Introduction:

Write up and solve a case about a decision problem that means something to you. You might want to write about choosing a job, a graduate school, a career, or a pet. You could try doing a survey or sampling activity, such as one where you can ask sensitive questions without embarrassing anyone using probability techniques. Or study some medical, legal, or public policy decision that has significance to you. For different examples of what such cases might look like, see the Oil Wildcatter example (on the web), the job choice slides (to be posted), or the Elmtree write-up in Negotiation Analysis.

An ideal case should work as an engaging and challenging homework problem for a class like this. If you have questions about topics, formats, or techniques, please do not hesitate to post your questions to the discussion forum.

Note: The project is required for students taking the course for graduate credit. Students taking the course for undergraduate credit have the option of replacing their two lowest assignment scores with their project score.

Instructions:

Start by writing an abstract (approximately one page double-spaced) that describes what you are trying to do and why (e.g., this case illustrates such and such techniques by considering applications to such and such situation). Though not required, it should be helpful to you and interesting to everyone else if, by April 23, you post such an abstract to the discussion forum.

Following the abstract, write a case (approximately 2000-2500 words in length) that includes both a narrative that provides motivation, context, information, and data, as well as a list of specific questions or different scenarios to be addressed. You should consider 3000 words to be a firm absolute upper limit on the length on the report. Include your best solutions to these questions, along with comments about alternative approaches if the case is rich enough or realistic enough to admit them. As in the example cases mentioned above, please make sure that your solution not only mentions but makes good use of explicit and well-explained
calculations based on at least two of the following major techniques we have developed:

- Linear Programming and Sensitivity Analysis
- Numerical Scales, Value Functions, and Net Present Value
- PrOACT and the Method of Even Swaps
- Conditional Probabilities, Bayes’ Rule, and Tree Flipping
- Sampling, Bernoulli Trials, and the Value of Information
- Risk profiles and expected utility
- Game theory and negotiation analysis

Your case should include any relevant graphs, tables, or decision trees that you used for the analysis. For example, please make a table of all parameters, values, and equations. You may also include graphs of any sensitivity analysis that you conduct.

As we do throughout the course, you should distinguish between normative, behavioral, and prescriptive analyses. Situations where most people’s untutored reactions differ surprisingly from what you would now decide continue to be of special interest, too.

The amount of time and pages you devote to the project should equal about two other assignments. If what you write about is not too personal, you are again invited to post your report to the discussion forum. The project is not meant to be a group exercise, but should help you consolidate, interrelate, review, apply, and display what you have been learning. As always, cite any sources you use.