

IE 2001: OPERATION RESEARCH

(Homework Assignment 2: Due January 30, 2020)

- 1) Go over all the LP problems we have formulated thus far in class and the solutions to last week's HW formulations. Then read Chapter 3 of the text, which provides many other examples of LP formulations. You may skip Sections 3-2 and 3-3 on graphical solutions for the present (we will cover this material in detail in class next week), but go over the formulations in Section 3-1 and Sections 3-4 through 3-12. Try doing a couple of the exercise 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**.
 - a. Problem 5, page 114 (*Finco* – Hint: try writing the constraints first...)
 - b. Problem 13, page 115 (*Feedco*)
 - c. Problem 34, page 118 (*Airco*)
 - d. Problem 4, page 98 (*Chemco*)
 - e. Problem 50, page 121-122 (*Incinerator*)

In order to get full credit,

- all decision variables must be clearly defined using complete sentences,
- your answers must be CORRECT (i.e., the mathematical statements of the objective and constraints should be correct), and
- your answers must be COMPLETE (i.e., you should not miss any constraints or variables).

Keep in mind that there can often be more than one correct way of formulating these models.

Several of these questions are meant to be challenging and require some thought. You are welcome to work with other classmates of yours, but what you hand in finally should represent your own work.

Useful tip: Wherever possible, **draw schematic diagrams or pictures** of the system being modeled (especially for problems 2d and 2e). 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, come and see your friendly, neighborhood professor...

- 3) Brush up on how you plot an equation in two variables on a graph (watch this if you need to : <http://tinyurl.com/t763cps>) – you will need to be comfortable with this next class when we start to solve LPs.