Lecture 14** Amortized algorithms, table doubling, potential method *Reading:* Chapter 17	

November

Fri	2	**Recitation 9** Competitive analysis, self-organizing lists *Reading:* Sleator-Tarjan handout	
Mon	5	**Lecture 15** Dynamic programming, longest common subsequence, optimal BST *Reading:* Chapter 15	PS 7 due PS 8 out
Tue	6	**Videoconferencing 7** (Singapore only.) *Singapore time:* Wed 7, 8am.	
Wed	7	**Lecture 16** Greedy algorithms, minimum spanning trees *Reading:* §16.1–16.3 and Chapter 23	
Fri	9	**Recitation 10** Examples of greedy algorithms and dynamic programming	
Mon	12	**VETERANS DAY — HOLIDAY**	
Wed	14	**Lecture 17** Shortest paths, Dijkstra's algorithm, breadth-first search *Reading:* §22.1, §22.2; pp. 580–587, §24.3	PS 8 due PS 9 out
Fri	16	**Recitation 11** Depth-first search, edge classification *Reading:* §22.3–22.5	

Mon	19	**Lecture 18** Shortest paths, Bellman-Ford, shortest paths in DAGs, difference constraints *Reading:* §24.1, §24.2, §24.4, §24.5	
Tue	20	**Videoconferencing 8** (Singapore only.) *Singapore time:* Wed 21, 8am.	
Wed	21	**Lecture 19** All-pairs shortest paths, dynamic programming, Floyd-Warshall, Johnson's algorithm *Reading:* Chapter 25	PS 9 due
Fri	23	**THANKSGIVING VACATION — NO CLASSES**	
Mon	26	**Lecture 20** Disjoint-set data structure *Reading:* Chapter 21	
Tue	27	Graded PS 9 available by NOON	
Tue	27	**Videoconferencing 9** (Singapore only.) *Singapore time:* Wed 28, 8am.	
Wed	28	**Lecture 21** Take-home **Quiz 2** handed out; ethics, problem solving **(mandatory attendance)**	Quiz 2 out
Fri	30	**NO RECITATION** - work on Quiz 2!	

December

Mon	3	**NO LECTURE** Algorithmic programming contest begins (optional)	Quiz 2 due
Wed	5	**Lecture 22** Network flow, max-flow min-cut theorem *Reading:* §26.1–26.2	PS 10 out (optional)
Fri	7	**Recitation 12** Matchmaking *Reading:* §26.3	
Mon	10	**Lecture 23** Network flow, Edmonds-Karp algorithm	Contest entries due
Tue	11	**Videoconferencing 10** (Singapore only.) *Singapore time:* Wed 12, 8am.	

Wed	12	**Lecture 24** Diagnostic quiz in class; contest awards; discussion of follow-on courses	PS 10 solns out