PS 1710: Formal Political Analysis

Professor Woon
Spring 2008

Class Meetings

Tuesdays and Thursdays, 2:30 – 3:45 pm
525 Benedum Hall

Contact Information

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Office: 4810 Posvar Hall
Phone: (412) 648-7266

Course Page

CourseWeb (http://courseweb.pitt.edu)

Office Hours

Tuesdays and Thursdays, 4-5 pm
and by appointment

This course provides an introduction to analytical models and their application to political science. The unifying substantive theme is that politics is fundamentally about the choices that people and politicians make. Understanding that choices are often strategic and that institutions affect the way individual choices interact to become collective decisions provides important insights about democracy, elections, policymaking, and conflict.

Political scientists use mathematical models to think carefully and systematically about such choices, and formal analysis involves determining what claims can be logically derived or deduced from a model’s premises. We will introduce and develop fundamental concepts and methods from two general areas of analytic theory that are widely used by political scientists. Both theories share a common basis in the theory of rational choice. Social choice theory provides the framework and tools for analyzing how individual preferences are aggregated into collective choices. Game theory provides the framework and tools for analyzing strategic situations—when the outcome of an individual’s decisions also depends on what others decide to do. Applications include voting and electoral systems, legislative politics, the design of political institutions, the tragedy of the commons, and international crises.

Learning Objectives

The emphasis of the course is on developing careful and rigorous analytical skills. By the end of the semester, students should be able to:

- Identify and explain concepts from social choice and game theory
- Construct simple formal models from verbal descriptions of political situations
- Logically derive choices, equilibria, and outcomes of a formal model
- Interpret real-world political interactions in terms of theoretical models and principles
PREREQUISITES

Although this course has no formal prerequisites, it is intended for advanced undergraduates in political science. Formal analysis is inherently abstract and mathematical, but the level of mathematics actually used in the course will be kept to a minimum. Students should be comfortable with algebra, geometry, and working with symbols. Most of all, you should have a willingness to work hard at thinking logically and solving problems.

ACTIVE LEARNING

“Learning results from what the student does and thinks and only from what the student does and thinks. The teacher can advance learning only by influencing what the student does to learn.” – the late Herbert Simon (Nobel laureate and professor at CMU from 1949-2001)

Some of the material may be challenging at times, but I hope you find that formal analysis is as exciting and rewarding as I do. Meeting the learning objectives stated above will require your active engagement with the material, and the only real way to develop the desired analytical skills is through a lot of practice. You will have homework assignments to assist in this endeavor, and some class time will be devoted to classroom games and small group exercises.

I recommend the following courses of action:

• Do the readings before class then re-read material you had difficulty with after class.
• Start problem sets as soon as they are assigned.
• Work through the examples and additional exercises in the text.
• When working on a problem, use as much scratch paper as you need to. It helps to write down the problem and try different approaches if the answer isn’t immediately obvious to you. (Staring at a blank page trying to do the problem in your head usually doesn’t help.)
• After working on your own as much as possible, consulting classmates to check solutions and help each other with difficult or confusing problems. You will find that you learn a lot by explaining things to your peers.

My responsibility is to facilitate your learning by doing traditional professorly things (such as presenting and explaining basic ideas, demonstrating techniques, and grading your work) and, more importantly, to be responsive to your needs and concerns. Please don’t hesitate to share your comments and thoughts about how the course is going with me.
COURSE MATERIALS

The required textbook is Dixit and Skeath, *Games of Strategy*, 2nd ed., published by W.W. Norton. We will use the textbook sparingly during the first month on social choice but then use it extensively once we start game theory.

A course packet is available from a company called University Readers (NOT the Pitt book store), which you can order online at [http://www.universityreaders.com](http://www.universityreaders.com). Any questions about ordering the course packet should be sent to orders@universityreaders.com. The course packet contains most of the readings for the first unit of the course. When you order your course packet you will be able to download a PDF of the readings for the first two class sessions.

Additional readings are available on the internet, usually through JSTOR. Links to additional readings are provided in the course schedule section of the PDF version of this syllabus and in Courseweb. You must be on campus (or connected to PittNet via VPN) to access these readings.

All of the readings are also available on reserve at Hillman Library.

COURSE REQUIREMENTS AND GRADING

- Participation, 10%
- Problem Sets, 30%
- Midterm Exam, 25%
- Final Exam, 35%

Final grades are determined by computing an overall percentage score based on the percentage of points earned for each of the above categories and weighting them accordingly. Letter grades correspond to the following ranges for final scores:

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A+</td>
<td>97-100</td>
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<tr>
<td>A</td>
<td>93-96.99</td>
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<tr>
<td>A-</td>
<td>90-92.99</td>
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<tr>
<td>B+</td>
<td>87-89.99</td>
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<tr>
<td>B</td>
<td>83-86.99</td>
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<tr>
<td>B-</td>
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<tr>
<td>C-</td>
<td>70-72.99</td>
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<td>D</td>
<td>63-66.99</td>
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<tr>
<td>D-</td>
<td>60-62.99</td>
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<td>F</td>
<td>below 60</td>
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Participation

Attendance and participation are very important to your success in this class. In addition to lectures, we will use class time for games, group problem-solving, and quizzes. If you must miss class, especially on a day for which a game is scheduled, you must notify me ahead of time.
Asking questions in class is also essential for making sure that everyone understands my lectures and explanations. If something is confusing but no one says anything, in all likelihood it is because I am not being clear and everyone else is also confused but no one is willing to speak up.

**Problem Sets**

Problem sets consist of two types of questions. “Replication” questions will be similar to ones presented or worked on in class—the purpose is to ensure that you practice and master the basic techniques. “Extension” questions involve the same concepts but will require that your analysis go further than what is required for a replication question, and their purpose is to give you a sense of how formal analysis can be used to discover new theoretical insights.

For full credit, you must provide solutions (i.e. “show your work”) and turn in your homework on time. Your solutions must be legible (preferably typed). No late work is accepted because solutions are (usually) distributed on the day your homework is turned in.

Collaboration is permitted on problem sets and means that two or more people work together to solve the problems. It DOES NOT mean that one person does the problems and the others copy it. You may collaborate provided that you strictly adhere to the following conditions:

- You work with no more than 2 other people.
- You write up your solutions separately.
- On your homework, indicate with whom you collaborated.

**COURSE POLICIES**

**Academic Integrity**

Plagiarism and cheating are not tolerated. Students caught cheating will fail the course. Students are expected to be familiar with the University’s standards of student conduct (www.as.pitt.edu/faculty/policy/integrity.html). Violations will result in failing the course. If you have any questions about what is allowed and what is not allowed, do not hesitate to ask the instructor. Ignorance is not a valid defense.

**Disabilities**

If you have a disability for which you are or may be requesting an accommodation, please let me know and contact Disability Resources and Services, 216 William Pitt Union (412) 648-7890/(412) 383-7355 (TTY) as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.
Other Accommodations

I do not accept late work or give make-up exams. There are only two exceptions.

(1) If you have a signed medical note from a physician stating that you were physically unable to perform school work for at least three days prior to the due date. NOTE: a printout saying you stopped by student health does not qualify. Your note must be signed by a doctor and it must explain why you were unable to complete the assignment, not just that you were seen or given medication.

(2) If a member of your immediate family dies, then you may be excused if you provide documentation of the event (a dated funeral program, obituary, death notice, or a note from a religious leader on official letterhead, etc).

Course Schedule

Dixit and Skeath is the required textbook. Additional required readings can be found in the course pack [CP], online (where a link is provided), or on reserve at Hillman Library. Optional readings are also available online or on reserve. You are expected to do all the readings even though we will not always cover everything in class. The schedule is subject to change, depending on course needs.

Jan. 8  Introduction to Formal Analysis
Required:  Shepsle and Bonchek, 5-14 [CP]

Jan. 10  No class! (Southern Political Science Association Conference)

I. Voting and Elections

Jan. 15  Rational Choice
Required:  Shepsle and Bonchek, 15-31 [CP]

Jan. 17  Majority Rule
Classroom Game:  Voting and Agendas
Required:  Shepsle and Bonchek, 39-48, 57-62 [CP]

Jan. 22  Alternative Voting Rules
Required:  Dixit and Skeath, pp. 500-524
          Shepsle and Bonchek, pp. 166-177 [CP]
Jan. 24  Candidate Competition
Classroom Game: Campaigns
Required: Dixit and Skeath, pp. 524-530
Stewart, *Analyzing Congress*, pp. 6-22 [CP]

Jan. 29  Representation and Electoral Rules
Required: Shepsle and Bonchek, pp. 177-191
Shotts, *Does Racial Redistricting Cause Conservative Policy Outcomes?* [online]
Optional: Guinier, *Tyranny of the Majority*, chapter 4 [Reserve]

Jan. 31  Multidimensional Spatial Analysis
Required: Stewart, pp. 22-40 [CP]

Feb. 5  Roll Call Voting
Required: Stewart, pp. 373-383 [CP]
Jenkins and Sala, *The Spatial Theory of Voting and the Presidential Election of 1824* [online]

**II. Sequential Games**

Feb. 7  Introduction to Game Theory
Classroom Games: Guessing Game, NIM
Required: Dixit and Skeath, chapter 2

Feb. 12 and 14  Sequential Games
Classroom Games: Ultimatum Game
Required: Dixit and Skeath, chapter 3

Feb. 19 and Feb. 21  Institutions and Policy-Making
Classroom Game: Veto
Required: Stewart, pp. 71-81 [CP]
Krehbiel, *Pivotal Politics*, chapter 2 [CP]
Optional: Ferejohn and Shipan, *Congressional Influence on Bureaucracy* [online]
Feb. 26  Catch-up/Review Session

Feb. 28  Midterm Exam

### III. Collective Action

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<thead>
<tr>
<th>Mar. 4 and Mar. 6</th>
<th>Simultaneous Moves</th>
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<tbody>
<tr>
<td>Classroom Games:</td>
<td>Push-Pull, Lobbying Game</td>
</tr>
<tr>
<td>Required:</td>
<td>Dixit and Skeath, chapter 4</td>
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| Mar. 11 and Mar. 13 | Spring Break! |

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<thead>
<tr>
<th>Mar. 18 and Mar. 20</th>
<th>Social Dilemmas and Collective Action</th>
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<tbody>
<tr>
<td>Classroom Game:</td>
<td>Play or Keep</td>
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<tr>
<td>Required:</td>
<td>Dixit and Skeath, chapters 11 and 12 (up to p. 403)</td>
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<tr>
<th>Mar. 25</th>
<th>Protests and Reforms</th>
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### IV. Information and Uncertainty

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<tr>
<th>Mar. 27 and Apr. 1</th>
<th>Probability, Uncertainty, and Risk</th>
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<tbody>
<tr>
<td>Classroom Game:</td>
<td>Lottery Choice</td>
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<tr>
<td>Required:</td>
<td>Dixit and Skeath, pp. 221-231</td>
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<tr>
<th>Apr. 3 and Apr. 8</th>
<th>Cuban Missile Crisis</th>
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<tbody>
<tr>
<td>Movie:</td>
<td>Thirteen Days</td>
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<tr>
<td>Required:</td>
<td>Dixit and Skeath, chapter 14</td>
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Apr. 10 and Apr. 15  Asymmetric Information
Required: Dixit and Skeath, chapter 9 (including appendix)

Apr. 17  Catch-up/Review Session

Apr. 24  Final Exam