This course is structured as a workshop. Rather than just covering a series of papers, we will instead work through current open research problems that we are working on or planning to study. We will begin each topic by identifying a specific problem to be studied. This will include an overview of what the applications are, why the problem is of interest, what the current state of knowledge is in the literature, and what approach will be taken to addressing the problem. Next, we will then study in more detail the most closely related articles to the questions raised. Finally, having a better feeling for the related literature we will come back to an in depth discussion of the approach and modeling that is in progress or is to be undertaken.

In reading the related literature, we will do it with a specific eye to the problem that we are addressing. We will keep in mind some of the following questions. Is the approach taken by the authors appropriate? What is really established and what are the limitations in the conclusions? Why were certain assumptions made? How robust is the analysis to changes in the modeling or formulation? How might we do things differently? What interesting research questions are left open or suggested by the work?

With regards to your participation in the course:

Each of you will be expected to raise a research question that you may be interested in, and do a search to find the most closely relevant literature. You will suggest an approach to addressing the question you have raised. Building on this, we will dig into the literature in question to find out what the state of the art is. We will zero in on a couple of the most relevant papers and examine them in detail with reference to to the question. Finally we will come back to sharpening the focus and approach you originally suggested, and when appropriate examine the model and results to date.

This should be a good spring-board for a second or third year paper, or even your dissertation research.

To help with some of the class presentations, there is a handout “Notes on Presenting a Paper,” which is designed to help you in structuring presentations (available on my web site).

To give you time to work up a proposed area of study, I will start out with a current project of mine.

In the first class I will present a research question and then we will go over one or two of the most closely related papers on this subject. In the second class, I will then present the current approach in my thinking to addressing this, and some preliminary results, and we can criticize it (hopefully constructively!).