600.363 (Intro Algos)-463(Algos I)

Instructor

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Office Hours: Mon, Fri 2:30-3:45pm
Voluntary Help Class: Fri 4-5pm

Grading

One Assignment/week (20% of the grade)
Late submissions after the solutions are posted will not be accepted. Late submissions will be graded for half the credit.
Two Midsemester Examinations (25% of the grade per exam)
Final Examination (30% of the grade)

First Midsemester examination Oct 11
Second Midsemester examination Nov 11
Final examination (Wed) Dec. 18, 9-12 noon

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Text Book

Cormen, Leiserson, Rivest and Stein: Introduction to Algorithms, The MIT Press, Cambridge, Mass. (Third Edition; but any edition is adequate).

Course Content

The course emphasizes tools for the design of algorithms. The topics wil be covered in approximately the same order as in CLRS. At the end of each class, the particular subsections of interest will be listed. The following list is a general guide

- Algorithm specification, correctness, speed, space (Chaps 2,3)

- Design Techniques

  Divide-and-conquer (Chap 4); Dynamic Programming (Chap 15); Greedy (Chap 16); Randomization (very cursory introduction initially)

- Data Structures (Chaps 10,12,13,18,21)

  Stacks, queues, lists, trees, balanced search trees, 2-3 trees, B trees, red-black trees

- Sorting and order statistics (Chaps 6,9)

  Heap sort, k^{th}-smallest element

- Graph algorithms (Chaps 22-26)

- String matching (Chap 32)

- NP-completeness (Chap 34)

- Approximation algorithms (Chap 35)

- Analysis of randomized algorithms