

Math 30210 — Introduction to Operations Research

Assignment 2 (60 points total)

Due before class, Wednesday September 12, 2007

Instructions: Please present your answers neatly and legibly. Include a cover page with your name, the course number, the assignment number and the due date. The course grader reserves the right to leave ungraded any assignment that is disorganized, untidy or incoherent. You may turn this assignment in before class, or leave it in my mailbox (outside 255 Hurley Hall). It can also be emailed; if you plan to email, please check with me to see if the format you plan to use is one that I can read. No late assignments will be accepted. It is permissible (and encouraged) to discuss the assignments with your colleagues; but the writing of each assignment must be done on your own.

Reading: Sections 2.3 (particularly sections A, C, D, E and G), 3.1 and 3.2.

Note: For any problem that involves solving a linear program, you may use TORA (or other software). If you use TORA (or other software), you should include a printout of the output screen for *at least two of the problems*. For the remaining problems, you may just report the output, if that is more convenient.

1. (5 points) Taha, Problem Set 2.3A, problem 1.
2. (7 points) Taha, Problem Set 2.3A, problem 4.
3. (5 points) Taha, Problem Set 2.3C, problem 5.
4. (6 points) Taha, Problem Set 2.3C, problem 6. Note that for this problem, the objective function is of the form $\min\{A, B, C\}$, where $\min\{\}$ means “take the smallest of the numbers inside the braces”. This is not a linear objective function. The main point of this question is turning the objective into a linear function. Here’s a hint: add a variable (y say), and let the objective function be y itself. Then try to figure out what linear constraints you could put on y that make it exactly $\min\{A, B, C\}$.
5. (7 points) Taha, Problem Set 2.3D, problem 5.
6. (5 points) Taha, Problem Set 2.3E, problem 3. (For this problem, you should just set up the linear programming problem; there is no need to solve it).
7. (7 points) Taha, Problem Set 2.3E, problem 7.

8. (Optional!) Taha, Problem Set 2.3G, problem 2.
9. (Optional!) Taha, Problem Set 2.3G, problem 5.
10. (3 points) Taha, Problem Set 3.1A, problem 4.
11. (4 points) Taha, Problem Set 3.1A, problem 5.
12. (Optional!) Taha, Problem Set 3.1A, problem 6.
13. (5 points) Taha, Problem Set 3.1B, problem 1.
14. (6 points) Taha, Problem Set 3.1B, problem 4.