

## Final Project Evaluation Criteria

The final project involves a class presentation and a written report based on **original work for this class**. **The purpose is not to show that information can be extracted from the web or books and integrated into a report on some topic.**

The evaluation criteria depend upon the kind of project. The criteria are pretty explicit for standard projects. Non-standard projects require an abstract, written approval and more communication as indicated below. The grading of non-standard projects is also more subjective than for standard projects. Separate sections below cover the two cases. **One common criterion is the level of effort for this class**. A second important criterion, especially for standard projects, is the use of the methodology and concepts taught in class.

Team projects are encouraged. Individual projects may be allowed in some classes, partly depending on class size.

The paper written length should target 20 pages for a single person project. A team project paper should be closer to 40 pages. Parts of papers going much over these lengths may be not graded. The grades may not be the same for all members of a team project if there is evidence of unequal levels of contribution.

The grading primarily focuses on written report but the project presentation is graded. Positive examples and feedback from mid-year redesign presentations usually establishes the standards expected. Most students give satisfactory to excellent final presentations and receive full credit. There are deductions for not presenting, poor visuals, bad organization, difficult to follow rushing, and running out of time to finish. Please practice.

### 2. Standard projects

Standard projects focus on the description of a dataset or a portion of a dataset. The data sets need to be multivariate and of sufficient size and complexity as to be non-trivial. Quality graphics are expected. The thoughtful investigation of a data set, following the criteria below can warrant an A grade whether or not some exciting result is found. When students are trying new modeling methods, less than optimal modeling is acceptable. Trying new things can be positive as long as they make some sense and the graphic meet applicability, quality and variety standards.

There are four broad evaluation areas indicated below. The level of effort for this class is a major grading consideration. The majority of the project effort may be directed toward precursors to the graphics. For example data cleaning can be a pain and take a long time. The report should explicitly communicate the level of effort in an area when a substantial effort has been made that might not otherwise be obvious.

- Potential high level of effort areas
  - Data gathering and preparation data for analysis/graphics
  - Development of a GUI to access data and facilitate graphics production
  - Development and/or integration visual analytics
  - Adaptation of existing graphics or use graphics for new data
  - Development of new graphics
  - Attention to appearance details especially when this involves extra work
- Use of methods or concepts taught in class

- Graphics should show variety
  - Univariate , bivariate, multivariate
- Graphics should be of high quality
  - Provide the units of measure, etc.
- Avoid methods deprecated in class. The deprecation methods in some cases go against common practice and perhaps even some perceptual studies.
  - Pie charts
  - Perspective bars without watermarks
  - Symbols plotted on the plot outline
  - Linked legends when direct labeling will do.
- Quality of description
  - Well written
  - Indicate the nature of the data set and its source
  - Indicate the goals for the graphics and/or analysis
    - The goals can be simply be exploration
  - Logical and/or systematic description and reasoning
  - Indicate results or conclusions
  - Clear labeling of figure and tables
- Useful innovation
  - This is not required for an A project, but is rewarded.

### 3. Non-standard projects

Students are expected to submit an abstract and obtain **written** approval before taking on a non-standard project. Such projects may

- Develop new methods (graphics and/or related algorithms)
- Critically review (with recommendation for improvements) of agency publications or web sites.
- Packaging graphics for use in a targeted domain such as a high school geoscience class
- Presenting the software methodology and graphics for an area of science not covered by the instructor. For example an acceptable project might be on use of ENVI for analysis and visualization of new hyperspectral data sets. The difference from this and a standard project would be an increased emphasis on ENVI capabilities and education of class mates.
- Address some other worthy task

### 4. Constraints on multiple use projects.

Students are encouraged to use graphics in their dissertation, at work, and for other classes. There are no constraints in reporting original graphics oriented to the semester that is part of a dissertation. Written permission is required in advance to obtain credit for materials generated at work or for another class. For work projects, the permission comes with an additional reporting requirement to clarify the student's contribution to the project and student's level of effort. For projects that span a second concurrent class, the other instructor must be notified and an understanding reached about the level of effort for the respective classes. Students may also build on their own previous work, but are required to provide the previous work so the incremental effort can be assessed. In general the expectations are a little less for a multiple used project because the work is often seen as more impressive. However, the constraints are present to prevent situations such as students receiving credit for past work, other's work, and full credit for half the work. Fairly abiding by the constraints will typically be treated as an honor's code violation in this class.

## 5. Guidance on including background material

A **modest** fraction of background material may come from the web or from the student's work in other context, provided **the sources are clearly identified**. The background can be very helpful to the instructor's understanding. However note:

- Papers identified as not reporting the sources will be rejected for plagiarism or purposeful deception.
- Papers are not to be primarily a report on some topic taken from the literature.