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Algorithms II 89-322

Instructor: Prof. *Amihood Amir*   03-531-8770   amir@cs.biu.ac.il

Webpage: http://u.cs.biu.ac.il/~amir/AlgII/alg2.html
Office hours: by appointment

Text: Any advanced algorithms book. Example: Cormen, Leiserson, Rivest and Stein (2nd edition). Class notes.

Prerequisites: Algorithms I, Complexity.

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

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.