Syllabus for Experimental Economics I: Behavioral Game Theory

Class Time: Tuesday 9:10am-12:10pm, at Social Sciences 608 (社科 608 教室)
Instructor: Joseph Tao-yi Wang (josephw"at"ntu.edu.tw) Office: Social Sciences 754/301
Office Hours: Tuesday 12:10-1:00pm after class or by email appointment
Class Website: http://homepage.ntu.edu.tw/~josephw/experimental_23S.htm

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: Camerer (2003), Behavioral Game Theory, Princeton University Press. (BGT)
Presentation: Moffatt (2019), Experimetrics Lecture Notes for NTU mini-course. (Emt)

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. Capra, Croson, Rigdon and Rosenblat ed. (2020), Handbook of Experimental Game Theory, Edward Elgar Publishing.
2. Kagel and Roth, ed. (1995/2016), Handbook of Experimental Economics, Vol. 1 and Handbook of Experimental Economics, Vol. 2, Princeton University Press (HEE1/2).
3. Holt (2019), Markets, Games and Strategic Behavior: An Introduction to Experimental Economics, Princeton University Press. (Holt; Undergraduate text)
4. Moffatt (2016), Experimetrics: Econometrics for Experimental Economics, Palgrave.

Assignments:

1. Weekly Homework (10%): Weekly problem sets submitted on NTU COOL.
2. Replication (20%): Form groups to replicate estimation of assigned paper (due 5/23).
3. Presentation (30%): 20-minute oral presentation of one section of Experimetrics Lecture Notes and one research article (10% each) and feedback to others (10%).
4. Final Proposal (40%): Final presentation and written proposal (<4 pages, due 6/5).

Course Outline:

1. [2/21] Experimetrics and Behavioral Game Theory (BGT,Ch.1; Holt; Wang)
- [2/28] Holiday: Experimental Economics and Behavioral Game Theory on OCW
2. [3/ 7] Risk and Time Preferences (Holt, Ch.3), under Confucianism (Liu-14)
   a. Basic Principles of Experimental Design (BGT, A1.2)
3. [3/14] Social Preferences (1) (BGT, Ch.2; HEE2, Ch.4; UG, DG; He-22)
4. [3/21] Social Preferences (2) (BGT, Ch.2; HEE2, Ch.4; Trust; Lin-20) [Emt-1]
5. [3/28] Mixed-Strategy Equilibrium (BGT, Ch.3); LUPI (Ostling-11; Mohlin-20) [Emt-2]
- [4/ 4] Spring Break: Neuroeconomics on OCW (HEE2, Ch.3; KWC-14; Chen-19)
6. [4/11] Bargaining (BGT, Ch.4) and its Process (Chen-22) [Emt-3]
7. [4/18] Dominant Solvable Games (BGT, Ch.5) and Eyetracking (CHW-18) [Emt-4]
8. [4/25] Level-k Thinking (Crawford-13) with Eyetracking (Wang-10) [Emt-5]
9. [4/29] Learning (BGT, Ch.6; HEE2, Ch.10) in Process (KWC-09; Chen-20)[Emt-6]
10. [5/ 2] Coordination (BGT, Ch.7) and Equilibrium Selection (LLW-15) [Emt-7]
11. [5/16] Signaling/Reputation (BGT, Ch.8); Cheap Talk (Cai-06) [Emt-8]
12. [5/23] Experimetrics & Replication Exercise Due [Emt-9]
13. [5/30] Final Proposal Presentation
- [6/ 6] Revised Proposal Presentation and Proposal Due
14. (Optional) Political Economy (HEE2, Ch.6); Open vs. Closed (BLLW-19)

Paper Presentation Links:

1. Confucianism & Preferences (Liu-14)
2. Risk Preferences (Lin-20)
3. Replication with MobLab (Lin-20)
4. LUPI-1 (Ostling-11)
5. Bargaining & its Process (Chen-22)
6. Spatial Beauty Contest Games (CHW-18)
7. Level-k and Pupil Dilation (Wang-10)
8. LUPI-2 (Mohlin-20)
9. Open vs. Closed Rule (BLLW-19)
10. Cheap Talk (Cai-06)
11. Eyetracking Learning (KWC-09)
12. Cheap Talk Equil. Selection (LLW-15)

Paper Presentation List:

1. Confucianism and Preferences (Liu-14): 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. Estimating Risk Preferences (He-22): He, Analytis and Bhatia (2022), "The Wisdom of Model Crowds," *Management Science*, 68(5), 3635-3659.
3. Replication with MobLab (Lin-20): 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.
4. LUPI-1 (Ostling-11): Ostling, Wang, Chou and Camerer (2011), "Testing Game Theory in the Field: Swedish LUPI Lottery Games," *American Economic Journal: Microeconomics*, 3(3), 1-33.
5. Bargaining and its Process (Chen-22): Chen, Lin, Nave, Smith, Camerer, Wang (2022), "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, 407-431.
6. Spatial Beauty Contest Games (CHW-18): 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. Level-k Thinking and Pupil Dilation (Wang-10): 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. LUPI-2 (Mohlin-20): Mohlin, Ostling and Wang (2020), "Learning by Similarity-weighted Imitation in Winter-takes-all Games," *Games and Economic Behavior*, 120, 225-245.
9. Committee Design - Open vs. Closed Rule (BLLW-19): Battaglini, Lai, Lim and Wang (2019), "The Information Theory of Legislative Committees: An Experimental Analysis," *American Political Science Review*, 113(1), 55-76.
10. (Opt) Cheap Talk (Cai-06): Cai and Wang (2006), "Overcommunication in Strategic Information Transmission Games," *Games and Economic Behavior*, 56(1), 7-36.
11. (Opt) Eyetracking Learning (KWC-09): Knoepfle, Wang and Camerer (2009), "Studying Learning in Games Using Eye-Tracking," *Journal of the European Economic Association*, 7(2-3), 388-398.
12. (Opt) Equilibrium Selection in Cheap Talk Games (LLW-15): 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")