FINAL STATISTICS PROJECT GUIDELINES

Your final project is writing a research paper addressing a research question followed by presenting your findings in class. You are expected to choose a research question which requires you to use inference procedures we learned in classes comparing 2 populations OR χ^2 Tests OR inferring the slope of regression line... Your project will be done both in class and outside of class. You can work alone or with partners from your class (maximum group size of four).

There are some basic steps you need to consider in order to produce a successful statistics project. A simple guideline of what you should include in a project is listed below.

I. You need a question or problem.
Statistics is a tool to help you answer a question. This is a school project, so make sure your topic is **appropriate** for the classroom.

II. Define your problem or question in clear, specific terms—clearly define your population of interest.

III. Find out as much as you can about your question.
A. What work has already been done on your question or a similar question?
B. Collect research about your topic. You need a minimum of <u>three</u> references. You may use the Internet, the library, textbooks, etc.
C. Information from your references needs to relate directly to your question. It is frequently the basis for your hypotheses.

IV. Develop your hypotheses.
What do you expect to happen? Think about your research as you select your null and alternative hypotheses.

V. Design your study.
Data collection: Find or develop techniques and measurement instruments that will provide objective data pertinent to your hypotheses.
Data analysis: Decide how you will analyze your data—what hypothesis tests, confidence intervals or regression analyses you will use. Design of your data analysis is a major part of your overall study design.

VI. Collect your data using the script and instruments you developed. Use good random techniques. If you are doing an experiment, use random assignment of treatments to the available subjects.

VII. Analyze your data following the plan you developed. This is the most important part of your project.

A. Your null and alternative hypotheses need to reflect what you found in your background research.

B. Make sure you use all the correct formulas and requirement checks. Check your test results and *p*-values with your calculator and/or other statistical software. You must submit all data so your results can be verified.

VIII. Interpret your results and draw conclusions relative to your hypotheses based upon your data and your analysis of your data.

A. Use charts, tables, histograms, box plots, stem-and-leaf plots, correlation lines, statistical tests, confidence intervals (but only the ones that are appropriate) to display and analyze your data.

B. Remember to identify your sample size, distribution, and confidence or significance levels so that you draw appropriate conclusions; be careful with your conclusion if you failed to reject your null hypothesis—you can't prove your null hypothesis is true.

C. Think about what could be done to improve your study if there was a "next time"—what changes you would suggest.

IX. Compile your results—write, rewrite, spell-check and PROOFREAD your presentation! Use appropriate illustrations in your PowerPoint, poster or video.