CS 600 Analysis of Algorithms Syllabus

The syllabus below describes a recent offering of the course, but it may not be completely up to date. For current details about this course, please contact the course coordinator. Course coordinators are listed on the course listing for undergraduate courses and graduate courses.

Text Books

Required
Cormen, Leiserson, Rivest, and Stein , *Introduction to Algorithms* , 3rd ed., 2009

Week-by-Week Schedule

Week	Topics Covered	Reading	Assignments
1	Analysis of Algorithms, Insertion Sort, Mergesort	Chaps 1-2	
2	Asymptotic Notation, Recurrences, Substitution, Master Method	Chaps 3-4	
3	Divide-and-Conquer: Strassen, Fibonacci, Polynomial Multiplication	Sections 28.2 and 30.1	
4	Quicksort, randomized algorithms	Sections 5.1-5.3 Chapter 7	Sorting comparisons
5	Linear-time Sorting: Lower Bounds, Counting Sort, Radix Sort		
6	Order Statistics, Medians		
7	Applications of Median, Bucketsort	Sections 9.1-9.3	
8	Binary Search Trees, Red Black Trees	Chapters 12-13.	
9	Dynamic programming	Chapter 15	
10	Greedy algorithms, minimum spanning trees	Chapter 16	Huffman Coding
11	Graph searching, BFS, DFS	Chapters 22, 23	
12	Shortest Paths: Bellman Ford, Dijkstra's algorithms.	Chapter 24	Wordgraph
13	Shortest paths II: all-pairs Shortest Paths, Matrix Multiplication, Floyd-Warshall, Johnson	Chapter 25	
14	Review.		