Class website: http://www.cs.pitt.edu/~dcc20/cs1510

Course group: https://groups.google.com/d/forum/pitt-cs-1510-fall-2012?hl=en

The group will be used for class announcements. If you have general questions (e.g. about a homework problem or example from class) please use the group instead of emailing myself or the TA directly. This will allow the quickest response from either myself, the TA, or other students. If you email me a general question I will most likely just post it to the newsgroup when answering it.

You can choose a user name that does not reveal your identity, but you will be required to provide that user name to the instructor and TA.

Instructor: Daniel Cole
Office: SENSQ 6406
Phone: 412-624-4773
E-mail: dcc20@cs.pitt.edu
Office hours: Monday, Wednesday 1:30 - 3:00, Tuesday, Thursday, 9:00 - 10:00

TA: Neal Barcelo
Office: SENSQ 6803
E-mail: ncb30@cs.pitt.edu
Office hours: Tuesday and Thursday 10:00 - Noon

Meetings: Monday and Wednesday from 3:00-4:15 in SENSQ 5129.

Text: Foundations of Algorithms by Neapolitan and Naimipour. Any edition of the textbook should work for this class. The textbook is not required in that it is not required for any specific assignments. However, if you choose not to use the textbook you forfeit your right to complain about being disadvantaged by not having the textbook.

Prerequisites: CS 1501 and CS 1502

Goals: The main goal of the course is to learn how to think algorithmically. We will be designing algorithms rather than learning particular algorithms. The lectures will serve as an introduction to particular algorithm design techniques by applying the techniques to a number of problems. The homeworks will then be to apply these techniques to other problems. Most of your learning will come from the process of solving the homework problems.

We will cover the following topics, (most likely) in the following order:
- The Greedy Approach (Chapter 4)
- Dynamic Programming (Chapter 3)
- Reductions and NP-completeness (Chapter 9)
- Parallel Algorithms (Chapter 11)

Grading: HW 30%, Exam1 30%, Exam2 30%, Attendance/Class Participation 10%
The first exam will cover greedy algorithms and dynamic programming. The second exam will cover reductions and NP-completeness and revisit dynamic programming if necessary. In the past, most students have found the course material quite challenging.

The grading scale will be set subjectively at the end of the semester. You are not in competition with other students and there are no number of set A’s or B’s, etc. However, you should not think of this method as a curve. Cooperation amongst students allowed and encouraged so you should seriously consider taking advantage of this by helping each other with the material.

**Homework:** It is expected that the majority of the students’ learning will come from solving and writing up the homework problems. You may form homework groups of up to 3 people, however I reserve the right to rearrange groups as I see fit. Each group needs to turn in only a single write-up, but, for each problem, the person doing the writing needs to be specified. You may, additionally, discuss problems with any student in the class but this excludes directly giving or receiving solutions. If you discuss a problem with students outside your group, please note the student(s) on your write-up.

Write-ups must use LaTeX, http://en.wikipedia.org/wiki/LaTeX, and are due at the start of class. Sometimes only a subset of assigned problems will be required to be written up, however students are responsible for all assigned problems (e.g. on the exam). In addition to the normal write-up I may occasionally ask you to also turn in the latex source of the write-up.

The write-up is a very important part of the problem solving process in this class, because, when done correctly, the write-up forces you to ensure your solution is correct and, in general, the more clearly you can explain a solution, the better you understand it. The target audience of a write-up should be a fellow student that wants to understand the solution to the problem. Note that this is not the same as a fellow student that wants to know the “correct answer” to the problem.

**Homework Grading:** I would rather see students be unable to solve a problem and know exactly where they are stuck and why rather than trying to “bluff” their way closer to a solution. Knowing your limitations is much better than pretending you know more than you actually do. Thus, in general, a write-up that is incorrect but asserted to be correct will receive less credit than a write-up that is incorrect but specifies either, at exactly what point the students are stuck (and why) or why the proposed solution doesn’t work. Also remember that whomever is grading your write-up knows the solution to the problem so they will be attempting to determine, not simply if you have a correct solution, but if you actually understand the correct solution. Thus, a write-up with a correct solution but insufficient explanation to allow the grader to determine if the author understands the solution will be graded lower than a correct solution with sufficient explanation.

Homeworks can receive a grade of 0, 1, 2, or 3 under the following general (but not strict) guidelines:

3: Know what you’re doing and don’t make a mistake (solution provided is algorithmically/logically correct and this is clear from the write-up)

2: Know what you’re doing but make a (non-trivial) mistake (seeing the posted solution would allow the student to see and correct the mistake fairly easily)

2: A little uncomfortable with the problem, but make decent progress and know exactly at what point you get stuck (seeing the posted solution would probably help the student clear up their confusion about the problem)

1: Not comfortable with the problem but can make a little progress before getting stuck (student has a more fundamental lack of understanding and the posted solution would probably not be of much help in overcoming this)
1: A little uncomfortable with the problem, make decent progress, but then try to bluff the rest of the way (the student’s level of ability is not clear due to “bluffing”)

0: No idea what’s going on

0: Don’t really know what you’re doing but try to bluff your way through even a little progress (the student’s level of ability is not clear due to “bluffing”)

Additionally, write-ups that are essentially pseudo-code with no explanation will receive a grade of 0. In general, if you feel your score is not reflected in your grade then try improving your write-ups before you complain about the grading.

**Exams:** Exams will consist of problems presented in class or assigned as homework. The problems on exams, may, however, be modified slightly or presented in such a way so as to remain abstractly, but not literally, the same as a problem from lecture or the homework. A student that understands the solution to the original problem should not have too much difficulty realizing that the modified problem is a problem they have already seen. However, a student that has simply memorized a solution to the original problem will have difficulty recognizing the modified problem.

General solutions will be provided (on the class website) for any homework problem that may appear on the exam. The solutions will not necessarily be high quality write-ups but are rather intended to allow you to get the main idea of the solution.

**Exam Scoring Appeal Policy:** Any clerical errors will be immediately corrected. For other problems, you may submit an appeal in writing if you believe that your solution for a problem on an exam is “essentially fully correct”. No appeals are allowed for additional partial credit as partial credit is too subjective. Appeals must be submitted within 7 days of receiving the graded exam. No appeals will be accepted until 24 hours after the graded exam is returned. Note that, while the problem will be regraded, there is a possibility that the new grade will be lower than the original grade.

**Disability Policy:** If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and Disability Resources and Services, 216 William Pitt Union, 412-648-7890/412-383-7355 (TTY), as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

**Missing Exams:** If you are going to miss an exam for unavoidable reasons please contact me as soon as possible.

**Cheating Policy:** I have no tolerance for cheating. Not only does cheating, potentially, result in a false assessment of your ability (i.e. grade), but, when it is not punished, it encourages the honest student, that struggles and yet does not cheat, to start cheating. If your exam scores significantly differ from your homework scores, I reserve the right to base your final grade solely on your exam scores. I may copy all or some subset of your homeworks so that if cheating is detected, previous work may be reviewed for cheating. Additionally, cheating may result in a grade of 0 on homework/midterm or an F for the course.