Political Science 835  
Game Theory and Political Analysis  
Spring 2013

Instructor: Alexander Tahk, 305 North Hall, 263-2297  
Office Hours: Thursday 1:00–3:00pm  
Lecture Time and Location: Monday, 3:30–5:30pm, in 422 North Hall

Teaching Assistant: Emily Sellars, 304 Taylor Hall  
Office Hours: TBD  
Section Times and Locations:  
Wednesday, 11:00–11:50am, in Noland 379 and Wednesday, 2:25–3:15pm, in Chamberlin 2108

ClassList: polisci835-1-s13@lists.wisc.edu

Overview

This course is an introduction to game theory: the mathematical analysis of strategic decision making. The bulk of the course is organized around classes of “games” (representations of strategic environments). For each class of games we will develop and learn to use one or more “solution concepts” (methods of deriving predictions). Although much of the material is inevitably abstract, when possible we will appeal to applications from political science. That said, the concepts are general, and social scientists from neighboring disciplines should find the course accessible and useful.

Along the way, we will also discuss theories of individual and social choice. A theory of individual choice is essential to any model of group choice derived from the preferences of individual actors; game theory is a general framework for building such models. Social-choice theory—the study of how individual preferences are aggregated directly into social preferences, rather than indirectly through strategic choice—is an alternative approach to modeling group choice. We study social-choice theory both because of its importance to political science in general and because of the close relationship between many results in social-choice theory and those in game theory.

Course Requirements

There are four components to the course grade:

- Midterm exam: 35 percent
- Final exam: 45 percent
- Problem sets: 15 percent
- Reaction paper: 5 percent
Problem sets will be distributed every class except March 11 and May 6. They are due that Friday in
the TA's mailbox. Grading of the problem sets will be “coarse,” with each problem set given a check
plus (exemplary effort), check (complete/good effort), check minus (incomplete/poor effort), or zero
(not turned in). Despite the coarseness, and notwithstanding the relatively small direct contribution
to your final grade, by far the most important thing you can do in this course is to give yourself heart,
body, and soul to the problem sets. Do not be tempted into easing back for a problem set or two, with
the thought that you can catch up before the exam. This material is like a train: if you get off at one
station, you will find it very difficult to get back on at the next. Do work in groups, but ideally only
after you have had a chance to think through the problems on your own. Please see me when you have
questions and come to office hours even if you do not have questions so that you can learn from the
questions others ask—that is also part of the learning process.

In addition to regular class attendance, you are required to attend the Political Economy Colloquium,
which meets irregularly on Thursdays from 11:45am to 1:00pm in 422 North Hall. The colloquium
schedule and papers to be presented will be posted at http://users.polisci.wisc.edu/pec/
schedule.html. If you have an unavoidable conflict, please let me know in advance.

You will get much more out of presentations if you have read the papers in advance. I therefore ask you
to choose one colloquium presentation for which you will read the paper closely prior to the talk. You
will undoubtedly have questions, e.g., about the assumptions of a model or the empirical implications
of a theoretical framework. You should email me one such question before the talk, and you should
then find a satisfactory answer to that question while the speaker is in town (e.g., by raising the question
during the presentation or by meeting with the speaker in person). The following Monday, you should
turn in a short written discussion, of approximately 300–500 words, of the question and answer. I
expect entries to be written in clear prose and to be free of grammatical and punctuation errors.

Reading

In contrast to many topics in political science, game theory is best taught from a textbook. There are
two texts for the course, both available at the University Bookstore and elsewhere:

Cambridge: Cambridge University Press.

Press.

Additional readings are listed below and will be made available through Learn@UW.

Schedule

Readings are given in chapter.section.subsection format.
I Introduction
January 23 (section)—Overview

II Individual and Social Choice
January 28—Individual Choice Under Certainty and Uncertainty
McCarty and Meirowitz 2, 3

February 4—Social Choice
McCarty and Meirowitz 4

III Strategic Games with Perfect Information
February 11—Nash Equilibrium
Osborne 2
McCarty and Meirowitz 5.1, 5.2.2, 5.6

February 18—Applications: Electoral Competition, the Commons Problem
Osborne 3.3
McCarty and Meirowitz 5.3

February 25—Mixed-Strategy Nash Equilibrium
Osborne 4.1–4.5, 4.7–4.10, 4.12
McCarty and Meirowitz 5.4, 5.13

March 4—Rationalizability and Iterated Dominance
Review Osborne 2.9, 4.4
Osborne 12
McCarty and Meirowitz 5.2.1, 5.5

March 11—Midterm Exam

IV Extensive Games with Perfect Information
March 18—Subgame-Perfect Nash Equilibrium
Osborne 5, 7.1
McCarty and Meirowitz 7.1, 7.3, 7.5
Spring Break

April 1—Application: Repeated Games
  Osborne 14, 15
  McCarty and Meirowitz 9

April 8—Application: Bargaining Models
  Osborne 16.1
  McCarty and Meirowitz 10.2–10.4

V Strategic Games with Imperfect Information

April 15—Bayesian Nash Equilibrium
  Osborne 9.1–9.3
  McCarty and Meirowitz 6.1, 6.3, 6.8

VI Extensive Games with Imperfect Information

April 22—Weak Sequential Equilibrium and Perfect Bayesian Equilibrium
  Osborne 10.1–10.4
  McCarty and Meirowitz 8.1

April 29—Application: Signaling Games
  Osborne 10.5, 10.7
  McCarty and Meirowitz 8.2, 8.3, 8.6.2

May 6—Modeling as an Enterprise


VII End-of-the-Semester Activities

TBD—Final Exam