POS

Game Theory: Politics and Strategy
Day(s) T, TH, 3:10-4:55, Willis 204

Prof Bryan R. Daves
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Willis 404
Office Hours: T, TH 12:00-1:30, W 10:00-11:30
(507) 222-6195

Please be advised that there may be revisions to this syllabus. I will announce these in class, and I will post the information on Moodle.

Course Description: In politics, competition is common and cooperation is problematic. Elementary to both are the strategies that individuals, movements, parties and countries choose to achieve their goals, given what others are doing. This course introduces the basic concepts and tools of game theory which is the formal representation of the strategic relationships of actors to understand whether, how and when political actors get what they want. Examples from different political contexts will be used to illustrate real life examples of theoretical insights

Prerequisite(s): None, although comfort with basic Algebra is a plus.

Text: Strategy: An Introduction to Game Theory, 3rd Edition

Course Objectives:
At the completion of this course, students should be able to:

1. Understand how the preferences of strategic actors lead to actions
2. Identify and be able to specify the components of a game
3. Specify the strategies of the players
4. Understand how static and dynamic games work and differ
5. Specify how the amounts of information held by the players affect their strategies
6. Solve games by identifying the strategies employed by the players, incorporating the effects of information, sequence, and action spaces.
7. Apply the basic tools of game theory to political contexts.
Grade Distribution:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Weekly Problem Sets</td>
<td>30%</td>
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<tr>
<td>Midterm</td>
<td>25%</td>
</tr>
<tr>
<td>Group Project</td>
<td>15%</td>
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<tr>
<td>Final Exam</td>
<td>30%</td>
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Grading System:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Numerical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4</td>
</tr>
<tr>
<td>A-</td>
<td>3.67</td>
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<tr>
<td>B+</td>
<td>3.33</td>
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<tr>
<td>B</td>
<td>3</td>
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<tr>
<td>B-</td>
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<td>C+</td>
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<td>C</td>
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Course Policies:

- **General**
  - Calculators may be used for problem sets, but not for exams.
  - Exams are closed book, closed notes.
  - No makeup exams will be given, unless there is an excused absence such as illness (Doctor’s note required), or a death in the family.

- **Grades**
  - Grades in the C range represent performance that meets expectations; Grades in the B range represent performance that is substantially better than the expectations; Grades in the A range represent work that is excellent.

- **Weekly Problem Sets**
  - Students are expected to hand in work that is solely their own. I will assign practice problems as a part of a problem set for students to work on together. I also will provide the solutions to those problems. These practice problems will neither be handed in nor graded. Students are encouraged to work on the practice problems together, but those problems that are to be handed in by a student must be exclusively their own. Offering and accepting solutions from others is an act of plagiarism, which is a serious offense. Students should be aware of the academic integrity policies found in the student handbook.
  - No late assignments will be accepted.

- **Attendance and Absences**
  - Attendance is expected.
  - Students are responsible for all missed work, regardless of the reason for absence. It is also the absentee’s responsibility to get all missing notes or materials. Students should consult with me about any announcements I may have made in class.

- **Students with disabilities**
Carleton College is committed to providing equitable access to learning opportunities for all students. The Disability Services office (Burton Hall 03) is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations. If you have, or think you may have, a disability (e.g., mental health, attentional, learning, autism spectrum disorders, chronic health, traumatic brain injury and concussions, sensory, or physical), please contact Chris Dallager, Director of Disability Services, by calling 507-222-5250 or sending an email to cdallager@carleton.edu to arrange a confidential discussion regarding equitable access and reasonable accommodations.

- **Academic Integrity**

  - Academic integrity is demanded in a college community. The life of the mind requires precision in attribution and authorship of work. "Dishonesty in academic work, particularly in the form of plagiarism, also defeats the process of self-discovery which is the heart of a liberal education." Students must familiarize themselves with the Web site "Academic Integrity in the Writing of Essays and Other Papers" (from which the above quotation is taken) which is maintained by the office of the dean of the college. Students are assumed to be familiar to rules and procedures of the college found in the Student Handbook.
Tentative Course Outline:
The weekly coverage might change as it depends on the progress of the class. However, you must keep up with the reading assignments.

<table>
<thead>
<tr>
<th>Week</th>
<th>Content</th>
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| Week 1 | • Introduction to Game Theory: What is a game, preferences and utilities?  
• James D. Morrow *Game Theory For Political Scientists*, Ch.1-2;  
Watson Ch. 1 |
| Week 2 | • Representing Games  
• Reading assignment: Watson Ch. 2-4 |
| Week 3 | • Analysis of Static Games I: Dominance, Best Response, rationalizability and applications  
• Reading assignment: Watson 6-8 |
| Week 4 | • Analysis of Static Games II: Applications of Rationalizability, Mixed strategy Nash Equilibrium, Strictly Competitive Games, and applications  
• Reading assignment: Watson, 9-12 |
| Week 5 | • Midterm, Introduction to Dynamic Games, Sequential Rationality, Backwards Induction  
• Reading assignment: Watson Ch. 14-15 |
| Week 6 | • Subgame Perfection, Applications of Dynamic Games (complete information), Bargaining  
• Reading assignment: Watson Ch. 18-19 |
| Week 7 | • Repeated Games, applications  
• Reading assignment: Watson Ch. 22-23 |
| Week 8 | • Introduction to Incomplete Information Games  
• Watson Ch.24 |
| Week 9 | • Bayesian Equilibrium, applications  
• Reading assignment: Watson Ch. 26-27 |
| Week 10 | • Perfect Bayesian Equilibrium  
• Reading assignment: Watson Ch. 28-29 |