

INTEG 475 — Special Topics: Evidence-Based Decision Making, (WINTER 2016)
(held with ERS 475/675, GEOG 474/675; LEC, SEM)

Overview: Everyday, decisions are made at a personal level, an organizational level, or in the form of public policy. This course introduces decision analytic tools for systematically structuring messy problems to identify trade-offs among different decisions and how to explore them intelligibly. The limits of evidence-based approaches for effective decisions will also be discussed, such as the is-ought problem, the threat of undemocratic technocracy, and the complexities of policy cycles.

Meeting time: TBD, but at two 80-minute blocks per week

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Objectives: By the end of this course, you should be able to

- 1) Articulate the difference between inquiries that aim to uncover facts (science) from decisions (value debates, policy, legal judgments).
- 2) Explain the complementary relationship that science can play to policy and its importance (i.e. policy-relevant science, science-policy interface, science-society interface)
- 3) Apply a variety of decision-analytic techniques for the purposes of problem definition and policy evaluation
- 4) Construct and analyze a simple model for a policy problem, where you are able to
 - Recommend at least one intervention that should be pursued (or avoided) and why;
 - Perform an appropriate sensitivity analysis of your results;
 - Discuss the limitations of your simple model and important considerations for a decision or for future research.

Potential text(s):

- *Making Hard Decisions* by Robert T. Clemen, 1997 or 2004
- *Numbersight: A Street-Fighting Mathematician Teaches How to Make Better Decisions* by Sanjoy Mahajan, 2015

Potential required software:

- Microsoft Excel and latest appropriate Add-ins (e.g. TreePlan)
- *Analytica* by Lumina Decision Systems
- The latest version of *ScenarioWizard* by Wolfgang Weimer-Jehle
- *STELLA* by isee systems

Selected readings may be drawn from the following books:

- *The Structure of Scientific Revolutions* by Thomas S. Kuhn
- *The Honest Broker* by Roger Pielke Jr., 2007
- *Uncertainty* by M. Granger Morgan and Max Henrion, 1990
- *Environmental Decisions in the Face of Uncertainty*, a report published by the US National Research Council of The National Academies, 2013
- *Thinking, Fast and Slow* by Daniel Kahneman, 2013

- *Science as a Contact Sport* by Stephen Schneider, 2009
- *A More Beautiful Question* by Warren Berger, 2014
- *Implementation: How Great Expectations in Washington are Dashed in Oakland; Or, Why It's Amazing that Federal Programs Work at All, This Being a Saga of the Economic Development Administration as Told by Two Sympathetic Observers Who Seek to Build Morals on a Foundation of Ruined Hopes* by Jeffrey L. Pressman & Aaron Wildavsky, 1973

Potential papers for readings

- Alvin Weinberg on Trans-science
- Funtowicz and Ravetz on Post-normal science
- Paul Slovic on affect and risk perception
- Matthew Brown on Deweyan inquiry
- Cohen et al., "A Garbage Can Model of Organizational Choice"