Formal Political Theory I
PS 525, Fall 2011, Tuesdays 1:00-3:20pm, 8/26 - 12/11, Room: 404 DKH

Instructor: Milan Svolik, Department of Political Science
Email: msvolik@illinois.edu
Office hours: Fridays 3-5pm, 311 DKH, or by appointment
Web page: http://netfiles.uiuc.edu/msvolik/www/
No class on: TBD

Description: This course is an introduction to formal political theory – the application of game theoretic methods to political science. Formal political theory represents some of the most widely used analytical tools in the study of politics. More broadly, game theory can be thought of as a general methodology for building social-scientific theories. This is the first in a sequence of two courses; it introduces the central ideas and techniques of game theory along with political illustrations. The second course in this sequence focuses more extensively on prominent applications of game theoretic methods in political science research as well as advanced topics. Students are strongly encouraged to take both courses.

Readings: The course textbook is Osborne, Martin J. 2004. An Introduction to Game Theory. Oxford: Oxford University Press. I recommend that you purchase this textbook (online). The book is also on reserve at the library. The first two chapters are available for download at the author’s website.

Course Requirements: Students are required to attend lectures, read the assigned material, and complete homework assignments. The last is the most important one: The only way to learn game theory is by doing it. At the level of this course, that amounts to a careful study and completion of problems sets. There will be nine homework problem sets. I encourage you to work on these in groups (you must nonetheless turn in your own solution.)
**Grading:** The final grade will be composed as follows: problem sets 40%, midterm 20%, final 30%, class participation 10%. Only four of the nine problem sets will be graded; I will randomly decide which four after you turn them in.

**Topics:**

**Rational Choice (Chapter 1 in Osborne)**

*Concepts:* ordinal preferences, completeness, transitivity, rationality, choice under uncertainty

*Applications:* political preferences, rational choice paradoxes,

**Strategic Games (Chapters 2-4 in Osborne)**

*Concepts:* games in normal form, strict/weak dominance, best response function, Nash equilibrium, mixed strategies, focal effects, multiple equilibria, existence and significance of Nash equilibria

*Applications:* classic games, the median voter theorem, war of attrition, synergistic relationship, reporting a crime, auctions

**Extensive Games (Chapters 5-7 in Osborne)**

*Concepts:* subgame perfect equilibrium, backward induction, chance moves

*Applications:* deterrence, bargaining, agenda control, lobbying, bargaining and war

**Bayesian Games (Chapter 9 in Osborne)**

*Concepts:* type, state, belief, Bayesian Nash equilibrium, knowledge

*Applications:* adverse selection, public good provision, juries, infection
Extensive Games with Imperfect Information (Chapter 10 in Osborne)

*Concepts:* history, information set, behavioral strategy, sequential rationality, belief consistency, perfect Bayesian equilibrium, equilibrium refinements

*Applications:* bluffing, electoral accountability, war of attrition, cheap talk, reputation

**Recommended Readings:**

Throughout this course, we will rely primarily on Osborne (2004). Below, I list some references that may be useful as an introduction to the application of game theory in the social sciences.

**Some other game theory textbooks intended for political scientists:**


**Some other game theory textbooks (intended primarily for economists):**


**Some useful writings on the history, philosophy, and role of game theory in the social sciences:**


These speak more directly to the role of formal models in political science:


On the art and role of theoretical models more generally:


On the history of game theory:


You had learned any mathematics that you will need in this class by the time you finished high school. Nonetheless, here are some references for mathematical methods frequently used in formal modeling for those who would like to read further:

These are intended primarily for political scientists:


These are intended primarily for economists:


Some useful articles on how to present mathematical arguments correctly and intelligibly are:
