

Dartmouth College, Department of Economics

Course Information: Economics 35 - Games and Economic Behavior

Class Meetings: Silsby 312, MWF 11:15-12:20
[x-hour: Tue 12-12:50]

Prerequisites: Economics 21, Mathematics 3, Economics 10

Course Page: <http://www.dartmouth.edu/~econ35wg>

Course Description:

Economics 35 gives an introduction to the basic concepts of game theory, with an emphasis on economic applications. Game theory has become a vital methodology for researchers in many disciplines and has found its way into pop art, films (<http://www.gametheory.net/html/popular.html>) and there is even a book using game theory to analyze some chapters of the Bible (Steven Brams: Biblical Games: Game Theory and the Hebrew Bible).

This course starts with analyzing situations in which players make their decisions simultaneously and have complete information about each other's payoff. In greater detail we will focus on situations in which actors make their decisions sequentially and therefore must take into account how opponents may respond to their decisions. The course thus analyzes static and dynamic games with complete and with incomplete information and focus on the refinements of equilibrium concepts.

A variety of real-world problems can be analyzed in strategic settings as they focus on situations that involve strategic interdependence. Take for example industrial organization: the market price in an industry is not only the result of your own output but also of the output of your competitors. Similarly, we observe in the field of international trade that the levels of imports, exports, and prices do not only depend on domestic tariffs but also on tariffs of other countries.

Incomplete information is a topic that has gained enormous ground in the literature of the past 2 decades. Think of a dynamic game in which earlier moves of a player may convey information to the opponent player about some relevant variables. Revealing and concealing information are the basis of strategic behavior and are therefore particularly useful to explain actions that would be seen as irrational in a non-strategic world. Signaling games, as well as repeated games (finitely and infinitely) under symmetric information, and some topics in bargaining games conclude the course.

Readings: We will be using "Strategy: An Introduction to Game Theory" by Joel Watson (New York: Norton, 2002, ISBN 0-393-97648-3). This book is in

stock at Wheelock Books and can also be bought through on-line retailers. The book is rigorous and mathematically precise but also extremely careful in its focus on using the simplest possible models and least complicated mathematics necessary. Another bonus of the book is the way in which it incorporates elements of contemporary contract theory into the exposition. A copy of the book is ordered for the reserve desk at Baker Library. Check also Joel Watson's page at <http://weber.ucsd.edu/~jwatson/strategy.htm> .

Problem Sets: I assign a list of problems for the chapters we are covering in class every Thursday evening, starting the first week of April. Starting April 21, these problem sets should be solved in written form and turned in the Wednesday after. Here the list:

Problem Set 3	available April 21	due in class April 27
Problem Set 4	available April 28	due in class May 4
Problem Set 5	available May 19	due in class May 25
Problem Set 6	available May 26	due in class June 1

Grading and Exams: Grades will be based on a midterm exam (35%), a final (50%), presentation of problems in class, written solution to problem sets and class participation (15%). If a student misses an exam, I take her average over her other exam grades. A penalty may be imposed, depending on why students miss the exam. Students that are sick on the day of the exam need to obtain a medical note through their class dean and let me know before the exam is scheduled to take the exam.

Honor Principle: Work on examinations must be the student's own, without assistance from others or from notes or texts. I also regard allowing others to copy your work as a violation of the Honor Principle. Non-programmable calculators may be used during tests.

Disabilities: Students with any kind of certified disabilities should contact me not later than the 3rd week of April, just to speak about their needs to make the course as accessible as possible.

Slides: Lecture slides that will be used during class can be downloaded from the course page at least one day before class (2 per page handout). I do not use Blackboard but update our course page ~*econ35wg* usually 3-4 times a week.

Study Groups: The Academic Skills Center (301 Collis) will offer a study group for this course. Further details will be handed out in class the last week of March or the first week of April. For questions please contact Ms. Holly Potter in the Academic Skills Center (646-2014).

Tentative Course Outline (to be updated every 3-4 weeks):

Topic	Chapter
Representing Games	
3/20 The Extensive Form	2
4/1 Strategies	3
4/4 The Normal Form	4
Analyzing Behavior in Static Settings	
4/6 Beliefs and Mixed Strategies	5
4/8 No Class	
4/11 Dominance, Efficiency, and Best Response	6
4/13 Iterated Dominance	7
4/15 Iterated Dominance	7
4/18 Partnership Games and Best Response	8
4/19 [x-hour] Partnership Games II	8
4/20 Exercises and Nash Equilibrium	9
4/22 Nash Equilibrium	9
4/25 Oligopoly: More examples	10
4/27 Mixed-Strategy Nash Equilibrium	11
4/29 Mixed-Strategy Nash Equilibrium: Extensions	11
5/2 Mixed-Strategy Nash Equilibrium: Exercises	11
5/4 Best Response Correspondences	11
5/6 Strictly Competitive Games	12
5/6 Security Strategies and Nash Equilibrium	12
5/9 Review Session	
5/11 Midterm Exam	
Analyzing Behavior in Dynamic Settings	
5/16 Details of the extensive form	14
5/18 Backward Induction & Subgame Perfection	15
5/20 Subgame Perfection and Nash Equilibria	15
Information	
5/23 Introduction: Incomplete Information	24
5/25 Bayes-Nash Equilibrium	26
5/28 Perfect Bayesian Equilibrium	28
6/1 Signaling Games	29
<u>Final Exam: TBA</u>	

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 My office hours are Tue and Thur 4-5 this term. Email me for any question.