

**The Task:** With at most three partners, design and carry out an experiment. You and your partner(s) will submit one presentation, and together you will make a brief (5 –10 minutes) oral presentation to the class. Class time will be allocated for you to work on your projects, but some of the effort must be done on your own time. Students in the class can be used if you need human subjects.

You may turn in a rough draft of your experimental design and/or presentation any time for suggestions for improvement.

### **The Experiment:**

Since this is a comparative experiment, it should have control and experimental groups. It cannot be an observational study.

The response variable must be a quantitative measurement.

The treatment groups can be defined by a quantitative variable (like the Walk the Line experiment) or a categorical variable.

Draft a design of your experiment and submit it for approval by the due date below. Once the design is approved, plan out the experiment carefully. Class time will be provided for you to conduct your experiment and enter the data. Make sure you include randomization, replication and control. While the experiment is in progress, make sure you are carefully recording the experiment data. When data is entered into a spreadsheet, make sure everyone in the group has access to the data.

**The Presentation:** Your presentation should contain the following components:

- 1) **Purpose:** Discuss your objectives, including what question(s) you are trying to answer, what information you are hoping to obtain about your population, and how your population is defined.
- 2) **The Subjects:** Describe how you chose your experimental units or subjects. Your subjects must be randomly allocated into treatment(s) and control groups. You may want to block, if appropriate. You should have a minimum of 20 units or subjects.
- 3) **The Experiment:** Include a detailed diagram of your experiment. Define the treatment(s), etc. Be as specific as possible.
- 4) **The Data:** Present the data in both tabular and graphical formats. Select graphs that demonstrate whether or not your treatments affected your response.
- 5) **Conclusions:** What were the results of your experiment? Were there possible sources of error (bias, confounding, placebo effect, etc.) and what were their effects on the data? How do these limit the validity of your conclusions? What did you do to reduce their effects?
- 6) **Summary:** Provide a summary of your project that someone with no statistical background could understand.

## Project 3 Rubric:

Description of Project Presented	Grade
<p>All the requirements of the project are met beyond the minimum. Final result shows clear evidence of additional effort to expand on the project in keeping with the project objective.</p> <p>Final result shows evidence of thoughtfulness and clear attempt to produce an academically sound project. Evidence of extra care for precision, accuracy and clarity are also apparent.</p>	A
<p>All the minimum requirements of the project are met, with additional effort to expand on the project in keeping with the project objective.</p> <p>Final result shows evidence of thoughtfulness and clear attempt to produce an academically sound project. Evidence of extra care for precision, accuracy or clarity is also apparent.</p>	B
<p>At least the minimum requirements of the project are met.</p> <p>Final result shows evidence of thoughtfulness and clear attempt to produce an academically sound project.</p>	C
<p>Not all requirements met to at least the minimum level, and/or final result shows evidence of careless work, or lack of thoughtfulness, or lack of academic sincerity.</p>	D
<p>Project not submitted, or submitted with a majority of the requirements lacking.</p>	E