IEMS 490 Health Policy Modeling

Fall 2009  Professor Benjamin Armbruster

**Description**  Phd level course on the application of mathematical, statistical, economic, and systems models to problems in health policy. Areas covered include disease screening, diagnosis, treatment; assessment of medical technologies; organ allocation policies; and capacity planning. The policy issues studied will encompass a variety of diseases and health conditions including HIV/AIDS, coronary artery disease, asthma, hepatitis C, liver transplants, and pandemic influenza. The analyses will encompass a variety of modeling techniques including simple cost analysis; cost-effectiveness analysis; statistical and probabilistic analysis; decision analysis; risk analysis; simulation; Markov models; linear programming; Markov decision processes, and simulation and control of dynamical systems.

**Class website**  http://users.iems.northwestern.edu/~armbruster/2009iems490/

**Prerequisites**  Bachelor’s level understanding of basic concepts in probability, statistics, differential equations, and optimization.

**Class Times**  Tuesday, Thursday 9:00am - 10:50am, Tech M228

**Instructor**  Professor Benjamin Armbruster, Tech M237
armbruster@northwestern.edu

**Office Hours**  After class, and by appointment

**Textbook**  none

**Readings**  All readings will be posted online and should be read in advance of the session in which they are discussed.

**Assignments**  For each session (starting with lecture 2), each student should prepare a 1-2 page write-up on the readings that addresses the following questions, as appropriate: What policy question(s) are addressed in the paper(s)? How important are these questions? What are the most important assumptions of the analysis? Are any of these assumptions questionable? What non-quantifiable factors are relevant to the policy question(s)? Are the authors’ conclusions justified? Is the analysis useful for the policy question?

In addition, each student must write a term paper going into more depth on one subject. The paper could be a critique of an existing study and extend the analysis; a critique of several studies addressing the same policy question; or a new policy study.