

Algorithms - syllabus for the exam

- Greedy algorithms, matroids - everything. (In the book, the whole chapter).
- Dynamic programming - everything except the Traveling Salesman Problem with bitonic tours. (In the book, the whole chapter except optimal polygon triangulation).
- Approximation algorithms - everything, including the use of linear programming and probability but without derandomization with k -wise independent sample spaces. (In the book, the whole chapter).
- Network flows - everything, including applications to problems on graphs (e.g. matching), but without networks on which the algorithm doesn't halt (i.e. Zwick's paper). (In the book, the whole chapter excluding the sections about preflow-push and lift-to-front).
- FFT and polynomials multiplication - everything, including applications of polynomials multiplication. (In the book, the whole chapter except the section about efficient FFT implementations).
- GCD and modular operations - everything. (In the book, the whole chapter except integer factorization).
- Cryptography - everything, including RSA and Rabin's encryption. (In the book, the relevant section, and a link in the web-site for Rabin's encryption).
- Primality testing - everything. (In the book, the relevant section).
- Operations on matrices - everything, including finding a rank 1 matrix nearest to a given positive semidefinite matrix in l_2 norm. (In the book, the relevant chapter excluding the sections about matrix multiplication. For SVD see lecture notes from last year).