

## Course Calendar

### September

Wed	4	<b>Lecture 1</b> Administrivia; Introduction: design and analysis of algorithms, insertion sort, mergesort <i>Reading:</i> Chapters 1–2.	
Fri	6	<b>Recitation 1</b> Correctness of algorithms <i>Reading:</i> None	PS 1 out
Mon	9	<b>Lecture 2</b> Asymptotic notation. Recurrences: substitution, iteration, master method <i>Reading:</i> Chapters 3–4, excluding §4.4	
Wed	11	<b>Lecture 3</b> Divide and conquer: Strassen’s algorithm, integer multiplication, polynomial multiplication <i>Reading:</i> §28.2 and §30.1	
Fri	13	<b>Recitation 2</b> Recurrences, sloppiness (Akra-Bazzi) <i>Reading:</i> Akra-Bazzi handout	
Mon	16	<b>Lecture 4</b> Quicksort, randomized algorithms <i>Reading:</i> §5.1–5.3, Chapter 7	PS 1 due PS 2 out
Wed	18	<b>Lecture 5</b> Linear-time sorting, lower bounds, counting sort, radix sort <i>Reading:</i> §8.1–§8.3	
Fri	20	<b>Recitation 3</b> Sorting: Heapsort, dynamic sets, priority queues <i>Reading:</i> Chapter 6	
Mon	23	<b>STUDENT HOLIDAY — NO CLASSES</b>	
Wed	25	<b>Lecture 6</b> Order statistics, median <i>Reading:</i> Chapter 9	PS 2 due PS 3 out
Fri	27	<b>Recitation 4</b> Applications of median, bucket sort <i>Reading:</i> §8.4	
Mon	30	<b>Lecture 7</b> Hashing, universal hashing <i>Reading:</i> §11.1–§11.3	

**October**

Wed	2	<b>Lecture 8</b> Hash functions, perfect hashing <i>Reading:</i> §11.5	
Fri	4	<b>Recitation 5</b> Quiz 1 review	PS 3 due
Mon	7	<b>Quiz 1</b> in class	Quiz 1
Wed	9	<b>Lecture 9</b> Relation of BST's to quicksort; analysis of random BST <i>Reading:</i> §12.4	PS 4 out
Fri	11	<b>Recitation 6</b> Binary search trees, tree walks <i>Reading:</i> §12.1–§12.3	
Mon	14	<b>COLUMBUS DAY — VACATION</b>	
Wed	16	<b>Lecture 10</b> 2-3 trees, B-trees <i>Reading:</i> §18.1–18.2	
Fri	18	<b>Recitation 7</b> Red-black trees, rotations, insertions, deletions <i>Reading:</i> Chapter 13	
Mon	21	<b>Lecture 11</b> Skip lists <i>Reading:</i> Possible handout	PS 4 due PS 5 out
Wed	23	<b>Lecture 12</b> Augmenting data structures, interval trees <i>Reading:</i> Chapter 14	
Fri	25	<b>Recitation 8</b> Examples of augmentation <i>Reading:</i> Chapter 14	
Mon	28	<b>Lecture 13</b> Computational geometry, range queries <i>Reading:</i> §33.1–33.2	
Wed	30	<b>Lecture 14</b> van Emde Boas, priority queues <i>Reading:</i> van Emde Boas handout	PS 5 due PS 6 out

**November**

Fri	1	<b>Recitation 9</b> Convex hulls <i>Reading:</i> §33.3	
Mon	4	<b>Lecture 15</b> Dynamic programming, longest common subsequence, optimal BST <i>Reading:</i> Chapter 15	
Wed	6	<b>Lecture 16</b> Greedy algorithms, minimum spanning trees <i>Reading:</i> §16.1–16.3 and Chapter 23	
Fri	8	<b>Recitation 10</b> Examples of greedy algorithms and dynamic programming	
Mon	11	<b>VETERANS DAY — HOLIDAY</b>	
Wed	13	<b>Lecture 17</b> Fast Fourier transforms <i>Reading:</i> §30.1–30.2	PS 6 due
Fri	15	<b>Recitation 11</b> Quiz 2 review	
Mon	18	<b>Quiz 2</b> in class	
Wed	20	<b>Lecture 18</b> Amortized algorithms, table doubling, potential method <i>Reading:</i> Chapter 17	PS 7 out
Fri	22	<b>Recitation 12</b> Competitive analysis, self-organizing lists <i>Reading:</i> possible Sleator-Tarjan handout	
Mon	25	<b>Lecture 19</b> Shortest paths, Dijkstra’s algorithm, breadth-first search <i>Reading:</i> §22.1, §22.2; pp. 580–587, §24.3	
Wed	27	<b>Lecture 20</b> Shortest paths, Bellman-Ford, shortest paths in DAGs, difference constraints <i>Reading:</i> §24.1, §24.2, §24.4, §24.5	PS 7 due
Fri	29	<b>THANKSGIVING VACATION — NO CLASSES</b>	

**December**

Mon	2	<b>Lecture 21</b> All-pairs shortest paths, dynamic programming, Floyd-Warshall, Johnson's algorithm <i>Reading:</i> Chapter 25	PS 8 out
Wed	4	<b>Lecture 22</b> Network flow, max-flow min-cut theorem, Ford-Fulkerson <i>Reading:</i> §26.1–26.2	
Fri	6	<b>Recitation 13</b> Matchmaking <i>Reading:</i> §26.3	PS 8 due PS 9 out (optional)
Mon	9	<b>Lecture 23</b> NP-completeness, polynomial-time reductions <i>Reading:</i> §34.1–34.2	
Wed	11	<b>Lecture 24</b> Approximation algorithms; discussion of follow-on courses <i>Reading:</i> §34.3–34.5	PS 9 solns out