Course Objectives: The course serves as an introduction to the art of model building and use, especially related to the analysis of public sector planning and management issues, and the identification and evaluation of possible solutions. The course introduces the quantitative systems approach for identifying the physical, economic, environmental, and social impacts of alternative decisions planners and managers are asked to make. While the problems we examine will likely differ from the ones you will have to deal with in your future jobs, they will serve to develop your skills of building and using quantitative optimization and simulation models. By the end of this course you should feel competent in the development and use of a variety of modeling tools to help you address, analyze, and make informed decisions involving both structured and unstructured public systems planning and management problems. These tools are commonly used in economics, engineering, ecology, business, agriculture, and city and regional planning professions, to name a few.

Course Content: The course will focus on quantitative and qualitative methods for managing data and informing those responsible for decision making. These methods include various deterministic and probabilistic optimization and simulation models, and decision analysis. The aim of all of this 'information technology' is to help us generate and communicate information to decision makers in ways that result in more informed decision making (applied to the public sector).

Applications of these modeling approaches can include, for example:
1. Public health planning and epidemic control
2. Military strategy and battles
3. Management of forest, water, and other environmental resources
4. Transportation planning
5. Location and expansion of public infrastructure
6. Sustainable regional development
7. Extraction and use of non-renewable resources.
8. Operating policies for public service providers (police, ambulance services, fire stations, etc.)
9. Project benefit – cost analyses; environmental economics

Instructors: Pete Loucks 403 Hollister Hall, DPL3@cornell.edu, 255-4896
TAs: To be assigned.

Text: Class Notes on Blackboard

References: Any Operations Research or Management Science Text

Software: We will be using a few software packages (Excel, Lingo)

Homeworks: Homework exercises will be assigned on Wednesdays and are due a week later. They need to be submitted as your own work but you may, and are encouraged to, work on them with others in the class. If you have any questions you can ask for help, including in class, before submitting your homework exercises. The course project(s) will be team efforts. Each member of each team will be graded based on the team's work and the recommendations of others in the team.

Grading: Average of homework grades (less lowest one) will count 60%, the team project 20%, and a pre-project exam 20%. No final exam. A total numerical grade within 10 points of the highest total numerical grade earned will be an A, the next lower 10 points will be a B, etc. The top three of each set of 10 points will get a '+' and the lowest three will get a '-' . (Hence it is possible that everyone in this course can get an A+ and impossible for everyone to fail.)

A Request: Please be a critic in class. Ask questions, argue, and tell us anytime (and certainly before the end of the course when it is too late to do anything about it) if you are confused, unhappy, or are not satisfied with the work you are doing or grades you are getting and want help.