Due Dates

**Wednesday, April 16:** Have figured out who your partner in this project is, and be ready to select a topic. The order of selection will be determined randomly in class.

**Wednesday, April 23:** Project write-up is due.

Instructions

You will work in two-person groups (no more, no fewer) in this project, with each group turning in a single paper. The task is to analyze a data set collected from Biology 332 this semester and answer the question of interest fully and carefully. I will provide you with the data, and the research questions are listed in the Project Topics section below.

Your full write-up should be a paper that includes several things:

- an *introduction*, stating where the data came from, what the specific research question being answered is, and what you found the answer to be.
- a *data* section, in which you describe the experiment, give the data in a nicely formatted table, and describe the variables measured and the units used in the measurements.
- an *analysis* section, in which you do a complete statistical analysis to answer the question of interest. You should be very clear what statistical methods are being used, what necessary assumptions are being checked, which of these assumptions do and do not hold, what computer programs (if any) are being used, what the result is in both statistical and non-statistical terms, and any possible shortcomings in the analysis (with justification).
- a *conclusions* section, in which you briefly state the results of your statistical tests, both in statistical and non-statistical terms, as well as any possible shortcomings in the analysis (with justification).

While there may be some duplication in different sections of your paper, a clear layout with these sections is important to help readers who might not read the entire paper. They need, for example, to be able to get a quick overview of the paper in the introduction, as well as to get a quick understanding of what the results are of the paper from the conclusions section. There is no set number of pages or words for this paper. The paper should be as long as it needs to be to explain your methods and convey your results.

Your papers will be returned to the Biology 332 class, where they will examine your results.
Project Topics
The data obtained from Biology 332 come from three different projects. The questions to be answered are:

1. Two plants were tested in three subsequent weeks for their photosynthesis rate. Plant 1 was watered, Plant 2 was not. Question: Are the two plants different in photosynthesis rates? (Since this was done at four different light levels, four different groups can analyze this question.)

2. Every week for three weeks a different individual plant was harvested and either cold-treated for 24 hours or kept at room temperature. Photosynthetic rates were determined for each. Question: Are cold-treated plants of this type different in their photosynthesis rates from non-cold-treated plants of this type? (Since this was done at three different light levels, three different groups can analyze this question.)

3. Two types of ivy (invasive and non-invasive) were tested for photosynthesis rates to see if photosynthesis activity might be associated with invasiveness. Three different individuals were used for each type, but it is not known which measurement belongs to which. Each individual was tested 2-3 times. Question: Do these two different types of ivy have different photosynthesis rates? (Since this was done at four different light levels, four different groups can analyze this question.)