Due: This is due no later than at the time of the final exam (Thursday 12/18 12:30-2:30). You will have time in Lab on Friday (12/12) to work on it.

Provided for you is a program called “final lab pgm.sas” that provides all the data needed for this assignment/lab.

**Submission directions:** Copy and paste all code used, the log(s) for each analysis and the answers to the questions into the body of an email. No output please (there would be too much and your email would be extremely long). Please organize code, log and answers for ease of grading. Thanks!

1. List the assumptions of a one-sample t-test.

2. What option is needed to change the significance level?

3. The first dataset (called yogurt) contains data about 14 randomly chosen brands of vanilla yogurt and their calorie content. A diet guide claims that you will get 120 calories from a serving of vanilla yogurt. Is there sufficient evidence that the mean number of calories from vanilla yogurt is different from the diet guide’s stated claim? List hypotheses and use SAS to compute the test.

4. What are two difference between the pooled and unpooled t-test?

5. The second dataset (called Egypt) contains skull breadths from Egyptian males from 200 BCE and 4000 BCE. Some archaeologists theorize that ancient Egyptians interbred with several different immigrant populations over thousands of years. To see if there is any indication of changes in body structure that might have resulted, they measured 30 skulls of Egyptian males dated from 4000 BCE and 30 others dated from 200 BCE. Do these data provide evidence that the mean breadth of males’ skulls changed over this period?
   a. Test the variances to determine whether a pooled or unpooled t-test is appropriate.
   b. State the hypotheses of interest for the t-test.
   c. Use SAS to compute the tests.

6. What are the assumptions for simple linear regression (also called least-squares regression) and analysis of variance (ANOVA)?
7. The dataset called Decagon is up next. Decagon Devices in Pullman, WA makes probes to measure soil moisture and temperature. The variables are the time to make a batch of probes and the cost associated with each batch. We are interested in estimating each batch’s cost based on the time to make the batch.
   a. Use SAS to run a regression analysis using PROC REG.
   b. Do a significance test of the slope.

8. Last one! The article “Origin of Precambrian Iron Formations” (Econ. Geology, 1964: 1025-1057) reports data on total Fe for four types of iron formation (carbonate, silicate, magnetite, and hematite). State the hypotheses for this experiment and run an analysis of variance (ANOVA) using PROC GLM.