

Econ 445

Design and Analysis of Experiments
Department of Economics, George Mason University
Fall 2019

Class: Thursday 4:30 -7:10 pm

Location: Mason Hall D180

Instructor:

Daniel Houser

Tel: 703-993-4856

Office: Mason Hall D154, Fairfax

Website: <http://mason.gmu.edu/~dhouser/>

Email: dhouser@gmu.edu

Office Hour: Thursday after class
or by appointment

TA:

Jian Song

Email: jsong25@gmu.edu

Office Hour: Thursday 3:30-4:30 pm
at Mason Hall D150 Tutoring Room

Course Description

This class provides an introduction to the design and analysis of economics experiments. The topics covered will be useful to anybody interested in running scientific experiments, but will be primarily geared toward behavioral experiments as conducted by economists and psychologists.

Textbooks

Required:

Box, Hunter and Hunter. (2nd Edition) Statistics for Experimenters. Wiley.

Recommended:

1. Cox, D. R. (1958) Planning of Experiments. Wiley.
2. Sidney Siegel and N. John Castellan Jr. (2nd edition) Nonparametric Statistics for the Behavioral Science.

Grades

Homework	25%
Presentation	10%
Midterm – on Oct. 17	25%
Final exam – TBD	40%

Your course grade will be based 25% on the problem sets (drop one with lowest grade, the rest equally weighted), 10% on the presentation of one of the reading assignments, 25% on the midterm exam, and 40% on the final exam. Good class participation can improve your evaluation. **We do not give make-up exams. Homework must be turned in on time. Late homework won't be accepted.**

Outlines

Notes are available at <http://mason.gmu.edu/~dhouser/courses.htm>

1. Science and Experiments

Box, Hunter & Hunter, Chapter 1; Cox, Chapter 1; Houser website, Lecture 1

2. Review of Basic Statistics

Probability distributions, parameters, statistics

Box, Hunter & Hunter, Chapter 2; Houser website, Lecture 2

3. Comparing Two Entities

- Relevant reference sets and distributions
- Randomized Paired Comparison Design
- Blocking and Randomization

Box, Hunter & Hunter, Chapter 3; Houser website, Lecture 3

4. Comparing k treatment means

- Completely Randomized Design - One-way ANOVA
- Randomized Block Design - Two-way ANOVA

Box, Hunter & Hunter, Chapter 4; Houser website, Lecture 4

5. Designs with more than one blocking variable

- Latin squares
- Greco and hyper-grecolatin squares
- Balanced incomplete block designs

Houser website, Lecture 5

6. Repeated Measures

- a. Introduction
 - b. Standard ANOVA for repeated measures without order dependencies
 - c. Comments on repeated measures designs that address order and sequencing effects
- Houser website, Lecture 6*

Reading Articles

1. Kosfeld, Michael, Heinrichs, Markus, Zak, Paul J., Fischbacher Urs, and Fehr, Ernst, 2005, "Oxytocin increases trust in humans", *Nature*, Vol. 435
2. Brosnan, Sarah F. and Waal, Frans B.M. de, 2003, "Monkeys Reject Unequal Pay", *Nature*, Vol. 425
3. Cox, James C., 2004, "How to Identify Trust and Reciprocity", *Games and Economic Behavior*, 46:2, 260-281
4. Houser, Daniel and Robert Kurzban, 2002, "Revisiting Kindness and Confusion in Public Goods Experiments", *American Economics Review*, 92:4, 1062-1069
5. List, John A. and David Lucking-Reiley, 2002, "The Effects of Seed Money and Refunds on Charitable Giving: Experimental Evidence from a University Capital Campaign". *Journal of Political Economy*, 110:1, 215-233
6. Fehr, Ernst and Bettina Rockenbach, 2003, "Detrimental effects of sanctions on human altruism", *Nature*, Vol. 422
7. Schotter, Andrew, 2003, "Decision Making with Naïve Advice", *American Economics Review*, Vol. 93, No. 2, 196-201
8. Cox, James and Oaxaca, Ronald, 1999, "Can Supply and Demand Parameters be Recovered from Data Generated by Market Institutions?" , *Journal of Business and Economic Statistics*, 17
9. Charness, Gary and Martin Dufwenberg, 2006, "Promises and Partnership", *Econometrica*, 74: 6, 1579-1601
10. Chen, Yan and Sherry Xin Li, 2009, "Group Identity and Social Preferences", *American Economic Review*, 99:1, 431-457
11. Gneezy, Uri, 2005, "Deception: The Role of Consequences", *American Economic Review*, 95: 1, 384-394
12. Cox, James C. and Oaxaca, Ronald L. 1989, "Laboratory Experiments with a Finite-Horizon Job-Search Model", *Journal of Risk and Uncertainty*, 2:301-330
13. Duffy, John and Ochs, Jack, 1999 "Emergence of Money as a Medium of Exchange: An Experimental Study", *American Economic Review* 89, 847-877.

14. Venon, Smith, Suchanek, Gerry and Williams, Arlington, 1988 "Bubbles, Crashes, and Endogenous Expectation in Experimental Spot Asset Markets", *Econometrica*, 56:5, 1119-1151
15. Gneezy, Uri and List, John A, 2006, "Putting Behavioral Economics to Work: Testing for Gift Exchange in Labor Markets Using Field Experiments", *Econometrica*, 74:5, 1365-1384
16. Chen, Yan and Tayfun Sonmez, 2006, "School Choice: An Experimental Study", *Journal of Economic Theory* 127:1, 202-231

Students with disabilities

Students with Faculty Contact Sheets for this class need to present them to the instructor as soon as possible. Other students requiring reasonable accommodations, as covered under the Americans with Disabilities Act, should contact the Disability Resource Center (DRC) to open up a DRC file and discuss needed accommodations. Questions and requests for reasonable accommodations should be directed to DRC, 234 SUB I, phone (703) 993.2474 or email dwyne@gmu.edu.

Honor code

George Mason University is an honor code university. Students pledge not to cheat, lie, plagiarize or steal in academic matters.