1-2014

ECNS 405.01: Game Theory

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Syllabus
Economics 405 – Game Theory
MWF 11:10 AM – 12:00 PM
JRH 204

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Class Description and Learning Objectives:

Economics 405 is an introduction to the tools of game theory and how they may be applied. In many situations, one individual's choices will affect another's welfare, and vice versa. Game theory is a method of analyzing situations where decisions are interrelated and each agent recognizes this fact and makes decisions strategically. Our primary focus will be on competitive games of perfect information, and we will examine games with less-than-perfect information as time permits. During this course, you will learn the following:

1. How to read and interpret a game matrix and how to diagram a static strategic problem using a game matrix.
2. Under what conditions a Nash equilibrium exists.
3. The definition and use of mixed strategies.
4. How to read and interpret a game tree, and how to diagram a dynamic strategic problem using a game tree.
5. What equilibrium concepts are appropriate for different types of games (static vs. dynamic, perfect vs. imperfect information), and how to identify these equilibria.

Practical Issues:

1. TEXTBOOK: You must have access to moodle to fully participate in this class. I also recommend you purchase the textbook:

   Games of Strategy, by Avinash Dixit and Susan Skeath, 2nd edition (the University Bookstore will have copies of the 3rd edition, which is slightly improved, but it's more expensive).

2. CLASSROOM ENVIRONMENT:

   If you miss a class, it is your responsibility to get notes, announcements, assignments, etc. from your classmates. I will send class information (updates, articles for discussion, etc.) to your university email address. You will need to either check this email account regularly or set up message forwarding to your preferred account.

This course is accessible to and usable by otherwise qualified students with disabilities. Talk to me if you'd like to request reasonable program modification. For more information, visit the Disability Services website at http://www.umt.edu/disability.

3. GRADING:

Your final grade will be based on your performance on problem sets and exams. There will be four exams during the semester plus an exam given during final exam week, and I will drop one exam.

Problem Sets	12%
Exam 1 (Feb 21)	22%
Exam 2 (Mar 21)	22%
Exam 3 (Apr 18)	22%
Exam 4 (May 7)	22%
Exam 5 (May 12, 10:10–12:10)	22%

(*It adds up to more than 100%, but remember that one exam will be dropped*)

Exam policy:
Make sure you don't have a conflict with the exam dates above. If you miss an exam during the regular semester without a university excuse, you must take the final, which will be comprehensive. You will be allowed to take a make-up exam only if (1) you have a valid university excuse for missing the exam and (2) you show me evidence of your excuse (a doctor's note, for example) as soon as you are able.

Problem sets:
Problem sets will be handed out one week before they are due. These exercises are intended to allow you to practice using the skills discussed in the textbook and in class and to familiarize you with the types of questions that will be on exams.

Adding, dropping, and changing the grade option:
The last day to drop, add or change the grade option is April 7. After this date, you will need my and the Dean's signatures in order to drop the course. I will not approve a drop without written documentation of a medical issue, a change in work schedule, or other emergency.

Academic Integrity:

I expect you to know and abide by the Honor Code in all matters pertaining to this course. Violations of this code will be pursued in accordance with the code.

Tentative Course Schedule: The material we cover is subject to change, but problem set due dates and exam dates will not change. The readings are recommended but not required.

Week	Date	Topic	Reading	Quiz/Test
1	Jan 27 – 31	Introduction, math review and notation	Chapters 1 & 2	
2	Feb 3 – 7	Strategic form games and Nash equilibrium	Chapter 4	PS 1 Due Feb 7
3	Feb 10 – 14	Continued		PS 2 Due Feb 14
4	Feb 17	**Presidents' Day**	**No Class**	
	Feb 19 – 21	Dominance	Chapter 5	**Exam 1** Feb 21
5	Feb 24 – 28	Continued		
6	Mar 3 – 7	Applications: Oligopoly		PS 3 Due Mar 7
7	Mar 10 – 14	Mixed strategies	Chapters 7 & 8	PS 4 Due Mar 14
8	Mar 17 – 21	Introduction to dynamic games	Chapter 3	**Exam 2** Mar 21
9	Mar 24 – 28	Backward induction		PS 5 Due Mar 28
	Mar 31 – Apr 4	**Spring Break**	**No Class**	
10	Apr 7 – 11	Dynamic games and subgame perfect equilibria	Chapter 6	PS 6 Due Apr 11
11	Apr 14 – 18	Extensions / Applications	Chapter 10	**Exam 3** Apr 18
12	Apr 21 – 25	Continued		PS 7 Due Apr 25
13	Apr 28 – May 2	Repeated games	Chapter11	PS 8 Due May 2
14	May 5 – 9	Infinitely repeated games		**Exam 4** May 7
	Monday, May 12	**Exam 5:** 10:10 AM–12:10 PM		