POLITICAL SCIENCE W4209: GAME THEORY AND POLITICAL THEORY (SPRING 2010)

Professor: Macartan Humphreys  Time: MW 11:00am-12:15pm
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Overview

W4209 provides a high-level introduction to game theory. We focus on basic concepts and major results of importance for political scientists. It is appropriate for graduate and advanced undergraduate students. Major results from social choice and game theory are covered with applications in the study of collective action, voting, and bargaining. I will assume that students are comfortable with mathematical techniques at the level of Political Science W4360 (Math Methods for Political Science) or intermediate microeconomics.

Requirements

The requirements are:

35% A midterm and a final exam accounting for 15% and 20% of your grade respectively.
30% There will be six sets of problems and exercises to complete throughout the course; these are intended to evaluate your understanding of the material and to allow for deeper exploration of models studied, and, especially, to practice model construction and proof writing. These each account for 5% of the course grade. Dates in which they are handed out and are due are marked with a ○ and a ● in the topics table respectively. Late problem sets will not be accepted.
25% You will be required to write a short original paper or group project presenting a model, a theorem or simulation. This paper is your key original output from this course. It can be short (10 pages) but should typically motivate a problem, develop a model, prove or demonstrate ensuing propositions, and identify testable predictions. You may be asked to present parts of your model in class or in the case of games and simulations you may gain a slot in the final day of class to “run” your model if applicable. The paper is due on 6 May 2008.
10% You will be required to participate in weekly sections where problem sets will be reviewed, and class and research material will be discussed.

Resources

• Required Readings are marked with R: on the topics table. These area all examinable.
• You should learn some R: http://www.r-project.org/ http://cran.r-project.org/doc/manuals/R-intro.pdf We will make some code available for running simulations of various games.
• It would be good if you also learned LATEX http://www.latex-project.org/ for writing up exercises
• The main coursebook is Martin Osborne’s An Introduction to Game Theory which is on order at Book Culture (Labyrinth)
• Other required readings will be available on courseworks
• Send queries and clarifications to your TA who will in most cases respond “publicly”
<table>
<thead>
<tr>
<th>Class</th>
<th>Topics and results</th>
<th>Readings</th>
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| W 20 Jan  | **1 Rationality and Social Choice**                    | **R**: Shepsle K. *Analyzing Politics*. Ch 3 & 4  
**R**: Handout  
Geanakoplos, Jn, 2001. *Three Brief Proofs of Arrow's Impossibility Theorem*  
| M 1 Feb   | **4 Chaos and Responses**                               | **R**: Shepsle K. *Analyzing Politics*. Ch 5 & 6  
| W 3 Feb   | **5 Intro to Normal Form Games**                        | **R**: Osborne 2  
Olson, M, *The Logic of Collective Action*, CUP. 1971. 5-66 |
| M 8 Feb   | **6 Solving Normal Form Games**                         | **R**: Osborne 3 |
| W 10 Feb  | **7 Nash I**                                           | **R**: Osborne 2 & 3 again  
McCarty N., and A. Meirowitz.2007. *Political Game Theory*. CUP, Ch. 5.1-5.5.  
McCarty and Meirowitz – Game Theory and Political Theory Ch 5.1-5.5 |
| M15 Feb   | **8 Risk**                                             | **R**: Osborne 4  
McCarty N., and A. Meirowitz.2007. *Political Game Theory*. CUP, Ch 3.1-3.2  
| W17 Feb   | **9 Mixed strategies I**                               | **R**: Osborne, Chs 4  
McCarty N., and A. Meirowitz.2007. *Political Game Theory*. CUP, Ch 3.4 |
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<tr>
<th>Class</th>
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<tr>
<td>M 1 Mar</td>
<td><strong>12 Extensive Form Games</strong>&lt;br&gt;Kuhn’s Theorem, Zermelo’s Theorem</td>
<td>R: Osborne Ch 12&lt;br&gt;McCarty N., and A. Meirowitz. 2007. <em>Political Game Theory</em>. CUP, Ch 7.1.</td>
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<td>M 8 Ma</td>
<td><strong>14 Review</strong></td>
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<td>W10 Mar</td>
<td>15 In class exam</td>
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<td>M 22 Mar</td>
<td><strong>16 Agenda Setting</strong>&lt;br&gt;The Setter Problem</td>
<td>R: Osborne Ch 7&lt;br&gt;Romer and Rosenthal, &quot;Political Resource Allocation, Controlled Agendas, and the Status Quo.&quot; (PC 33: 27/CR)</td>
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<td>M 29 Mar</td>
<td><strong>18 Repeated Games I</strong>&lt;br&gt;The Discounted Utility model; The Folk Theorems</td>
<td>R: Osborne, Ch. 14, 15&lt;br&gt;McCarty N., and A. Meirowitz. 2007. <em>Political Game Theory</em>. CUP, Ch. 9.1-9.5.</td>
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<br>Gilligan and Krehbel, "Collective Decisionmaking and Standing Committees: " (JLEO 3: 287/CR) |
| W 21 Apr    | **25 Evolution I**<br>Evolutionarily Stable Equilibrium                             | R: Osborne Ch 13<br>Dawkins, Richard. *The Selfish Gene* |
| W 28 Apr    | 27 Review                                                                           |                                                                         |
| M 3 May     | 28 Class Presentations                                                             |                                                                         |