V22.0310 Basic Algorithms, Fall 07

Time	Tues, Thurs 3:30-4:45
Place	wwh102
Instructor	Prof. Joel Spencer, wwh 829
Phone	x8-3219
email	spencer@cims.nyu.edu
Office Hours	Wed 1-2:30
Recitation	Wed 9:30-10:45
Recitation Inst	Marc Millstone
Text	Algorithm Design by Jon Kleinberg and Éva Tardos
Midterm	Oct 9 (now definite), in class
Final Exam	Thursday, Dec 20, 4-5:50, wwh102

Homework will generally be given out on Thursday, due back the following Tuesday. Submission of homework (unless clearly marked otherwise) is *mandatory.*

The final grade will be based 60% on the Final Exam, 30% on the Midterm and 10% on the Homework. But grades are not determined by an algorithm, subjective factors such as class participation (in both lecture and recitation) are a "fudge factor" that can carry great weight.

Midterm and Final exam dates are fixed. No Excuses!!

Collaboration on the Homework is *encouraged.* Each student must hand in the assignment individually and should write out the solutions in their own words. At the end of the assignment the collaborations must be listed. E.g.: Collaboration with John Smith and Mary Jones.

This course is simultaneously V22.0310.001 Basic Algorithms and V22.0310.002 Basic Algorithms Honors. Students taking the Honors section will be required to do a project. Descriptions of possible projects will be given during the term.

Following is a *rough* outline of the course. We expect to cover these topics but not necessarily in the precise order indicated. Generally we shall entirely skip some sections from each Chapter – this will be made clear in class and this schedule will be updated entirely. Students are not responsible for the skipped sections. In addition there is likely to be some material in class that is not in the text. Students are responsible for all such material.
Chapter 1. Some representative problems. Roughly 3 class sessions

Chapter 2. Basics of asymptotic analysis, running times. Heaps. Roughly 4 sessions
Chapter 3. Graphs. BFS and DFS. Roughly 5 sessions
Chapter 4. When and how to be Greedy. Shortest Paths, MST. Roughly 4 sessions
Chapter 8. P, NP and all that. Roughly 3 sessions
Chapter 5. Divide and Conquer. Mergesort, Recurrances, Counting Inversions, Multiplication. Roughly 4 sessions
Chapter 6. Dynamic Programming. Weighted Interval Scheduling and Sequence Alighnment. Roughly 3 sessions.