# Engineering Statistics II, HW 2

## Due start of class Thursday, Sept. 11

**Instructions:** This homework is due at the beginning of class Thursday, Sept. 11. Also, the problems are to be placed in order in your hw. A subset of the following questions will be graded. If you have any questions about this hw, please contact me.

**0:** Be sure to read chapter 1 and chapter 4, sections 4.1-4.6.

**1:** Consider the distillation column example in section 1-2.

**i.** Give one of the weaknesses (problems) of investigating the column using a retrospective study.

**ii.** Give one of the weaknesses of investigating the column using an observational study.

**2** Some questions about studies and experiments:

**i.** What is the main difference between an observational study and a designed experiment?

**ii.** Why do engineers need to do experiments as opposed to solving the problem directly by using scientific/engineering theory?

**3:** problem 4.7, page 111

**4:** For problem 4.13, page 113, do the following:

**i** Do parts a and d.

**ii** Determine the density function, $f_X$, of $X$.

**5:** Determine the CDF of $X$ given that the density of $X$ is

$$f_X(x) = \begin{cases} 2x, & 0 \leq x \leq 1 \\ 0, & \text{elsewhere} \end{cases}$$

**6:** problem 4.28, page 115

**7:** problem 4.39, page 117

**8:** problem 4.49, parts a, c, and e, page 125

**9:** problem 4.51, parts a, c, and e, page 125

**10:** problem 4.59, parts a, c, e, page 125

**11:** problem 4.58, page 125

**12:** problem 4.68, page 126