21-257 Models and Methods for Optimization
Summer 2010
Instructor: Deepak Bal
Email: dbal@cmu.edu
Time: M-F 1:30-2:50
Location: Wean Hall 8427

Course Objectives: The course will basically be in three parts. The first part will consist of a review of linear systems, linear programming, the simplex algorithm and problem formulation. The second part will cover LP duality, sensitivity analysis, and various network algorithms. The third part of the course will introduce integer programming, including topics like the knapsack problem, the travelling salesman problem, branch and bound methods and problem formulation. At the end of the course, the student should be familiar with the topics listed above.

Course Website www.math.cmu.edu/∼dbal/summer10 (this isn't up yet, but I'll let you know when it is)

Office Hours: My office hours will be held in my office, Wean 7116. Let's say for an hour right after class Monday through Thursday (so from about 3 to 4).

Tests: There will be 3 tests held in class over each of the three parts mentioned in the Course Objectives. There will be no final exam since by the third exam you will have been tested over all the material. The tests are preliminarily scheduled as follows:

- Test 1: Friday, May 28

- Test 2: Thursday, June 10

- Test 3: Thursday, June 24

Tests will be closed book, but calculators (not cell phones) will be allowed. If you miss a scheduled test, a makeup will be given if the test was missed for a documented illness or family emergency or University sponsored event. If you miss a test for an unacceptable reason such as sleeping through it, a penalty will be applied on the make-up.

Homework: Homework will essentially be assigned and collected once or twice weekly. Hence, I expect there to be about 8 or 9 homeworks. The homework problems will be a mix of book problems and problems stated in class. If you need help with the homework problems, please come to my office hours.

Quizzes: In order to promote attendence and to make sure that you are keeping up with the material, I plan on having a short quiz on some class days. The quiz will usually consist of one or two problems out of the relevant chapters of Stewart or Walker. The day before the quiz I may give you a list of problems from the book that the next days quiz problem will be chosen from. This way you can prepare for the quiz by looking over these problems. These quizzes are not meant to be particularly hard, I just want you to keep up with the material and realize if you are struggling with it.

Grading: Your final grade for the course will be determined by the following breakdown:

- Quizzes: 10%

- Homework: 30%

- Low exam score among 3 tests: 15%

- Middle exam score among 3 tests: 20%

- High exam score among 3 tests: 25%

The cutoffs for your final grades preliminarily look as follows:

- A: $\geq 90\%$

- B: $\geq 80\%$

- C: $\geq 70\%$

- D: $\geq 60\%$

- R: $< 60\%$

These cutoffs may be lowered, but will not be raised.

Academic Integirity: For the purposes of this course adhering to Carnegie Mellon's Statement on Academic Integrity means primarily one thing: making sure the work you turn in for credit is yours and yours alone.

This does not mean you can't work with other students. Indeed I strongly encourage you to form study groups. Working together to find solutions to homework problems or while studying for exams benefits everyone involved. When someone explains something to you, you gain the benefits of their understanding. Explaining topics to another student forces you to clarify your own ideas.

It is clear that on tests collaboration stops, and each student works alone to complete the problems. But what does it mean for a homework paper to be "your own work"? Once you have found a solution, you should write it up by yourself. You may need to refer to notes you have taken while collaborating, but you should not be referring to other peoples written work while producing your own.

Accomodations: Some students qualify for special accommodations such as extra time on tests. Please present documentation supporting such a request as soon as possible, and certainly at least three working days before the first test. I will try to assist, but may not be able to help with last minute requests.

General Thoughts: One thing you should realize is that this course is normally taught in 14 weeks and we are trying to do it in 6. Clearly, we are going to have to move fast through a lot of the material and there is going to be quite a bit of work. But you should also know that if you feel like you are falling behind, you shouldn't hesitate to come see me and get things clarified. Also, don't be shy in class. If I ask a question to the class, I do want someone to respond if they can. Alright, let's do this!