Homework Assignment 3

Due Monday, October 22

Problems

From chapter 4 of the text, do problems 1, 5, 9, 17, 18, 19, 20 and 26.

The following two special problems are part of your official homework assignment. You should do them and turn them in.

Special Problem 1

Choose a course that you have recently taken. You will analyze your performance on homework and exams as a process that can be improved.

Look through your records to create a check sheet that describes your performance. The defects, naturally, are problems that are incorrect. Divide them into categories of your choosing. Next, make a Pareto chart that illustrates the check sheet. Finally, make a cause and effect diagram to identify reasons for the defects. What actions can you take to reduce the number of defects?

You may work in groups of up to two persons for the special problem.

Special Problem 2

Select one of the hypothesis tests from Chapter 3 of the text (but not the pooled t test or the one-sample F test for a variance—we’ve talked about those in class). Select one of the assumptions for your test, choose a data-generating mechanism that violates the assumption, generate data, and implement the test. Is your test sensitive to a violation of the assumption that you chose? Summarize the results of your simulation both numerically and with a short descriptive passage.

Remember that you will need adequate replication for your simulation study.
Reading

As we continue along, you should keep up with the reading. For this assignment, read chapter 4 of the text. We’ll cover the material in a slightly different order than in the book. Our discussion will follow the pattern 4.1, 4.2, 4.4, then 4.3. Sections 4.5 through 4.7 provide nice examples and some “motivational writing” for how to effectively use a program of quality control in a business setting.

Computing

We’ll soon be using Minitab to construct control charts. If you haven’t done so already, take a little time to make yourself familiar with the package. The simulation study will give you a good opportunity to do so, although you are free to use whatever language you like for the simulation. A language such as $R$ is better suited to simulations.