CS535: Algorithm Design and Analysis
Coverage for Finals

- Know the different sorting algorithms and their runtimes: heap-sort, merge-sort, quick-sort, bucket-sort, radix-sort.
- The lower bound on comparison-based sorting.
- The algorithms for selection – finding the $i$th smallest number.
- Fundamentals on algorithm design – greedy methods, divide and conquer and dynamic programming.
- Graphs and the different ways they can be represented.
- Basic graph traversal algorithms (BFS and DFS), and how they can be used to solve simple problems on graphs (e.g., detecting cycles, finding connected components, etc.)
- Algorithms on directed graphs: determining strong connectivity, acyclicity.
- Shortest path algorithms: DAGs and Dijkstra’s algorithm, and how these can be modified to find other kinds of graphs. Make sure you also know their runtimes.