

# Course Syllabus

## Econ 612: Experimental/Behavioral Economics

J.M. Rao, Fall 2012, University of Tennessee

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**Course times:** Please check the website for the latest updates in course times. Class sessions will have the following structure:

0:00-0:10: oral quizzes

0:10-1:00: Justin lectures (with slides)

1:00-1:05: coffee break (I take my coffee with 2 creams, no sugar, just FYI)

1:05-1:20: student led discussion/lecture of the case study

1:20-2:00: Justin lectures (without slides), but this is more of a discussion than a lecture.

**Office hours:** We will set up 1 hour for each day I am in Tennessee (M-F) based on a discussion at the start of class. Also by appointment or Skype/phone, etc.

### Assessment/grading:

**35%: Class discussion and participation:** Each class after the first one a student (or student team, depending on numbers) will lead the discussion on a paper of her choosing (from a set that is on the topic of my lecture that day). To score points here just read the paper and highlight the key points and any potential criticisms you may have.

The more important component of class discussion is showing up every day having read the papers and engaging in a conversation. I know people have differential comfort level speaking aloud in class. Don't worry, I'll be sure to make sure everyone gets a chance to speak up (if they have some interesting to say). If come prepared for each class, you will naturally score high on this part of the assessment. If you do not come prepared, I am pretty good at noticing who doesn't want to talk because they are unprepared.

**15% Oral quizzes:** Each class will have "required" and "optional" readings. For the required readings, each class (after the first) I will draw 3 names randomly and 3 papers randomly (I'll draw without replacement, so everyone will go once before anyone goes twice). I will then ask you to do the following: 1) summarize the paper in 2-minutes or less 2) identify why you found it interesting, or if not, why you think it is not a good paper. This is a key job market skill (to do this for your own work), so practicing it now makes sense. If you miss class for a valid reason, there will be no penalty. If you miss class for a less than valid reason and are selected for an oral quiz, you will be docked 2.5% (17%

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<sup>1</sup> I am just kidding.

of this component) and will have to make it up the next class. If you let me know in advance, it will not be in an issue.

**50% Final presentation/paper:** You will be partnered with one other student to design an experiment. Think of this as writing one part of a research paper, the design part (this should be at most 5 pages, a terse style is fine, as long as it's clear). You will also have to conceptually present what would be the introduction/motivation of the paper. In December your team will do the following: a) submit the written design, instructions and any computer programs associated with the design b) do a 25 minute presentation motivating the work and walking the class through the design.

### **Course overview:**

I am going to teach this course from a *methodological perspective*. What does this mean? Consider an applied econometrics class. You end up learning a lot about wages and schooling and so forth, but this is so you can learn methods. The same will be true here. Here the focus is clearly on experimental methods; key results from the literature are designed to complement and exemplify proper/cool/influential use of the methods used, not the other way around. I will also spend more time than usual on *experimentation in business*. The reason is two-fold. First, given my experience at Yahoo! and Microsoft, I have personally been involved with influential experiments to identify causal effects in a business setting. Second, digital data sources and online purchasing is lowering the cost of experimentation—the prices you see on Amazon, the search ranking on Bing, the auction parameters for web advertising, the right number of “friends who like” on Facebook and so forth are all tuned with experiments.

At the end of the class my goal is for you to be able to design experiments to answer interesting economic questions. The study of experimental economics will hopefully raise some of these questions as well.

**Note:** I will update the syllabus as we go along, so please check the website for the most recent version. I will announce all changes/additions in class.

**Bold readings are required.** Regular font means optional. \*'s denote the reading that will be presented by students in the case study part of the class session.

## **Lecture 0: “Guest lecture by Bill Neilson” or “Some friendly advice from the editor of JEBO”**

In this lecture Prof. Neilson will highlight important concepts of the experimental method, outline what makes an experimental paper a good paper (and he would know, he decides the fate of 100's per year) and he will also give out the first assignment, which will be to choose a paper that can be

tested via randomized control trial and to write “first page” of an experimental approach to doing just that. Prof Nielson will be using the following paper as a case study, so make sure to read it carefully.

Unraveling in Guessing Games: An Experimental Study by Rosemarie Nagel, AER 1995

## Lecture 1: “Why run experiments anyway?” or “Severe tests”

In this lecture we’ll discuss the notion of causality and how experiments can be valuable tools to infer causal relationships. We’ll talk about what types of questions are well formed and what type are not. We are going to jump right in. Come prepared.

Interesting Questions in Freakonomics. John Dinardo, *Journal of Economic Literature*. 2007. (read the footnotes also, they are good).

Economic Theory and Experimental Economics. Larry Samuelson JEL 2005.

[http://www.appstate.edu/~whiteheadjc/eco4810/stuff/mr05\\_samuel2.pdf](http://www.appstate.edu/~whiteheadjc/eco4810/stuff/mr05_samuel2.pdf) David Hume on causality: <http://www.iep.utm.edu/hume-cau/> (and old school take correlation vs. causation, you may surprise to learn Hume thought the former is all we could really know).

Case study: none, we’ll use the second half of this class to get to know each other, talk about final projects, and so forth.

## Lecture 2: “Basic methods in experimental economics” or “Trying to do it right”

In this lecture we’ll discuss basic features of the experimental economics toolkit.

Roth, Alvin E. (1988); “Laboratory Experimentation in Economics: A Methodological Overview”, *Economic Journal*, Vol. 98, 974-1031.

Smith, Veron. (1993). “Economics in the Laboratory” *Journal of Economic Perspectives*.

Lei, Vivian, Charles N. Noussair, and Charles R. Plott (2001), “Nonspeculative Bubbles in Experimental Asset Markets: Lack of Common Knowledge of Rationality vs. Actual Irrationality,” *Econometrica*, 69: 831-859

Case study: perception of race and discrimination. Presented by Justin Roush

\*Bertrand, Marianne, and Mullainathan, S. (2004) “Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination,” *American Economic Review*, Vol. 94(4): 991-1013

More optional readings TBD

## Lecture 3: “Asking good questions” or “The first step”

In this lecture we’ll discuss how to ask good questions, how to ask questions you can expect to answer, how to ask questions that are interesting and somehow find the intersection of these sets.

Fogel, R. (1962). A quantitative approach to the study of railroads in American economic growth. *Journal of Economic History*.

McAfee, R.P. (1983). American economic growth and the voyage of Columbus. *AER*. (this paper parodies the Fogel paper)

Case study: transmission and influence in networks. Presented by Langchuan and Shreekar.  
Discussion topic: what would be the ideal experiment(s) to study transmission

Fowler, J. and Kristakis, N. (2007) The spread of obesity in a large social network over 32 years. *New England Journal of Medicine*.

\*Aral, S. and Muchnik L. (2009) Distinguishing influence-based contagion from homophily driven diffusion in dynamic networks. *PNAS*.

Watts, D.J. (2006). Experimental Study of Inequality and Unpredictability in an Artificial Cultural Market. *Science*.

Discussion: how would we design an ideal experiment for this topic?

## Lecture 4: "Power calculations in MatLab"

In this lecture will go over the basics for the purpose and benefits of performing power calculations both before and after you run an experiment (or do empirical analysis generally). I'll then go over in detail how to create synthetic (simulated) data in MatLab, and analyze the data using the actual statistical tests you plan to use. Power tests examine how these tests perform under various parameter scenarios and I'll show you how to test a wide variety of scenarios using nested loops.

List, J.A., S. Sadoff, and M. Wagner. (2008), "So you want to run an experiment, now what? Some simple rules of thumb for optimal experimental design," NBER working paper 15701.

Gary Charness, Uri Gneezy, Michael A. Kuhn, "Experimental methods: Between-subject and within-subject design," *JEBO* 2011

Case study: MatLab code demo for public goods game simulation and MatLab code demo for Hot Hand simulation

## Lecture 5: "What's in your treatment and experimenter demand effects" or "Lab vs. field vs. all"

In this lecture I'll talk about what is wrapped up in a treatment variable and specifically about what are known as experimenter demand effects.

Hoffman, E., K. McCabe, and V. Smith, "Social Distance and Other-Regarding Behavior in Dictator Games," *American Economic Review*, June 1996, 86(3), 653-660.

Falk, Armin and James J. Heckman, "Lab Experiments Are a Major Source of Knowledge in the Social Sciences," *Science*, October 2009, 326(5952), pp. 535-538.

Levitt, Steven D. and John A. List, (2007). "What Do Laboratory Experiments Measuring Social Preferences Reveal About the Real World?" *Journal of Economic Perspectives*.

Stanovich, K. and West, R. (2008) On the relative independence of thinking biases and cognitive ability. *Journal of Personality and Social Psychology*

Case study: dictator games and opting out presented by Matt and Clay.

Andreoni, J., Rao, J.M., and Trachtman, H. "Avoiding the Ask". Working paper. Available from my website.

\*Lazeer, E. and Malmendier, U. (2009) Sorting in lab experiments. NBER working paper.

Dana, J. and Weber, R. (2007) Opting out in Dictator games. *Economic Theory*.

## Lecture 6: "Methods: Priming and cognitive load"

So far we will have discussed the experimental technique of causally manipulating a treatment variable of interest. In this lecture I'll discuss a few methods to do this: priming and cognitive loading.

Shih, M, Ambady, N., and Richeson J. (2002) Stereotype performance boosts: the impact of self-relevance and the manner of stereotype activation. *Journal of Personality and Social Psychology*.

Benjamin, D. and Choi, J. (2007) Social identity and preferences. *AER*.

Dijksterhuis, A. (2004) Think different: the merits of unconscious thought in preference development. *Journal of Personality and Social Psychology*.

Case study: self-control as a costly cognitive resource. Yin and Jie

\*Ward, A. and Mann, T. (2000) Don't mind if I do: disinhibited eating under cognitive load. *Journal of Personality and Social Psychology*.

\*Fishbach, A. et al. (2003) Leading Us Not Unto Temptation: Momentary Allurements Elicit Overriding Goal Activation. *Journal of Personality and Social Psychology*.

Ali, N. (2011) "Learning self-control". *QJE*

## Lecture 7: "Methods: Not all lab studies are experiments" or "Bringing them in to measure something you otherwise couldn't"

Many lab studies are not experiments as we have narrowly defined them. Rather they generate data that is more similar to applied observational studies. Typically, however, they measure things we could not otherwise measure, ranging from DNA to cognitive ability to social actions. A model is typically used to tie these correlations to a causal story. I will discuss the strengths and weaknesses of this experimental paradigm.

Camerer et al. *Neuroeconomics: How neuroscience can inform economics*. *JEL*.

Harbaugh et al. (2006) Cognitive bases of giving. *Science*

Case study 1: Oxytocin and trust

Kosfeld, M. et al. Oxytocin increases trust in humans. *Nature*. 2005.

Case study 2: presented by Michael Craig

Gneezy, Uri, Kenneth Leonard, and John A. List, "Gender Differences in Competition: Evidence from a Matrilineal and a Patriarchal Society," *Econometrica* (2009).

## Lecture 8: "False positives, replication and experimentation in other sciences"

In this lecture I'll talk about how false positives can "naturally" creep into work based on endogenous sample size and the multiplicity of analysis options. I'll also discuss how to avoid this by doing power calculations ahead of time. I'll further hit on the idea that lack of statistical significance does not mean lack of effect.

Economists often idealize experimentation in other sciences. Involving humans, the thought goes, makes things more complicated. Petri dishes are simple. In this lecture I'll use the case study of siturins on longevity. It turns out many concepts we have learned about, replicability, importance of theoretical models, strict tests, experimental confounds and so forth come to bear here as well. In the end, very few of the results from this "red hot" literature have stood up. Hopefully this different perspective will shed some light on experimental design for economic settings.

Justin will lecture on XMRV and Chronic Fatigue Syndrome and the impact of sirtuins on life span.

Aging Genes: The Sirtuin Story Unravels. Jennifer Couzin-Frankel. *Science* 2 December 2011: 1194-1198. [DOI:10.1126/science.334.6060.1194]

False Postive. Jan Cohen and Martin Enserink. *Science*, September 2011: 1694-1701 [DOI: 10.1126/science.333.6050.1694].

Case study #1: False positives in psychology. Jing and Tina

\*Nelson, L. and Simonsohn, U. (2011) False-positive psychology. *Psychological Science*.

Case study #2: Belief formation in humans and apes. Nathan and Okila

\*Call, J. and Tomasello, M. A Nonverbal false belief task: The performance of children and great apes.

## Lecture 9: "Experimentation in business" or "This class aint so useless after all"

In this lecture I will draw from my experience running and evaluating experiments at Yahoo! and Microsoft. The following two papers are useful examples of experimenting at a firm. The first discusses power and experiment cost/benefit analysis. The second is a good example of applying theory (Myerson's reserve pricing formulas) to a real-world setting, and doing so via randomized experiments. Key concepts we'll discuss:

- Hawthorn effects, "you-just-changed-it" effects, what else is changing?, general vs. partial equilibrium, competing hacks, how incentives come in to play

Lewis, R. and Rao, J.M. On the near-impossibility of measuring advertising effectiveness. Working paper. Available from my website.

Case study: structuring auctions on search engines, presented by me.

\*Ostrovsky, M. and Schwarz, M. The impact of reserve prices on sponsored search auctions. Working paper.

Edelman, Ostrovsky and Schwarz. (2007) The generalized second price auction and sponsored search. AER.

Varian, H. (2007). GSP and symmetric equilibrium. International Journal of Game Theory.

## Lecture 10: "External validity" or "What can coffee mugs really tell us about the world?"

Sometimes lab experiments from psychology and economics seem so contrived to offer no real general insights about the world. Is this flippant remark true generally? Come to this lecture to find out.

Camerer. "The promise and success of lab-field generalizability in experimental economics: A critical reply to Levitt and List"

More readings TBD.

Case study: Endowment effect, presented by Lawrence Laplue

Kahneman, Daniel, Jack L. Knetsch, and Richard H. Thaler 1990, "Experimental Tests of the Endowment Effect and the Coase Theorem," *JPE*, 98  
Kahneman, D., J. Knetsch and R. Thaler. "Anomalies: The Endowment Effect, Loss Aversion, and the Status Quo Bias." *Journal of Economic Perspectives*, 1991, 5(1), pp. 193-206.

\*List, J.A. "Does Market Experience Eliminate Market Anomalies?," *Quarterly Journal of Economics* (2003), 118(1), pp. 41-71.

Role of uncertainty and risk: Hoffetz, Erickson, More TBD