

IE 2001: OPERATION RESEARCH

(Homework Assignment 2: Due January 26, 2012)

- 1) Go over the LP problems we have formulated thus far in class and read Chapter 3 of the text, which provides numerous other examples of LP formulations. You may skip Sections 3-2 and 3-3 on graphical solutions for the present; we'll cover these in detail next week. However, you should carefully go over the formulations in Section 3-1 and Sections 3-4 to 3-12. Try doing a couple of problems at the end of each section.
- 2) Formulate the following modeling problems from Chapter 3 and hand in your formulations - **you do NOT have to solve anything!**

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| 2.1) Problem 6, page 114 | (Steelco) |
| 2.2) Problem 17, page 115 | (Furnco) |
| 2.3) Problem 27, page 117 | (Grummins) |
| 2.4) Problem 50, page 121-122 | (Incinerator) |

In order to get full credit, your answers must be both CORRECT (i.e., the mathematical statements of the objective and constraints should be correct) and COMPLETE (i.e., you should not miss any constraints or variables). In addition, all decision variables must be clearly defined using complete sentences. Finally, keep in mind that there is often more than one correct way of formulating these models.

Several of these questions are meant to be challenging and require some thought. You're welcome to work with others if you think this helps you learn, but remember that what you turn in should be your own work and not just copied from someone!

Useful tip: Wherever possible, **draw schematic diagrams or pictures** of the system being modeled (especially for problems 2.4 2.5 & 2.6). These will help you better understand the system parameters and characteristics, the sequence of decisions to be made, and the appropriate choice of decision variables.

Useful tip 2: **START EARLY** – if you're stuck, contact your friendly, neighborhood professor!