Statistics 5200 Fall 2020 Homework 4

Assignment Due (by 11:59 P.M.): Wed 21 Oct

Directions: You may discuss the exercises with other students and with the instructor, but the work you turn in must be your own. Note that neatness and format (including SAS code in appendix) will contribute 10 points to the total score. This assignment will be graded out of 50 points. Note that some SAS code to get you started is provided in Canvas; the only things you'll need to change in the code are the powers used in the transformations (based on the Box-Cox output) and possibly the order of variables in CLASS statements – see commented NOTES in the starter code.

Exercises:

1. (20 points) Based on textbook Problem 8.1 (page 198; data on page 166).
   (a) (2 points) Fill in the blanks: This is a ____ by ____ factorial design with ____ replicates at each factor level combination.
   (b) Fit a two-way ANOVA model (with interaction) using PROC GLM. Report (by number) the following parts:
      i. (5 points) Graphical evidence regarding the appropriateness of relevant assumptions. If a transformation is necessary, specify which transformation you make (and how you chose it), and provide graphical evidence of how the problems with assumptions were fixed.
      ii. (6 points) Both interaction plots (with a brief interpretation)
      iii. (4 points) If the interaction term is significant, briefly characterize the interaction (e.g., discuss what "drives" the interaction). If the interaction term is non-significant, report appropriate post-hoc mean comparisons for both main effects, with a brief interpretation.
   (c) (3 points) Which factor level combination(s) would you recommend, and why?
2. (20 points) Based on textbook Problem 8.7 (page 202). Follow the same directions as for exercise 1 (a-c) above.

Appendix: (10 points) Include SAS code used for this assignment.