

## Group Project (ST 370-002 & 005, Fall 1999)

15% of your course grade will depend upon successful, on time completion of the following exercise. These projects are to be done in teams of 1-4 (3 person teams are probably optimal)\*. They are to result in thorough but concise, professional quality technical reports of not more than 10 double spaced pages (not including the raw data, computer outputs and S codes). They are to be turned in by **March 03, 2000**. If you hand it in before that date, the instructor will give feedback and allow you to make improvements. One paragraph proposals (project abstract) are due by **April 17, 2000**. These proposals should list your team members and spell out briefly the factors (controlled variables), response variables, and your basic experiment or methodology.

Pick a subject that interests you (preferably one with some engineering flavor) and plan, execute and analyze the results of a several factor experiment intended to increase your understanding of the subject. Check out the web for sample projects (or visit my office to browse previous year's projects). A good source of data is in <http://www.stat.cmu.edu/DASL/>.

When planning your study, pay attention to Chapters 1, 4 and 5 in this book, particularly Section 1-6. After experimenting make a thorough but concise report of your entire investigation. Include at least:

1. An Executive Summary (goals and major findings)
2. A Table of Contents
3. A Description of the Reason for Your Study
4. A Statement of How You A Priori Expected the Study to Turn Out
5. What You Did and How You Did It (in enough detail that your instructor could replicate it if he wished, without having to ask you for more details of exactly what equipment and materials were involved, how they were used, etc.),
6. A List of the Raw Data You Obtained and Circumstances Surrounding Their Collection (order of collection, etc.),
7. Appropriate Statistical Analyses of the Data (use graphics as well, as numerical summaries)
8. A Statement of the Subject Matter Implications of Your Study, and
9. A Discussion of Further Questions Raised by Your Study (that might be investigated in a subsequent experiment).

You may need to include sketches of physical apparatus used (if any). Simply attaching a ream of computer printout is not what is meant by including an appropriate statistical analysis. The main body of the report should include only the end products of any statistical calculations (but example calculations should be included in a appendix so your reader can see how your end products were produced). If you are going to include complete computer printouts, they should be painstakingly annotated and included only as appendices (small parts of printouts may be integrated in the text where appropriate). Any appendices should be referred to explicitly in the text (don't leave the reader guessing why appendix material is included). Write the report as if a

busy engineering manager were going to read it. Statistical jargon for the sake of statistical jargon will not be well received.

The book is full of examples of the kind of studies that are possible, and your instructor can let you look at a list of other similar student experiments. This project need not be expensive nor require a huge time investment in data collection. But it does need to show careful planning, good logic and the use of data collection and analysis concepts discussed in the course. Some part of your instructor's reaction to your project will also inevitably reflect the originality of your topic, so choose it with some care.

You will probably have less trouble with the project if the response or responses that you consider are quantitative as opposed to being categorical, and are derived from some physical measurement as opposed to say a 1 to 10 "rating" by an "expert."

Attached to the group written report, each team member will include a separate sealed envelope giving his or her assessment of the percentage of total team effort provided by each group member. In the event that it becomes evident that the project workload was wildly unbalanced within a team, your instructor may assign differing individual project grades within a team.

Team average scores for these projects will be assigned according to the following schedule:

Executive Summary and Table of Contents	5%
Reason for Study and A Priori Beliefs	5%
Description of Data Collection	10%
Appropriateness of Data Collection Plan	10%
Presentation (and Annotation if Needed) of Raw Data	10%
Statistical Analysis	20%
Subject Matter Implications and Question for Further Study	10%
Professional Appearance of Report	10%
General Readability of Report	10%
Appropriateness of Project Topic	10%

Sign the **Honor Pledge**: *I/We have neither given nor received unauthorized aid on this assignment* on your cover page, before you submit the project.

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\*However if you can not find suitable partners, you can also do the project as a single individual. January 10, 2000.