PURPOSE:
Select an operating or natural system (or subsystem) within which there is an optimal production planning, scheduling, layout and location, inventory, blending, transportation, assignment or related set of network planning and design problems. Choose one important problem for which some system improvement would be desirable. On campus or off-campus systems are possible. You may work as a team if you so wish.

Ideally, the choice of the specific problem would be suggested by the client or owner of the system. Refer to the textbook and the web along, for example, for additional insights into types of generic network optimization problems for possible study.

The system you select is up to you. Remember that this is a course on network optimization so that the fundamental assumptions relevant to modelling with graphs and network concepts should be followed.

Carefully determine the objective function(s), decision variables, and constraints of the problem.

Collect data on the operations of the system so that you can attempt to obtain estimates of the data and variables of interest. Hopefully, the client may be able to provide the data for you. I would like to suggest that you possibly develop an Android App for a droid phone. * Alternatively, if you have an I-phone using Mathematica might be relevant. **

Your final typewritten project report should include the following sections:

- **I. Introduction (Background)** – a clear description of the system under study and the purpose of your study. What are you attempting to accomplish and what measures of effectiveness are to be used?
- **II. Data collection and analyses** – what data were collected and how? What analyses were performed? The raw data should be organized and tabulated in an appendix.
- **III. Development of optimal (if possible) or good operating policies** – how would you proceed to obtain improved operating policies for the system? Perform some limited sensitivity analysis to underscore your results.
- **IV. Conclusions and recommendations** – what conclusions can you make from your analyses? What do you recommend be done – to improve the system and/or for future work?

REQUIREMENTS:

As a first step in the project, I would like a one page typewritten description of the project proposed by September 25th 2014. This proposal will be evaluated as part of your term project assignment which will be due at the end of the semester in the first or second week of December.

At the end of the semester, a report of no more than ten (10) pages should be turned in. Appendices with data or computer results can be extra, yet the main body of the report should not exceed ten pages. This is a hard constraint!

You will be evaluated based upon the following criteria:

- **Creativity and originality of your problem and its formulation**
- **Thoroughness and completeness of your results**;
- **Correctness of your results**;
- **Communication, Clarity, and Quality of your overall presentation**.

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** Mathematica website with insights as to how to create an app: [http://url.wolfram.com/R7Yz9y/](http://url.wolfram.com/R7Yz9y/)