

Projects: What is Due at the End of Each Stage?

Stage 1: Due in Week 7 of the Semester

What is Due at the End of Stage 1?

1. Cover sheet with project title, members' names, date, stage number.
2. An annotated bibliography of each of the resources.
3. A paragraph summary of what your group learned from the background investigation.
4. A glossary of terms pertinent to your project.
5. A photocopy of the notes you have taken during this stage.

Stage 2: Due in Week 10 of the Semester

What is Due at the End of Stage 2?

1. An outline of your plan of action for the investigation.
2. (a) For projects with surveys: a copy of the survey instrument together with a description of your proposed sampling method.
(b) For case studies: a copy of your case study referenced with footnotes, other supporting documents, and data collection forms.
3. A copy of any (new) notes or calculations.

Stage 3: Due in Week 12 of the Semester

What is Due at the End of Stage 3?

1. A copy of all of the data collected, calculations performed, and resulting graphics. If a survey was involved these would typically include mean, median, mode, standard deviation, proportion, confidence interval for the mean, confidence interval for the proportion and a box-plot. If a case study was involved, then give sources for the data and clearly state any assumptions made for the calculations.
2. A paragraph summarizing what your group learned from the action, analysis and conclusion stage.
3. A brief statement of your conclusion.
4. If this was a Design Your Own Project, also submit a formal project framework including the purpose, suggested background reading, and a description of each of the 4 stages. Use the project frameworks given out at the beginning of the semester as a guide for this.

Stage 4: Due in Week 14 of the Semester

What is Due at the End of Stage 4?

1. The written report for your project

The following lists essential components of and provides a uniform structure for your written report.

Title: The title must capture the central theme of the paper. It should be short. Usually it is centered, bold, and is in a larger font than the rest of the paper.

Names: List the names of your group members below the title.

Table of Contents: Help the reader easily navigate through your report with a table of contents/tabs/page numbers. NOTE: If this was a Design Your Own Project, include a final version of the Project Framework (purpose, background reading, and description of the 4 stages) immediately after the table of contents.

Introduction: Catch the reader's attention and then clearly state the topic or problem and explain your goals.

Main Body: Organize the main body logically so that it is easy to follow. Divide it into several sections using section headings as needed. Be sure that your data is presented and summarized in appropriate ways. Include summary statistics such as mean, median, standard deviation, and 5-number summaries, as appropriate. Also, include histograms, bar charts, pie charts etc. as appropriate. Address the question of validity of your sample or rationale for your case study approach. Do not include large amounts of raw data in this section; put these in an appendix. Do show the details of important calculations, but put these in an appendix. Remember, your paper will be evaluated (in part) on having adequate and correct mathematical content.

Conclusion: Summarize the conclusions of the project. Include any limitations of your work and suggestions of related topics for future work that could extend this project.

Bibliography: Provide documentation of all sources including full documentation on web sources (not just a URL).

Data and Calculations Appendices: Place all raw data and calculations in separate appendices.

Action Response Appendix: Include in a separate appendix the response action (letter, article, memo and summary report, etc.) you have taken as a result of your project (see item #3 below).

Proof read, proof read, proof read!!

2. The Oral Report (20 minutes for each report on _____)

Aside from the bibliography and appendices, your oral presentation should have the same features as your written report. However, your oral report is to be just 20 minutes long (15 minutes for the actual presentation and 5 minutes for question and answers and transition), and so you will not be able to cover all of the material in your written report. All team members need to be a part of the presentation. The following lists a few tips for giving a mathematical talk.

Organize and prepare your talk ahead of time. Experienced speakers know that a lot of preparation is required to give a concise and interesting talk. There is a wonderful quote, attributed to Abraham Lincoln: "If you want me to give a ten minute speech, give me two weeks... If you want a two hour speech, I'm ready now!"

Practice giving the talk in a classroom setting if possible.

- Be considerate of your audience. It is surprisingly easy to lose the audience, so be sure you give them adequate help in understanding the problem you worked on and the work you carried out. Be sure to define new terms.

- The audience usually doesn't start concentrating until there is a visual cue, such as a PowerPoint slide, or transparency, and may miss that which is only spoken. A good general strategy is to *show* and then *tell*; that way the audience has two chances to get the point.
- At the very beginning, outline your presentation. State the topic or problem you plan to discuss. Make sure the audience knows where you are headed before you launch into the details.
- Let the audience know when you are about to finish the talk; conclude, don't just stop talking. Summarize what you have found, discuss the questions left unanswered by the work presented, and indicate what would be the "next step" in furthering your investigation.
- Describe briefly your Action Response.
- Anticipate questions, and prepare answers in advance.
- Make eye contact with the audience when giving the talk.
- Time your talk when you practice and, if necessary, revise the talk for length.
- For greatest impact, use relatively few transparencies or PowerPoint slides, with carefully chosen images. Covering more than 1 slide per minute in a talk is too fast a pace.
- Another useful rule of thumb is to put at most 6 talking points on a single slide. Also use a large font type, at least 18 point, preferably larger than that.

3. Your Action Response/Dissemination to a (Wider) Audience

Decide on an action response to the findings and conclusion of your report. Then disseminate your results or recommendations to an appropriate customer, audience or community by means of an article, letter, etc. For example, for the Health Center Project or Ballona Insect projects, prepare a memo and summary report for the Health Center and the Friends of the Ballona Wetlands, respectively. A letter to the editor of the campus newspaper is another option or a letter to an appropriate administrative official or unit on campus. Your work can also be submitted for presentation at an undergraduate research conference.¹

¹ See, for example, <http://www.math.pepperdine.edu/~kkillpat/PCUMC/PCUMC.htm>