

# FINAL STATISTICS PROJECT GUIDELINES

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—no surveys about sex, pornography, etc.
- II. Define your problem or question in clear, specific terms.
- III. Develop your hypotheses. What do you expect to happen?
- IV. Find out as much as you can about your question.
  - A. Has someone already done work on your question?
  - B. Is your question one for which there is an answer?
  - C. Collect research about your topic. I have old issues of *Consumer Reports* if you need them. (Be sure to include this information in your Works Cited.)
- V. Design your study. Find or develop techniques and measurement instruments that will provide objective data pertinent to your hypotheses. (Remember that surveys you use as a source of data must be field-tested before use.) Decide how you will analyze your data.
- VI. Collect your data. Use good sampling techniques. The ONLY exceptions are the use of a “panel of experts” for taste testing (AP Stat and other higher math students are known to be **expert** tasters) or other experiments with random assignment of treatments.
- VII. Analyze your data following the plan you developed.
- 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, proportions (but not all of them) to display and analyze your data.
  - B. Remember to identify your sample size, distribution, and confidence level so that you use appropriate test statistics and check all test requirements.
  - C. Think about what could be done to improve your study if there was a “next time”.
- IX. Write your results—write, rewrite, spell-check, rewrite and . . . PROOFREAD!

## FORMAT AND STRUCTURE FOR STATISTICS PROJECTS

1. Your project must be word-processed using a standard font and double-spaced.
2. All charts, data sheets and graphs should be done on the computer (the only exceptions are any raw data tables). If not done on the computer, they must be neatly constructed and written in ink on unlined paper. Graphs and charts should have a title and properly labeled axes. You need graphs in BOTH your written project and on your visual aid.
3. All mathematical formulas must be given when computing test statistics. The substitution step must be shown before numerical answers are given. When using variables, be sure to state what each represents.
4. All pages must be numbered.
5. Order of pages:
  - A. COVER SHEET—The first page of your project must be a cover sheet that includes your name(s), date, class period and the title of your project.
  - B. TABLE OF CONTENTS
  - C. INTRODUCTION, PROBLEM, PURPOSE—This section should include the statement of your question, a statement as to why your project is important or relevant, and your null and alternative hypotheses. Also discuss what you expected to find.
  - D. RESEARCH—A **summary discussion** of your background research and information on related studies goes here.
  - E. METHODS AND PROCEDURES—This should include how your data were collected (sampling method/treatment assignment/etc.) or research done to collect your data. Be specific. Remember to document all items that need to be cited.
  - F. RESULTS (ANALYSIS OF DATA)—Your data tables and graphs go here, interspersed with your narrative. This is also where you include all statistical tests (including calculations). Graphs and charts should be inserted into the appropriate location of your paper or referenced by page number if not in the body of the paper. I will not look at your visual aid for graphs.
  - G. PROBLEMS IN THE PROJECT—This should include any difficulties that occurred when collecting or analyzing data, as well as what you would change in a follow-up to your project. Limitations of your inferences should be discussed.
  - H. CONCLUSION—This is where you interpret your findings (what can you conclude or not conclude from your research).
  - I. DISCUSSION—Suggestions for further work in the area of your topic, as well as recommendations, are mentioned here.
  - J. WORKS CITED—Use the M.L.A. or A.P.A. format.
  - K. APPENDICES—This is where you include your log, raw data (remember to protect subjects' privacy by NOT including names), a copy of your survey, cover letter, or any other handouts or information you used in your project. Also include hard copies of any information obtained off the Internet.
6. Final presentation—The written portion of your project (worth 200 points) will be due Friday, June 9. **Absolutely no late papers will be accepted.** Oral presentations are to

be from 8 to 10 minutes in length and incorporate a visual aid (poster, video, Power Point presentation, overhead transparency). All members of your group must be active participants. Oral presentations will be scheduled during the final exam week and the week before, June 5<sup>th</sup> to 14<sup>th</sup> (worth 40 points). You are NOT to use the visuals in your written project for your presentation (they are too small). If your visual aid is a Power Point presentation, you must turn in a hard copy with your presentation.

7. I will keep your project. If you want a copy, make one before you turn it in.

## EVALUATION

1. Correctness of statistical techniques and procedures (the most important aspect).
2. Creativity and originality.
3. Organization and neatness (does the project report adhere to format guidelines?) Clarity (includes the correct use of vocabulary and grammar as well as well-presented data and charts). Remember to write in paragraph, not bullet, form.
4. Date of completion—all work must be submitted on or before the due date—written is due June 9<sup>th</sup>, oral presentations from the 5<sup>th</sup> to the 14<sup>th</sup>. If you are absent, your project must still be turned in by the due date.
5. Validity of conclusions (was the objective accomplished? It is OK to “fail to reject” your null hypothesis.)
6. Active participation of all group members (as evidenced by your log).

NO PROJECT COMPLETED, WORD-PROCESSED, AND TURNED IN ON TIME WILL RECEIVE BELOW A”C” grade.

## **PROPOSAL**

Your proposal needs to be word-processed and should include:

1. Your research question.
2. Your background research.
3. Your experimental design.
4. Your plan to analyze the data.
5. Your group task assignments.
6. Your timeline.

Your proposal is due May 15<sup>th</sup> and will be worth 10 points (it may be turned in earlier so you can get started on your data collection). Please make sure you address all the topics mentioned in the separate proposal handout. Turn in two (2) copies of your proposal—one for me to keep and one to return to you with comments/suggestions.

## **LOG**

You need to keep a log of your work:

When—day and time of work

Who—names of those working

Where—location

What—the specific task

Why—the purpose of this task—how it will fit into the project

You will turn in your log as the first appendix of your written project. You may photocopy the sample or design your own form.

# FINAL PROJECT PROPOSAL

Group Members:

1. What question do you hope to answer with your study? Why did you choose this topic?
2. Define your problem or question (and the population of interest) in clear, specific terms.
3. What is your hypothesis? (What do you expect to find when you get your data?)
4. Background research:
  - A. Is the question one for which there is an answer?
  - B. What work has already been done on this question?
  - C. What sources have you used so far? What additional sources do you plan to use to research your topic?
5. What is the design of your study? How do you plan to collect your data? Be specific about sample selection/treatment assignment and your planned testing/surveying techniques.
6. How do you plan to analyze your data? Be specific as to the techniques and statistical test(s) you will use.
7. Who is going to do what (your group task assignments)?
8. When are you going to do it (your timeline)?

<b>WHEN</b>	<b>WHO</b>	<b>WHERE</b>	<b>WHAT</b>	<b>WHY</b>

Topic:

Names:

## Statistics Final Project

### Proposal (10)

\_\_\_\_\_

### Written Project (200)

Letter Grade \_\_\_\_\_ = \_\_\_\_\_

statistical content  
originality  
organization—overall flow  
format:  
    cover sheet  
    table of contents (pages numbered)  
    introduction, problem, purpose  
    research  
    methods and procedures  
    results (analysis of data)  
        statistical tests  
        graphs  
    problems  
    conclusion  
    discussion—further work?  
    works cited  
    appendices  
        log  
        raw data  
        sample survey/letter/etc.  
        Internet research  
        other  
group participation (as evidenced by log)  
neatness - overall appearance  
spelling  
grammar

### Oral Presentation (40)

\_\_\_\_\_

voice projection/eye contact (5)  
visual aid—clarity, readability, appearance, relevance (15)  
class interest (5)  
creativity (5)  
group participation—flow (5)  
time—8 to 10 minutes (5)

### Grand Total (250)

\_\_\_\_\_

May 18, 2005

Fellow Faculty Members:

Now that A. P. exams are over, some of the A. P. Statistics students are collecting data for their projects. In order for the study/project to be valid, good sampling design must be used. This means that some students were randomly selected from the lists of all GALILEO H.S. students to be included in this student research.

Therefore, my students may come to your classroom with a request to briefly use one or more of your students. They can be identified by the clipboard and surveys they are using, as well as a copy of this letter. I really appreciate your cooperation with these student researchers. However, if the time they come is not convenient, please feel free to give them a better time to return. My students' learning should not interfere with your students' learning.

Please let me know immediately if any of the student researchers exhibit improper behavior. Thank you in advance for your support.

Doug Page

## Student Survey Guidelines

1. Enter the classroom **quietly**.
2. Wait until there is an appropriate break in the class before you go up to the teacher. Do not interrupt the teacher.
3. Call the teacher by name and introduce yourself as an AP Stat student surveyor. Show your letter if requested.
4. **ASK** if you may borrow the student(s) for about five minutes.
5. If the teacher says this is not a good time (testing or whatever), ask when would be a better time.
6. **Be courteous and respectful at all times.** Thank the teacher.
7. Remember, conducting surveys (WASC or your own) is a privilege that you can and will lose if I get complaints.

### Sample Script

My name is \_\_\_\_\_ from the A.P. Statistics class. You have been randomly selected to complete a student survey regarding your opinions about GALILEO H.S. Your individual opinions are very important and will be kept strictly confidential. Please take the time to read and answer each question carefully and honestly.

There are two sides to the survey. Select one answer to each question and bubble in the corresponding circle completely. When you are finished, place your survey in the manila envelope.

Thank you for your cooperation.