The objective of the main project is to model and analyze real-world problems using substantial mathematical (Operations Research) techniques. Each group will identify a problem to work on, in consultation with the instructor.

Timeline

The project will have four checkpoints. The first is a project proposal, due Thursday, January 27th, the second a progress report, due Thursday, February 10th, the third is a the submission of a preliminary draft on Thursday, March 10th, and finally submission of the project paper, due to CORS on Tuesday, April 5th and to the instructor on Thursday, April 7th. Except for the preliminary draft, these will be accompanied by presentations. Detailed requirements and a marking rubric will be distributed for each stage.

Problem Selection

There are several things to consider when selecting the problem to work on. You will need to motivate the problem, that is, explain why it needs to be solved. As part of this, you will identify stakeholders, that is, people who are affected by the issue and the proposal.

Real problems are by nature open-ended and complex. In order to analyze the problem, you will need to identify and model critical parts of the problem. At the same time, you will need to make assumptions that simplify the problem. You should justify what aspects of the problem you model and which aspects you do not.

You should model the problem in such a way that you can apply non-trivial mathematical (Operations Research) techniques to it to give a detailed, quantitative and verifiable answer. The techniques used will be to some extent dictated by the problem, and are not necessarily related to the subject material of any particular course. You need to make sure that the data (inputs) to the model can be realistically obtained in time to complete the project.

Groups should consult extensively with the instructor in selecting the problem.