As 20% of your course grade, you will be proposing, designing, carrying out and analyzing an experiment of your choice. As mentioned in class, if you are working on a project already, you can use that as the project in this class. Moreover, if you are having trouble designing an experiment, you can also do one of the following:

a) Go to the library and find real data from a published source and analyze it.

b) Write a report on a published article that uses multivariate statistical analysis. The article should be in your field.

Note that options (a) or (b) will result in a loss of some points.

The first step is a 2-3 page preliminary proposal, which will be due on Feb. 24. This proposal should specify exactly which option you plan to use. In addition, it should specify: 1) the statement of the problem and the response variables to be studied, 2) the potential causal factors and 3) an outline in which you plan to collect the data and analyze it.

As an example, let us say that you want to study the factors that influence the proportion and size of kernels popped in a bag of popcorn in the microwave. Now these factors could be the oven itself, time allowed, brand of popcorn, manner in which you place the bag etc. Some of these factors you might want to fix throughout the experiment (these then become part of the background effects) - e.g. you might want to use only one oven throughout the experiment. Some of the factors you may want to use as blocks, as an example, you may want to block on time and then study the effect of different brands.

"Degree of difficulty" will be taken into account in the final grade, hence a project with two or more independent factors will get more points than one with only one independent factor. Hence, do not avoid a project because it seems hard, on the other hand don't pick something that you won't get anywhere with.

This report will be due on the last day of class. The report should start with a one page "summary" or abstract of the experiment with the final conclusion (e.g. Betty Crocker Popcorn was found to be the best brand ...etc.). This summary should be general and understandable to a general audience. The rest of the report should be written for a student of statistics - it should include an introduction, a description of the experimental plan, graphical or tabular presentation of the data and precise conclusion (e.g. tests, confidence intervals, p-values etc.)