# Economics 311
# Experiments and Strategic Behavior
## Spring 2002

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Office Hours: Th. 4:30 – 5:30 pm, by appointment, or whenever my office door is open.

Location and Time:

This course will meet on Thursdays from 1:10 to 4 pm in Science Center 74, a computer-enabled classroom.

**What is strategic behavior?**

Standard economic models (both in macroeconomics and in microeconomics) assume that agents exhibit price-taking behavior: every agent takes the environment in which she operates as given and maximizes her utility under these constraints. However, this simplifying assumption only applies if agents are too 'small' to influence the environment of other agents through their actions. Many important economic phenomena do not fit this paradigm. For example, when a buyer and a seller negotiate a price each of them can walk away from a deal. In industries with a small number of dominant firms (such as the airline and aircraft industries) the price-setting behavior of a single firm can have a large impact on the profits of its competitors. Similarly, US import tariffs affect European manufacturers and can lead to trade wars if set too high. In these types of situations agents have to think strategically. They have to take into account that their own actions influence the payoffs of other players, that other players are aware of this interaction, and that they adjust their own behavior accordingly (etc.)

**What are economic experiments and why do we do them?**

In this course we will look at both what economic theory (specifically a field known as game theory) has to say about strategic interactions and what economic agents (experimental subjects) actually do when faced with strategic decisions. We will conduct a large number of in-class experiments (with real money payoffs) in order to either identify systematic deviations or to confirm theoretical predictions. We also look at a body of existing experimental research. Economic experiments are conducted in

controlled laboratory environments in order to look for behavioral regularities and document unanticipated regularities, formulate new theories to explain newly observed regularities, and make policy recommendations by testing new policies and fine-tuning existing ones. Economic experiments have been recently used outside of academia to study such diverse areas as markets for pollution permits, FCC bandwidth auctions, and matching market for medical internships.

**How to do the readings for this course?**

How many times have you promised yourself to do all your assigned readings before going to class and how many times have you actually done those readings as planned? In this course, the material will be first presented from the perspective of a participant in experiments. Only afterwards will you learn about underlying theories and interpretations. This means that reading assignments are for the most part back-loaded. You still have to do the readings though. ☹? No. ☺☺☺!!! Readings are actually a lot of fun. Occasionally you will have to do some of the readings in advance because you will be assigned to prepare a short presentation on a specific topic or assist me in running the experiment.

**Where can I find the readings?**

All the readings you need to do will be either available electronically or distributed to you in class. There is no required textbook to purchase. However, you might want to consider adding the following books to your library:

Prajit K. Dutta, *Strategies and Games: Theory and Practice*, MIT Press 1999

*The Handbook of Experimental Economics*, John Kagel and Alvin E. Roth, editors, Princeton University Press, 1995

Richard H. Thaler, *The Winner's Curse: Paradoxes and Anomalies of Economic Life*, Princeton University Press, 1994

Matt Ridley, *The Origins of Virtue: Human Instincts and the Evolution of Cooperation*, Penguin Books, 1996

Drew Fudenberg and Jean Tirole, *Game Theory,* MIT University Press, 1991

Douglas Davis and Charles Holt, *Experimental Economics*, Princeton University Press, 1993

**How to take notes in this class?**

In order to organize your thoughts, you should divide your notes into three distinct sections: Economic Theory, Experimental Evidence, and Experimental Methodology. Each class session is going to touch on some aspects of these three broad topics. You should look for connections between them. For example, economic theory assumes that economic agents are rational expected utility maximizers (write down the formulation and predictions of this theory in the theory section of your notes); whether people in fact

do maximize expected utility has been tested using economic experiments (write down evidence for or against this theory in your section on experimental evidence); while examining experimental evidence either through participation in experiments or by looking at experiments conducted by others, you learn something about experimental design (write down these rules and tips in the methodology section). In addition, you are required to keep a Journal of Classroom of Experiments to record all of the experiments that you do in class. Each entry should include the date the experiment was done, the title of the experiment, the structure of the experiment, what it was designed to test and a summary of results. Your journal will be collected at the end of the semester and will count in your participation and assignment grade.

**How will my grade be determined?**

In this course you are required to participate in in-class experiments and help conduct experiments on selected dates (20% of the grade); complete written take-home assignments (30% of the grade) and short in-class quizzes (20% of the grade); undertake a research project (30% of the grade). There will be no final exam.

**What constitutes a research project?**

There are two possibilities:
1) (preferred) Design and conduct your own experiment, collect and analyze experimental data, and report on your results. The instructor will fund all worthwhile projects.
2) Do an extensive literature review of a specific topic (to be approved by the instructor first).
Option number two is a risk-averse choice. We will discuss why in class.

**What topics will this course cover?**

This course will look at some of the major subject areas that have been addressed by laboratory experiments including individual decision-making, altruism, cooperation, reciprocity, gender effects, bargaining, focal points, coordination, public goods, commodity and fiat money, auctions, and market behavior. Each week you will receive detailed information about readings and assignments.

***Topic 1. Individual Decision Making***

> "The problem seems to be that while economists have gotten increasingly sophisticated and clever, consumers have remained decidedly human. This leaves open the question of whose behavior we are trying to model. Along these lines, at an NBER conference a couple of years ago I explained the difference between my models and Robert Barro's (a well known rationalist) by saying that he assumes the agent in his model are as smart as he is, while I portray people as being as dumb as I am. Barro agreed with this assessment."
>
> From *Winner's Curse* by Richard H. Thaler (Ch. 9)

The Handbook of Experimental Economics, Chapter 8

Kahneman D. and A. Tversky (1979) "Prospect Theory: An analysis of decision under risk," *Econometrica 47*: 263 – 91

Kahneman D., Knetsch J. L. and R. H. Thaler (1991) "The Endowment Effect, Loss Aversion, and Status Quo Bias," *Journal of Economic Perspectives*, Vol. 5, No. 1, pp. 193 – 206

Tversky A. and R. H. Thaler (1990) "Preference Reversals," *Journal of Economic Perspectives*, Vol. 4, No. 2, pp. 201 – 11

Thaler R. H. (1990) "Savings, Fungibility, and Mental Accounts," *Journal of Economic Perspectives*, Vol. 4, No. 1, pp. 193 – 205

Thaler R. H. and W. T. Ziemba (1988) "Parimutuel Betting Markets: Racetracks and Lotteries," *Journal of Economic Perspectives*, Vol. 2, No. 2, pp. 161 – 74

Rabin, M. (1999) "Risk Aversion and Expected Utility Theory: A Calibration Theorem" *UC-Berkeley Working Paper*

"Rethinking Thinking" (From The Economist print edition) Dec 18th 1999

***Topic 2. Strategic Behavior***

> As the physicist Murray Gell-Mann said, "Think how hard physics would be if particles could think." It is even harder if we don't watch what "particles" do when interacting.
>
> From Colin Camerer et al, *"Behavioral Game Theory: Thinking, Learning and Teaching"*, Caltech Working Paper, 2001

**Rationality and Iterated Deletion**

Nagel R., A. Bosch-Domenech, A. Satorra and J. Garcia-Montalvo (1999) "One, Two, (Three), Infinity: Newspaper and Lab Beauty-Contest Experiments" *Universitat Pompeu Fabra (Barcelona) Working Paper*

Camerer, C. (2001) "Experiments on Strategic Interaction", Chapter 5

**Coordination**

Van Huyck J. B., R. C. Battalio, and R. O. Beil (1990), "Tacit Coordination Games, Strategic Uncertainty, and Coordination Failure" *The American Economic Review,* 80:1 pp. 234 – 248 (available on JSTOR)

Bornstein G., U. Gneezy, and R. Nagel (1999),
"The effect of intergroup competition on group coordination: An experimental study" *Universitat Pompeu Fabra (Barcelona) Working Paper*

Camerer, C. (2001) *Experiments on Strategic Interaction*, Chapter 7

Kagel J. H. and A. E. Roth (1995), *The Handbook of Experimental Economics*, Chapter 3

**Mixed Strategies**

Camerer, C. (2001) *Experiments on Strategic Interaction*, Chapter 2

**Sequential Games**

Camerer, C. (2001) *Experiments on Strategic Interaction*, Chapter 3

**Auctions**

Thaler, R. H. *Winner's Curse*

***Topic 3. Market Games***

The Handbook of Experimental Economics