CS5451 Introduction to Parallel Computing: Architecture, Algorithms, and Programming

What do you need to succeed in this course (1)

- Solid programming experience in C/C++
  - The class will be programming assignment heavy and you will need to create parallel versions of various algorithms using multiple parallel programming methods.
  - It will be very hard to be learning how to program at the same time.
- Programming things that you need to know:
  - Dynamic memory allocation
  - File I/O
  - Command-line parsing
- You need to know how to debug your programs
  - Reasoning about correctness and also using standard tools
    - gdb

What do you need to succeed in the course (2)

- Solid understanding of key algorithms
  - Dense matrix algorithms
    - Matrix-vector and matrix-matrix multiplication
    - Gaussian elimination
  - Sparse matrix algorithms
    - Matrix-vector multiplication
  - Finding minimum and maximum elements in an array
  - Graph algorithms
    - Depth-first and breadth-first traversals.
    - Maximal independent sets.
    - Minimum spanning tree (Dijkstra and Kruskal's algorithms)
    - Single source shortest path (Dijksta's & Bellman-Ford algorithms)
    - All-pairs shortest path algorithms (Floyds-Warshall)
  - Sorting
    - Quicksort, radix sort, bucket sort, counting sort, sample sort.
  - Search algorithms
    - Best-first and depth-first search
    - A* and IDA* heuristic search
  - Discrete event simulation
    - Conservative and time-warp approaches
  - Longest common subsequence
  - Optimal matrix parenthesization
  - 0/1 Knapsack problem

What do you need to succeed in the course (3)

- Participate in class
  - Attend the lectures
  - Ask questions
  - Keep up with the on-line discussions at the course web-site

What about you?

- Tell me:
  - Who are you, your program, your year in school, and why are you taking this course and what you expect to learn from it.