
Prerequisites: Algorithms I, Complexity.

Transparencies: The transparencies used during the course all appear in the course webpage.

Course Contents:
More advanced problems in methods studied at Algorithms I. New algorithmic methods, e.g. linear programming. Different Algorithmic paradigms, e.g. on-line algorithms, randomized algorithms, approximation algorithms, the streaming model. New topics, e.g. pattern matching.

Syllabus: The following is a tentative schedule:
weeks 1-2 : Bin Packing approximations and Bin packing PTAS.
week 3 : Advanced Dynamic Programming – MHT’s.
weeks 4-5 : LP (definitions, hardness, relaxation, forms, duality).
week 6 : On-line algorithms (k-server, LRU)
week 7 : Randomized algorithms (Karger’s algorithm)
week 8 : Witness table algorithm for string matching.
week 9 : Convolutions for mismatches.
week 10 : Indexing.
week 11-13 : Streaming, group testing.

Topics that will be covered in tutorial:
Suffix tree construction.
LCA
Landau-Vishkin's k-error algorithm.

Grade: Final exam. Weekly assignments will be given for practice, as well as selected solutions.