Course Home Page: http://www.cs.pitt.edu/∼kirk/cs1510/index.html You should check the course home page page regularly. It will contain announcements, assignments, old midterms, solutions, pointers to other useful pages, etc.

Course Group Home Page: http://groups.yahoo.com/group/cs1510/ Course Group Mailing Address: cs1510@yahoogroups.co

The course group is the best place to ask general questions (e.g. a question about a particular homework problem). This group will be monitered by the instructor and the TA, but often other students can provide a quicker answer than the TA or instructor.

Instructor: Kirk Pruhs
Office: 6415 Sennott Square
Phone: 624-8844
Email: kirk@cs.pitt.edu (Please use the course group for general questions about assignments, etc.
Office hours: 1:00 – 3:00 PM Mondays and Wednesdays

TA: Mohamed Aly
Office: 6514 Sennott Square
Phone: 412-624-4613
Email: maly@cs.pitt.edu
Office hours: 2:30 – 4:00 Tuesdays and Thursdays

Text: The official text is *Foundations of Algorithms* by Neapolitan and Naimipour. Any edition of the textbook is fine for this class. You are welcome to consult other texts if you prefer. Some other good texts are authored by: 1) Udi Manber, 2) Brassard and Bratley, 3) Cormen, Leiserson, Rivest, and Stein 4) Sara Baase and 5) Kleinberg and Tardos. Disclaimer: If you choose to not follow the official text, then you may not later complain that you were disadvantaged because you opted not to use the official text.

Prerequisites: Technically CS 1501, and CS 1502. These will not be enforced. But be forewarned, if you take this class without these prerequisites, you forfeit you right to complain that the class is at an inappropriate level.

Course Content: The main goal of the course is to learn to think algorithmically like a "real" computer scientist. This course is different than CS 1501 in that we will be designing our own algorithms, as opposed to learning algorithms. Most class time will be devoted to examples of algorithm design for particularly interesting problems. There will be many written homework problems. Homework is very important. It is expected that most of your learning will come from the process of solving the homework problems. Exams will in large part be based on the homework. We will cover the following topics in the following order:

Deciding the Correctness of Algorithms (Chapter 4)
Dynamic Programming (Chapter 3)
Reductions and NP-completeness (Chapter 9)
Parallel Algorithms (Chapter 10)
Adversarial Lower Bounds (Chapters 7 and 8). We may well run out of time before we get to this.

Grading: Grades will be mostly based on two midterm exams. The first exam will cover greedy algorithms and dynamic programming. The second exam will cover reductions and parallel algorithms (and lower bounds in case that we get that far). The exams usually consist of 5 questions, with 2 correct out of 5 being a C, 3 correct out of 5 being a B, and 4 correct out of 5 being an A. In the past, many students have generally found the course material quite challenging.

Homework scores and class participation will be used to decide borderline grades, particularly borderline C/D grades. The actual scores on your homework assignments won't affect your grade, but whether you made a sincere effort to do the homework will. I will subjectively set the grading scale at the end of the semester. You are not in competition with other students. I have no set numbers of A's, B's etc. I strongly suggest you cooperate with each other to understand the material. This is in all students' best interests.

Everybody gets stuck on some problems. What is important is that you know what you know. I believe that someone who knows that the obvious solutions are incorrect, and thus cannot provide a satisfactory answer deserves more credit than someone who asserts that a wrong solution is correct. Thus my philosophy is to give minimal partial credit for an incorrect answer that the student claims is correct. I do give partial credit if a student partially develops a solution, and then states that he/she is stuck and doesn't know how to proceed.

Also I commonly ask exam questions of the form "Design an efficient algorithm for problem P", where problem P is a small modification to some problem Q that we discussed in class or was assigned as homework. What I want to test is whether you really understand (not just memorized) the solution for Q. If you really understand then you should be able to identify where the solution for Q fails for for P, and hopefully suggest a small modification to yield a solution for P. Thus you should expect little or no partial credit for the regurgitation of the solution for Q.

Homework Policy: You may work with other students on the homework subject to the following two provisos: 1) you must write up your solutions individually, and 2) at the end of each problem write up you must state the names of your collaborators. All homework is due at the start of class on the date due. No late homework is accepted.

The homework will be graded by the TA. One point is give for handing in a sheet of paper with your name on it (this is how I will take attendance). Each problem is graded on a 2 point scale (2 points = looks reasonable; 1 point = some insight is demonstrated; 0 points = no insight). A score of 2 does not necessarily mean that your solution is correct, only that no obvious error was spotted in a brief examination by the TA.

I **strongly** encourage you to do the homework. I understand that it would not be to difficult to find solutions to the problems on the www or elsewhere. I strongly encourage you to try to solve the problems on your own, or with your classmates. You learn by doing, not by watching others do. Further, most questions on the final exam will be variations of some problem that we did in class or that was assigned as homework. If you just copy a solution, you will not really understand the solution. Plus I will post solutions to almost every problem after that problem is due. Recall the actual scores you get on the homeworks will not affect your grade. Thus I can see no benefit of copying, you will have only robbed yourself of a learning experience.

Many students will find some problems demanding. It is not expected that all students will be able to answer all the homework questions. At the minimum, I would expect at the very least that each student would at least think hard about at least one problem on each assignment.

Exam Scoring Appeal Policy: Like the NFL, I use a "pay-to-play" review system. If you believe that your solution for a problem on an exam is "essentially fully correct" you may ask for a re-grade. The solution in question will be then given to an independent grader. If the independent grader believes that the the solution is "essentially fully correct" then full credit will be given for the solution. If the independent grader believes that the the solution is not "essentially fully correct" then five points will be deducted from the student's exam score. No appeals are allowed for additional partial credit; Partial credit is too subjective. The decision of the second grader is final. Appeals will not be accepted earlier than 1 class after the exams were returned, and will not be accepted later than 2 classes after the exams were returned. Of course any clerical errors can be corrected.

Missing tests: If you are going to miss a test for unavoidable reasons then before the exam (or as soon as possible) you must contact me. If this is not possible, contact the computer science departmental secretary at 624-8490.

Cheating Policy: I have no tolerance for cheating. If you are caught cheating, you will receive an F grade for the course.