CS 787
Fall 2024
Reference Books

The following books may be useful for supplementing the lectures. Items marked (*) can be accessed on-line through UW Libraries.

1. Cormen, Leiserson, Rivest, and Stein, Introduction to Algorithms (*).

   Encyclopedic and relatively free of logical dependencies, so you can profitably open it up just about anywhere and start reading.

2. Lawler, Combinatorial Optimization: Networks and Matroids.

   Tired of ad hoc approaches to an ever-growing list of combinatorial problems? This is the book for you. Emphasizes general methods (e.g. network flow, matroid intersection).

3. Papaditriou and Steiglitz, Combinatorial Optimization: Algorithms and Complexity.

   Surveys the border between discrete optimization and ideas surrounding the theory of NP-completeness.

4. Tarjan, Data Structures and Network Algorithms (*).

   Shows how matching data structures to a problem's information needs can lead to improved performance.

5. Ford and Fulkerson, Flows in Networks (*).

   Arguably the first discrete algorithms book. Shows how many problems can be reduced to the one of the title.

6. Motwani and Raghavan, Randomized Algorithms (*).

   Recent algorithms book with randomization as the unifying concept.

7. Vazirani, Approximation Algorithms (* – French edition).

   A tour of combinatorial optimization with emphasis on algorithms for approximate solutions to NP-hard problems.

8. Chvatal, Linear Programming.

   Introductory text with good coverage of combinatorial applications.

9. Boyd and Vandenberge, Convex Optimization.

   In nonlinear optimization, convexity is the "litmus test" for practicality. An introduction to this important topic, with many examples.