Advanced Game Theory  
ICPSR Summer Program 2012-Second Session

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Office Hours: TBA, by appointment, or just drop by my office in ISR

This course presents research that uses game theoretic models in detail. The object is to lead the student through how such models are used in research. The two goals of the course are building technical ability to solve and use such models in research and providing a deep understanding of key articles in this type of research.

The class covers the topics with a combination of sessions on general types of models and others which discuss a particular example of that model in the literature. Sessions that cover a general type of model will often be followed with a problem set. I have organized the course by topics in game theory and attempted to have the level of technical difficulty increase throughout the course. The papers also cover a range of topics across all subfields of political science in addition to a range of types of models. The focus of discussion will be the motivation of the model, the proof of the equilibrium, and how the paper might be extended.

I am open to the idea of covering other papers of particular interest to students at their suggestion. If there is a paper you always wanted to understand in detail, this is your chance. Please send any such suggestions to me as soon as possible.

Although the course seeks to teach modeling skills, it also assumes that the student has had at least one course in game theory already at least at the level of the Introduction to Game Theory course in the first session. Students should be aware that I do not intend to teach the basic concepts of game theory.

The course requires students to complete the homework assignments. We will also spend class time discussing student projects where they develop their own models, with Friday’s session of each week set aside for those discussions. Students are encouraged to bring topics that they are interested in developing for this course. In some cases, students will be encouraged to develop a model on their topic and then write a short paper presenting it.

This course does not use a book. For those students who would like to purchase a high-level game theory book for their own reference, I have the following three recommendations:

Fudenberg and Tirole, *Game Theory*, MIT Press  
Osborne and Rubinstein, *A Course in Game Theory*, MIT Press

Schedule of Classes

**July 17:** Introductory Meeting: Review of Math and Basics of Game Theory  
**Problem Set 1 out**

**July 18:** Backwards Induction, Bayesian Nash Equilibrium

July 19: Signaling Games: Continuous Types

July 20: First Discussion of Projects
**Problem Set 1 due, Problem Set 2 out**

July 23-24: Bargaining Models

**July 24: Problem Set 2 due, Problem Set 3 out**

July 25: Cheap Talk and Multiple Equilibria

July 26: Repeated Games, Folk Theorem

July 27: Second Discussion of Projects
**Problem Set 3 due, Problem Set 4 out**

July 30: Commitment

July 31: Stochastic Games and Markov Perfect Equilibrium
**Problem Set 4 due, Problem Set 5 out**

August 1-2: Selectorate Models; Microeconomic Models
Bueno de Mesquita et al., *The Logic of Political Survival*, Ch. 3

August 3: Third Discussion of Projects

August 6-7: More Markov Perfect Equilibrium
**August 6: Problem Set 5 due**
August 8: War of Attrition Models
Fearon, "Domestic Political Audiences and the Escalation of International Disputes."

August 9: Wrap Up