Course Calendar

February

Tue	4	**Lecture 1** Administrivia; Introduction: design and analysis of algorithms, insertion sort, mergesort *Reading:* Chapters 1–2.	
Thu	6	**Lecture 2** Asymptotic notation. Recurrences: substitution, iteration, master method *Reading:* Chapters 3–4, excluding §4.4	PS 1 out
Fri	7	**Recitation 1** Correctness of algorithms	
Tue	11	**Lecture 3** Divide and conquer: Strassen's algorithm, polynomial multiplication *Reading:* §28.2 and §30.1	
Thu	13	**Lecture 4** Quicksort, randomized algorithms *Reading:* §5.1–5.3, Chapter 7	PS 1 due PS 2 out
Fri	14	**Recitation 2** Randomized algorithms	
Tue	18	**Student Holiday — No Classes**	
Thu	20	**Lecture 5** Linear-time sorting (counting sort, radix sort), lower bounds *Reading:* §8.1–§8.3	
Fri	21	**Recitation 3** Sorting, lower bounds	
Tue	25	**Lecture 6** Order statistics, median *Reading:* Chapter 9	
Thu	27	**Lecture 7** Hashing *Reading:* §11.1–§11.3	PS 2 due PS 3 out
Fri	28	**Recitation 4** Quiz 1 review	

March

Tue	4	**Quiz 1** in class	
Thu	6	**Lecture 8** Binary search trees, tree walks *Reading:* §12.1–§12.3	
Fri	7	**Recitation 5** Random BST's, relation to quicksort *Reading:* §12.4	
Tue	11	**Lecture 9** 2-3 trees, B-trees *Reading:* §18.1–18.2	
Thu	13	**Lecture 10** Amortized analysis: Disjoint sets *Reading:* Chapter 17	
Fri	14	**Recitation 6** Augmented data structures *Reading:* Chapter 14	
Tue	18	**Lecture 11** Greedy algorithms, minimum spanning trees, Kruskal, Prim *Reading:* §16.1–16.3 and Chapter 23	
Thu	20	**Lecture 12** Dynamic programming, longest common subsequence, optimal BST *Reading:* Chapter 15	PS 3 due PS 4 out
Fri	21	**Recitation 7** Dynamic programming vs greedy	

April

Tue	1	**Lecture 13** Shortest paths, Dijkstra's algorithm, breadth-first search *Reading:* §22.1, §22.2; pp. 580–587, §24.3	
Thu	3	**Lecture 14** Depth-first search, connected components *Reading:* §22.3–22.5	PS 4 due PS 5 out
Fri	4	**Recitation 8** BFS, DFS	
Tue	8	**Lecture 15** Network flow, max-flow min-cut theorem, Ford-Fulkerson *Reading:* §26.1–26.2	
Thu	10	**Lecture 16** Pattern matching *Reading:* Chapter 32	PS 5 due PS 6 out
Fri	11	**Recitation 9** Quiz 2 review	
Tue	15	**Quiz 2** in class	
Thu	17	**Lecture 17** Fast Fourier transforms and polynomial multiplication *Reading:* §30.1–30.2	
Fri	18	**Recitation 10** Applications of FFT	
Tue	22	**Student Holiday — No Classes**	
Thu	24	**Lecture 18** Computational number theory *Reading:* §31.8	PS 6 due PS 7 out
Fri	25	**Recitation 11**	
Tue	29	**Lecture 19** Computational geometry I *Reading:* §33.2	

May

Thu	1	**Lecture 20** Computational geometry II *Reading:* §33.4	
Fri	2	**Recitation 12** Computational geometry	
Tue	6	**Lecture 21** NP-completeness I, polynomial-time reductions *Reading:* §34.1–34.2	
Thu	8	**Lecture 22** NP-completeness II	PS 7 due
Fri	9	**Recitation 13** Example reductions	
Tue	13	**Lecture 23** Approximation algorithms *Reading:* §35.1	
Thu	15	**Lecture 24** Parallel algorithms *Reading:* §27	