Syllabus for Experimental Economics I: Behavioral Game Theory

Class Time: Friday 1:20-4:20pm, at Social Sciences 609 (社科 609 教室)
Instructor: Joseph Tao-yi Wang (josephw "at" ntu.edu.tw) Office: Social Sciences 754
Office Hours: Friday 4:20-5:20pm after class or by email appointment

This is an upper division and graduate level course on experimental economics, focusing on behavioral game theory. The purpose is to introduce experimental economics to students so they can start their own research in this field. You are expected to write individual research proposals and present them. Specific goals of this course include:

1. **Introduction to experimental economics**: After this class, students are expected to be able to name several experiments performed in each fields of economics, and describe how the results affirm (or differ from) economic theory and/or field data.

2. **Experimental design**: After this class, students are expected to understand how to design and run an experiment. Students will also write a research proposal that:
   a. Proposes an economic experiment (with sample subject instructions), satisfying:
      i. Real Incentives (so choices have real consequences),
      ii. A Good Control Group (to compare with Treatment group),
      iii. Random Assignment (to the Treatment and Control groups),
      iv. No deception (to establish reputation so real incentives are believed).
   b. Argues why should we care about this experiment and why the experiment is designed this way (compared to other possible designs), and,
   c. Relates your experiment to existing literature (if any) and describes expected results and/or methods to analyze the data (or simulation results).

3. **Evaluate most current research**: After this class, students are expected to develop the ability to read recent journal articles in experimental economics, and evaluate the quality of the papers. During class, students are expected to read assigned journal articles and book chapters and present one article and/or one chapter in class.

Textbook: BGT - Camerer (2003), Behavioral Game Theory, Princeton University Press.
Class website: http://homepage.ntu.edu.tw/~josephw/experimental_21S.htm QR code:
Paper Presentation List:
1. Confucianism and Preferences (Liu-14)
2. Replication with MobLab (Lin-20)
3. LUPI-1 (Ostling-11)
4. LUPI-2 (Mohlin-20)
5. Bargaining and its Process (Chen-21)
6. Spatial Beauty Contest Games (Chen-18)
7. Level-k Thinking and Pupil Dilation (Wang-10)
8. Eyetracking Learning (Knoepfle-09)

9. Equilibrium Selection in Cheap Talk Games (Lai-15)
10. Cheap Talk (Cai-06)
11. Committee Design: Open vs. Closed Rule (Battaglni-19)

Useful resources for first-time presenters: "Oral Presentation Evaluation Criteria and Checklist" for components that form a good presentation and specific areas you should provide feedback. "關於 presentation 的一些想法" on Wei-jen Hsu's blog provides a step-by-step recipe on "How to Prepare a 20-minute Presentation using 20 hours."

Other Recommended Reading:

1. Kagel and Roth, ed. (1995/2016), Handbook of Experimental Economics, Vol. 1 and Handbook of Experimental Economics, Vol. 2, Princeton University Press (HEE1/2).
2. Holt (2019), Markets, Games and Strategic Behavior: An Introduction to Experimental Economics, Princeton University Press. (Holt; Undergraduate text)
3. Moffatt (2016), Experimetrics: Econometrics for Experimental Economics, Palgrave.
4. Mas-Colell, Whinston & Green (1995), Microeconomic Theory, Oxford University Press.

Assignments:

1. Weekly Homework (20%): Weekly problem sets submitted on NTU COOL.
2. Replication (20%): Form groups to replicate estimation of assigned papers (due **6/18**).
3. Presentation (30%): 20-minute oral presentation of one research article (20%) and feedback to others presenters (10%).
4. Final Proposal (30%): Final presentation and written proposal (<4 pages, due **6/4**).

Course Outline:

1. [2/26] Experimental Economics and Behavioral Game Theory (BGT, Ch.1; Holt; Wang)
2. [3/ 5] Risk and Time Preferences (Holt, Ch.3), under Confucianism (Liu-14)
   a. Basic Principles of Experimental Design (BGT, A1.2)
3. [3/12] Social Preferences (BGT, Ch.2; HEE2, Ch.4; UG, DG, Trust; Lin-20)
4. [3/19] Mixed-Strategy Equilibrium (BGT, Ch.3); LUPI (Ostling-11; Mohlin-20)
5. [3/26] Bargaining (BGT, Ch.4) and its Process (Chen-21)
- [4/ 2] Spring Break (Holiday)
6. [4/ 9] Dominant Solvable Games (BGT, Ch.5) and Eyetracking (Chen-2018)
7. [4/16] Level-k Thinking (Crawford-13) with Eyetracking (Wang-2010)
8. [4/23] Learning (BGT, Ch.6; HEE2, Ch.10) in Process (Knoepfle-09; Chen-20)
9. [4/30] Coordination (BGT, Ch.7) and Equilibrium Selection (Lai-15)
10. [5/ 7] Signaling/Reputation (BGT, Ch.8); Cheap Talk (Cai-06)
11. [5/14] Midterm Proposal Discussion (+ Experimetrics)
12. [5/21] Market Design (坂井豐貴-14; Jackson-13; HEE2, Ch.5)
13. [5/28] Political Economy (HEE2, Ch.6); Open vs. Closed (Battaglini-19)
- [6/ 4] Final Proposal Due and Presentation (Replication exercise due 6/18)
14. (optional) Neuroeconomics (HEE2, Ch.3; Krajbich-14; Chen-Wang-19)
15. (optional) Field Experiments (Harrison--04, Glennerster-Takavarasha, Ch.1)d

Paper Presentation List:

1. <u>Confucianism and Preferences (Liu-14)</u>: Liu, Meng and Wang (2014), "Confucianism and Preferences: Evidence from Lab Experiments in Taiwan and China," *Journal of Economic Behavior & Organization*, 104, 106-122.

2. <u>Replication with MobLab (Lin-20)</u>: Lin, Brown, Imai, Wang, Wang and Camerer (2020), "Evidence of General Economic Principles of Bargaining and Trade from 2,000 Classroom Experiments," *Nature Human Behaviour*, 4(9), 917-927. 3.

3. <u>LUPI-1 (Ostling-2011)</u>: Ostling, Wang, Chou and Camerer (2011), "Testing Game Theory in the Field: Swedish LUPI Lottery Games," *American Economic Journal: Microeconomics*, 3(3), 1-33.

4. <u>LUPI-2 (Mohlin-20)</u>: Mohlin, Ostling and Wang (2020), "Learning by Similarity-weighted Imitation in Winter-takes-all Games," *Games and Economic Behavior*, 120, 225-245.

5. <u>Bargaining and its Process (Chen-21)</u>: Chen, Lin, Nave, Smith, Camerer, Wang (2021), "Using Machine Learning to Understand Bargaining Experiments," Chapter 19 of *Bargaining: Current Research and Future Directions*, edited by Emin Karagözoğlu and Kyle Hyndman, Palgrave MacMillan.

6. <u>Spatial Beauty Contest Games (Chen-18)</u>: Chen, Huang and Wang (2018), "A Window of Cognition: Eyetracking the Reasoning Process in Spatial Beauty Contest Games," *Games and Economic Behavior*, 111, 143-158.

7. <u>Level-k Thinking and Pupil Dilation (Wang-10)</u>: Wang, Spezio and Camerer (2010), "Pinocchio's Pupil: Using Eyetracking and Pupil Dilation to Understand Truth Telling and Deception in Sender-Receiver Games," *American Economic Review*, 100(3), 984-1007.

8. <u>Eyetracking Learning (Knoepfle-09)</u>: Knoepfle, Wang and Camerer (2009), "Studying Learning in Games Using Eye-Tracking," *Journal of the European Economic Association*, 7(2-3), 388-398.

9. <u>Equilibrium Selection in Cheap Talk Games (Lai-15)</u>: Lai, Lim and Wang (2015), "An Experimental Analysis of Multidimensional Cheap Talk," *Games and Economic Behavior*, 91, 114-144. (Formerly titled "Experimental Implementations and Robustness of Fully Revealing Equilibria in Multidimensional Cheap Talk")

10. <u>Cheap Talk (Cai-06)</u>: Cai and Wang (2006), "Overcommunication in Strategic Information Transmission Games," *Games and Economic Behavior*, 56(1), 7-36.

11. <u>Committee Design - Open vs. Closed Rule (Battaglni-19)</u>: Battaglini, Lai, Lim and Wang (2019), The Information Theory of Legislative Committees: An Experimental Analysis, *American Political Science Review*, 113(1), 55-76.