Introduction to Game Theory in Social Science (POL-UA 840)

MW 9:30-10:45
GCASL, Rm. 361

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Rm. 312, 19 W. 4th St.   Rm. 320, 19 W. 4th St
M 11:30-12:30 p.m.   Tu 10:00-12:00

Course Description
Game theory is a framework for analyzing strategic interactions between thinking, goal-oriented actors. An interaction between individual actors is *strategic* if the consequence of one actor's choice depends not only on her own choice but also on the choices made by the others. Game theory is employed widely to understand a variety of phenomena in different fields, including politics, economics, business, and biology. This course will introduce the fundamentals of game theory and guide the student through some prominent applications of it, with special emphasis on applications in social science.

Course Requirements
Students are expected to complete assigned readings, written assignments, and exams. The assigned course text, Strategy: An Introduction to Game Theory, 3rd edition, by Joel Watson, is available at the NYU bookstore. Other assigned readings will be distributed via NYU Classes or in class.

Lectures augment and illuminate the assigned readings, and attending them is a practical necessity for doing well. Likewise, in the interests of using our limited time well, material that is covered thoroughly in the assigned readings is not necessarily repeated in lecture. Lectures and reading assignments are complements, not substitutes.

Written assignments and exams will consist mainly of solving problems, but may also include identifying strategic interactions, posing questions concerning such interactions, and formulating those questions in the context of a game-theoretic framework of analysis. Written assignments will be collected at the beginning of the class in which they are due, and late work will not be accepted without prior arrangement or truly extenuating, documented, and unforeseen circumstances.

There will be a total of three exams. Each exam will focus on the material covered in the weeks since the previous exam, but because the course material is itself cumulative in nature, **it will be necessary to master material in the earlier part of the course in order to do well later in the course**. Course grades will be based on written assignments (40%), midterm exams (20% each), and the final exam (20%).

Exam Dates (tentative)
Wednesday, February 26
Wednesday, April 15
The final exam will be held at the time designated by the Registrar.

Academic Integrity
All the graded assignments for this course must be products of your own work. Words and ideas of other authors used in your work must be properly referenced in accordance with the standard reference manuals (APA, MLA, Chicago, etc.). All instances of plagiarism (whereby the work of other authors is presented as your own) and cheating will be handled in accordance with university policy. For a more detailed description of university policy, see http://www.nyu.edu/cas/map/integrity.html.

Students with Disabilities
If you have any medically diagnosed condition which will make it difficult for you to carry out the work outlined in this syllabus, or which will require additional time or a different setting for exams, please notify me and the University Center for Students with Disabilities (CSD) in the first week of the course so that we may make appropriate arrangements. All information and documentation of disability is confidential.

Course Outline
Other readings and topics may be added as the course progresses. Unless otherwise noted, readings are from the principal course text.

1. Introduction: Chapter 1, Appendix A
2. Representing Strategic Interactions: Extensive-Form and Normal-Form Games
   p. 7, Chapters 2-3
3. Strategies, Conjectures, Beliefs, and Expectations: Uncertainty in Strategic Settings
   pp. 22-26 (review), Chapters 4-5
4. Analyzing Behavior in Normal-Form Games: Solution Concepts
   Chapters 6-7, 9
5. Applications
   Chapters 8, 10
6. Uncertainty about Other Players' Behavior: Mixed Strategies
   Chapter 11
   Tsebelis, George. (1989) "The Abuse of Probability in Political Analysis: The Robinson Crusoe Fallacy." *American Political Science Review.*

   Midterm 1 will cover (1)-(6).

7. Analyzing Behavior in Extensive-Form Games: Sequential Rationality
   Chapters 14-15
8. Applications to Bargaining
   Chapters 18-19

9. On-going Relationships: Repeated Interactions Between the Same Players
    Chapters 22-23

    Midterm 2 will cover (7)-(9).

10. Uncertainty and Unknowns
        pp. 325-26, Chapters 24-26
11. The Purification Theorem: Mixed Strategies Revisited
    Chapter 26 and TBA
12. The Condorcet Jury Theorem
    Chapter 27
13. Communication: Cheap Talk
    Chapter 28
    Farrell, Joseph and Matthew Rabin. (1996) "Cheap Talk." *Journal of Economic Perspectives.*
14. Communication: Costly Signaling
    Chapter 29

    Something Extra (Summer reading on your own!)
    Myerson, Roger B. (2008) "Mechanism Design." *The New Palgrave Dictionary of Economics*, 2nd Edition