Grading Rubric for the Design of Experiments

In order to have a good experiment, you must have control, randomization and replication within your experiment. For Lab #6 and the Project, these are the questions you must correctly answer when describing your experiment.

- **Control** - The main idea of control in experiments is to control the sources of variation other than the factors being tested. The conditions of the experiment should be as similar as possible for all experimental units. Have you described variables that could affect your experiment other than the treatment? Did you control for these variables in your experiment? How did you control for these variables?

- **Randomization** - The main idea of randomization is to spread the effect of unknown or uncontrollable sources of variation in your experiment evenly across the treatment groups. The experimental units should be assigned to the treatments at random. How many total trials do you have in your experiment? Did you describe how you assigned an experimental unit to a trial? Did you randomize the order of the trials? Did you describe how you randomized the order of the trials? The description of the randomization process must be complete; simply saying “I randomized” is not sufficient. The grader should be able to exactly reproduce your experiment.

- **Replication** - The main idea of replication within the experiment is to apply the same treatment to several experimental units. Did you correctly identify your experimental units? Did you complete several trials at each treatment level using different experimental units? How many trials do you have at each treatment level?

**Note:** It is not necessary to repeat the entire experiment. The fact that other groups are doing similar experiments will give us the opportunity to see if results are repeatable.