CSIT571 Computer Algorithms and Analysis - Syllabus

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Textbook *Introduction to Algorithms (Third Edition)*, by Corman, Leiserson, Rivest, and Stein.

- Basic concepts about algorithms, what an algorithm is, how to analyze the efficiency of algorithms.
- Introduction to the techniques for analyzing algorithms, O-notation, Ω-notion and Θ-notion.
- Efficient sorting algorithms: Heapsort and Quicksort. Linear sorting algorithms.
- Greedy algorithms: characterization and classic examples in this category—Minimum spanning trees, Single-source shortest paths, Huffman codes, etc.
- Dynamic programming: Chained matrix multiplication, Shortest paths, Optimal search trees, Traveling salesman problem, etc.
- More algorithms dealing with graphs: Depth-first search and Breath-first search, Maximum-flow problem.
- Introduction to algorithms to solve geometry-natured problems: Point location problems, algorithms for finding convex hulls.
- Introduction to NP-completeness.

Class Schedule

The class meets on Fridays @ 5:30-8:00PM, in Room RI-376.

Office Hours

Fridays @ 4:00–5:30PM; other times by appointment.

Homeworks, Exams and Grades

Programming projects will be assigned at appropriate stages of the course. Students will be asked to implement some algorithms discussed in class. Students will also design their own algorithms for some given problems, using the concepts and techniques learned in the class. Written assignments to analyze algorithms may be given, too. All finished projects will be graded, recorded, and will be part of your final grades.

Final examination will be held on Friday, December 18, 2015. The final course grades are decided based on projects (20%), midterm (40%) and final exams (40%). There will be no makeup exams. So make every effort to attend them.