GAME THEORY AND ECONOMIC ANALYSIS, ECONOMICS 521, SPRING 2016
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SYLLABUS
TIME AND LOCATION: TTH 11:00AM-12:15PM, SOC SCI 5106

COURSE DESCRIPTION: Game theory studies behavior in strategic situations, in which agents’ payoffs depend on behavior of others. The goal of this course is to teach you how to think strategically and how to predict outcomes of interactive situations. I will introduce you to the key concepts and tools of game theoretic analysis. Applications of game theory extend well beyond economics to political science, engineering, computer science, finance, biology, anthropology, sociology, and other fields. We will analyze some of these applications in class. We will also play some games.

COURSE TEXT: The material covered in class will be the main reference. I recommend that you buy Strategy: An Introduction to Game Theory (3rd edition) by Joel Watson, New York: W. W. Norton and Company, 2013. For those of you who prefer an alternative (more mathematical) treatment, I also recommend: An Introduction to Game Theory by Martin J. Osborne, Oxford University Press, 2003, of which table of contents as well as the first three chapters you can view online at:


Solutions to selected exercises are available at:

http://www.economics.utoronto.ca/osborne/igt/SOLS.HTM.

I will provide a detailed reading schedule for both textbooks on the course website. If you would like to read more, another good reference is Strategies and Games: Theory and Practice by Prajit K. Dutta, MIT Press, 1999 (it is a Google book).

PREREQUISITES: Econ 301 and Math 222 (or my consent).

CONTACT INFORMATION: My office hours are on Tuesdays, 3:45pm-4:55pm in 7440 SOC SCI or by appointment. You can reach me by e-mail at mrostek{at}ssc.wisc.edu or by phone at 608.262.6723.

DISCUSSION SECTIONS: Our TA is John Brauer, jbrauer{at}wisc.edu. John holds office hours on Wednesdays 3:00pm-5:00pm in 6413 SOC SCI.
Schedule:  Dis 301, Fr 11:00am-11:50am at SOC SCI 6322
          Dis 302, Fr 8:50am-9:40am at SOC SCI 4314
          Dis 303, Fr 9:55am-10:45am at SOC SCI 4314.

COURSE WEBSITE: Course readings will be announced before each class at:


All other course material can be accessed through Learn@UW (https://learnuw.wisc.edu).
**EVALUATION:** Your grade will be determined by: Weekly problem sets (20%); two midterm exams (each worth 25%); and a final exam (30%). Exam dates: Midterm 1: March 1 (Tu, location TBA); Midterm 2: April 7 (Th, location TBA); Final: May 10 (Tu, 7:45am-9:45am, location TBA).

Please plan ahead. If extraordinary circumstances prevent you from taking the midterm, you will need a written excuse from the Dean to take a makeup exam. Problem sets will be posted every Thursday and will be due the following Thursday. Late problem sets will not be accepted. The last “problem set” will be an assignment: You will be asked to write a short (one-page) analysis/explanation of a real-world strategic situation (e.g., a multi-agent phenomenon from your discipline) using game-theoretic tools. I encourage you to think about an interesting problem as we move along. There will be no class on two dates TBA.

**SOME ADVICE:** The pace of the course will be quite fast. Therefore, it is essential that you study and read systematically. Solving problem sets and other practice problems will be the best allocation of your time. (It is also the best way to prepare for the midterms and the final.) You might find it helpful to complete the readings prior to lectures. I strongly encourage you to discuss the course material and problem sets with your classmates. The assignments must be written individually (read: in your own words).

**COURSE OUTLINE:**
Week 1: Normal form games, Dominance

Week 2: Best response, Iterative elimination

Week 3: Nash equilibrium

Week 4: Applications: Static Games

Week 5: Mixed strategies

Week 6: Nash Equilibrium Applications, Review

Week 7: Midterm 1, Extensive-form games with perfect information

Week 8: Mover advantage, Subgame perfection

Week 9: Bargaining, Extensive-form games with imperfect information

Week 10: Spring Break

Week 11: Applications: Dynamic Games

Week 12: Review, Midterm 2

Week 13: Finitely and infinitely repeated games

Week 14: Information economics, Adverse selection

Week 15: Information economics, Job market signaling, Auctions

(The schedule might be subject to minor changes.)