

Syllabus for 412-3, Spring 2022

Overview: This course focuses on models of dynamic games, reputation effects, and learning, as well as their applications to political economy, macroeconomics, and industrial organization.

Instructor: Harry Pei **Email:** harrydp@northwestern.edu

Lectures: Tuesdays and Thursdays, 15:30-17:20. KGH 3301.

Guest Lectures: There will be two guest lectures on Zoom.

1. Jack Fanning on May 5th: Reputational Bargaining.
2. Kevin He on May 31st: Steady State Learning Models.

Evaluation: An in-class presentation *and/or* a final project (e.g., solve a problem mentioned in class, write a literature review, come up with your own question and make some progress, submit a research proposal that you plan to work on in the future).

Reading List: The ones with one star will be covered in class. The ones with two stars are available for in-class presentations. The ones without any star are background readings. Students are more than welcomed to present their own work, or to find other papers to present. Students are also welcomed to suggest related papers that I am unaware of.

Part 1: Reputation effects with perfect monitoring.

1. Kreps, D. and R. Wilson (1982) "Reputation and imperfect information," *Journal of Economic Theory*, 27(2), 253-279.
2. Milgrom, P. and J. Roberts (1982) "Predation, Reputation, and Entry Deterrence," *Journal of Economic Theory*, 27(2), 280-312.
3. Fudenberg, D. and E. Maskin (1986) "The Folk Theorem in Repeated Games with Discounting or with Incomplete Information," *Econometrica*, 54(3), 533-554.
4. *Fudenberg, D. and D. Levine (1989) "Reputation and Equilibrium Selection in Games with a Patient Player," *Econometrica*, 57(4), 759-778.
5. Fudenberg, D. D. Kreps and E. Maskin (1990) "Repeated Games with Long-run and Short-run Players," *Review of Economic Studies*, 57(4), 555-573.
6. *Li, Y. and H. Pei (2021) "Equilibrium Behaviors in Repeated Games," *Journal of Economic Theory*, 193, 105222.

Part 2: Reputation effects with imperfect monitoring.

1. Blackwell, D. and L. Dubins (1962) "Merging of Opinions with Increasing Information," *The Annals of Mathematical Statistics*, 33(3), 882-886.
2. *Fudenberg, D. and D. Levine (1992) "Maintaining a Reputation when Strategies are Imperfectly Observed," *Review of Economic Studies*, 59(3), 561-579.
3. Kalai, E. and E. Lehrer (1993) "Rational Learning Leads to Nash Equilibrium," *Econometrica*, 61(5), 1019-1045.
4. Sorin, S. (1999) "Merging, Reputation, and Repeated Games with Incomplete Information," *Games and Economic Behavior*, 29, 274-308.
5. *Gossner, O. (2011) "Simple Bounds on the Value of a Reputation," *Econometrica*, 79(5), 1627-1641.
6. **Faingold, E. (2020) "Reputation and the Flow of Information in Repeated Games," *Econometrica*, 88(4), 1697-1723.

Part 3: Identification problems.

1. *Ely, J and J. Valimaki (2003) "Bad Reputation," *Quarterly Journal of Economics*, 118(3), 785-814.
2. *Ely, J., D. Fudenberg and D. Levine (2008) "When is Reputation Bad?" *Games and Economic Behavior*, 63(2), 498-526.
3. **Deb, R., M. Mitchell and M. Pai (2021) "Bad Reputation in Relational Contracting," *Theoretical Economics*, forthcoming.

Part 4: Reputation sustainability.

1. Mailath, G. and L. Samuelson (2001) "Who Wants a Good Reputation?" *Review of Economic Studies*, 68(2), 415-441.
2. **Horner, J. (2002) "Reputation and Competition," *American Economic Review*, 92(3), 644-663.
3. *Cripps, M. G. Mailath and L. Samuelson (2004) "Imperfect Monitoring and Impermanent Reputations," *Econometrica*, 72(2), 407-432.
4. *Ekmekci, M. O. Gossner and R. Wilson (2012) "Impermanent Types and Permanent Reputations," *Journal of Economic Theory*, 147(1), 162-178.

Part 5: Limited memories.

1. **Ekmekci, M. (2011) “Sustainable Reputations with Rating Systems,” *Journal of Economic Theory*, 146(2), 479-503.
2. Liu, Q. (2011) “Information Acquisition and Reputation Dynamics,” *Review of Economic Studies*, 78, 1400-1425.
3. *Liu, Q. and A. Skrzypacz (2014) “Limited Records and Reputation Bubbles,” *Journal of Economic Theory*, 151, 2-29.
4. *Pei, H. (2022) “Building Reputations via Summary Statistics,” Working Paper.
5. *Pei, H. (2022) “Reputation Building under Observational Learning,” Working Paper.
6. Kaya, A. and S. Roy (2022) “Market Screening with Limited Records,” *Games and Economic Behavior*, 132, 106-132.

Part 6: Interdependent values and confounded learning.

1. *Pei, H. (2020) “Reputation Effects under Interdependent Values,” *Econometrica*, 88(5), 2175-2202.
2. *Pei, H. (2020) “Reputation for Playing Mixed Actions: A Characterization Theorem,” *Journal of Economic Theory*, forthcoming.
3. **Deb, J. and Y. Ishii (2020) “Reputation Building under Uncertain Monitoring,” Working Paper.
4. Yang, G. (2019) “Robustness of Reputation Effects under Uncertain Monitoring,” Working Paper.

Part 7: Long-run medium-run models.

1. *Schmidt, K. (1993) “Reputation and Equilibrium Characterization in Repeated Games with Conflicting Interests,” *Econometrica*, 61(2), 325-351.
2. *Cripps, M. K. Schmidt and J. Thomas (1996) “Reputation in Perturbed Repeated Games,” *Journal of Economic Theory*, 69(2), 387-410.
3. *Celentani, M., D. Fudenberg, D. Levine and W. Pesendorfer (1996) “Maintaining a Reputation Against a Long-Lived Opponent,” *Econometrica*, 64(3), 691-704.
4. *Thomas, J. and R. Evans (1997) “Reputation and Experimentation in Repeated Games with Two Long-Run Players,” *Econometrica*, 65(5), 1153-1173.

Part 8: Long-run long-run models.

1. *Cripps, M. and J. Thomas (1997) "Reputation and Perfection in Repeated Common Interest Games," *Games and Economic Behavior*, 18(2), 141-158.
2. **Chan, J. (2000) "On the Non-Existence of Reputation Effects in Two-Person Infinitely Repeated Games," Working Paper.
3. *Cripps, M. E. Dekel and W. Pesendorfer (2005) "Reputation with Equal Discounting in Repeated Games with Strictly Conflicting Interests," *Journal of Economic Theory*, 121(2), 259-272.
4. *Atakan, A. and M. Ekmekci (2012) "Reputation in Long-Run Relationships," *Review of Economic Studies*, 79(2), 451-480.
5. Atakan, A. and M. Ekmekci (2015) "Reputation in the Long-Run with Imperfect Monitoring," *Journal of Economic Theory*, 157, 553-605.
6. **Ekmekci, M. and L. Maestri (2021) "Reputation and Screening in a Noisy Environment with Irreversible Actions," Working Paper.
7. **Ekmekci, M. L. Gorno, L. Maestri, J. Sun, and D. Wei (2021) "Learning from Manipulable Signals," Working Paper.

Part 9: Reputational bargaining.

1. Rubinstein, A. (1982) "Perfect Equilibrium in a Bargaining Model," *Econometrica*, 50(1), 97-109.
2. Binmore, K., A. Shaked and J. Sutton (1987) "An Outside Option Experiment," *Quarterly Journal of Economics*, 104(4), 753-770.
3. *Abreu, D. and F. Gul (2000) "Bargaining and Reputation," *Econometrica*, 68(1), 85-117.
4. *Compte, O. and P. Jehiel (2002) "On the Role of Outside Options in Bargaining with Obstinate Parties," *Econometrica*, 70(4), 1477-1517.
5. *Abreu, D. and D. Pearce (2007) "Bargaining, Reputation, and Equilibrium Selection in Repeated Games with Contracts," *Econometrica*, 75(3), 653-710.
6. *Wolitzky, A. (2011) "Indeterminacy of Reputation Effects in Repeated Games with Contracts," *Games and Economic Behavior*, 73(2), 595-607.
7. *Wolitzky, A. (2012) "Reputational Bargaining with Minimal Knowledge of Rationality," *Econometrica*, 80, 2047-2087.

8. **Atakan, A. and M. Ekmekci (2014) “Bargaining and Reputation in Search Markets,” *Review of Economic Studies*, 81(1), 1-29.
9. **Abreu, D. D. Pearce and E. Stacchetti (2015) “One-Sided Uncertainty and Delay in Reputational Bargaining,” *Theoretical Economics*, 10(3), 719-773.
10. *Fanning, J. (2016) “Reputational Bargaining and Deadlines,” *Econometrica*, 84(3), 1131-1179.
11. *Fanning, J. (2020) “Mediation in Reputational Bargaining,” *American Economic Review*, 111, 2444-2472.
12. **Fanning, J. (2021) “Outside Options, Reputations, and the Partial Success of the Coase Conjecture,” Working Paper.
13. **Ekmekci, M. and H. Zhang (2022) “Reputational Bargaining with Ultimatum Opportunities,” Working Paper.
14. Pei, H. and M. Vairo (2021) “Reputational Bargaining with Unknown Values,” Working Paper.

Part 10: Repeated game with incomplete information.

1. Hart, S. (1985) “Nonzero-Sum Two-Person Repeated Games with Incomplete Information,” *Mathematics of Operations Research*, 10(1), 117-153.
2. *Shalev, J. (1994) “Nonzero-Sum Two-Person Repeated Games with Incomplete Information and Known-Own Payoffs,” *Games and Economic Behavior*, 7(2), 246-259.
3. *Israeli, I. (1998) “Sowing Doubt Optimally in Two-Person Repeated Games,” *Games and Economic Behavior*, 28(2), 203-216.
4. *Cripps, M. and J. Thomas (2003) “Some Asymptotic Results in Discounted Repeated Games of One-Sided Incomplete Information,” *Mathematics of Operations Research*, 28(3), 433-462.
5. *Peski, M. (2014) “Repeated Games with Incomplete Information and Discounting,” *Theoretical Economics*, 9, 651-694.

Part 11: Reputation without commitment types.

1. **Weinstein, J. and M. Yildiz (2013) “Robust Predictions in Infinite-Horizon Games: An Unrefinable Folk Theorem,” *Review of Economic Studies*, 80(1), 365-394.
2. **Weinstein, J. and M. Yildiz (2016) “Reputation without Commitment in Finitely Repeated Games,” *Theoretical Economics*, 11, 157-185.
3. *Pei, H. (2021) “Trust and Betrayals: Reputational Payoffs and Behaviors without Commitment,” *Theoretical Economics*, 16, 449-475.
4. *Pei, H. (2021) “Repeated Communication with Private Lying Costs,” Working Paper.

Part 12: Rational social learning.

1. Banerjee, A. (1992) “A Simple Model of Herd Behavior,” *Quarterly Journal of Economics*, 107(3), 797-813.
2. Bikhchandani, S., D. Hirshleifer and I. Welsh (1992) “A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades,” *Journal of Political Economy*, 100(5), 992-1026.
3. *Smith, L. and P. Sørensen (2000) “Pathological Outcomes of Observational Learning,” *Econometrica*, 68(2), 371-398.
4. Gale, D. and S. Kariv (2003) “Bayesian Learning in Social Networks,” *Games and Economic Behavior*, 45(2), 329-346.
5. Acemoglu, D., M. Dahleh, I. Lobel and A. Ozdaglar (2011) “Bayesian Learning in Social Networks,” *Review of Economic Studies*, 78(6), 1201-1236.
6. **Lobel, I. and E. Sadler (2015) “Information Diffusion in Networks Through Social Learning,” *Theoretical Economics*, 10(3), 807-851.
7. **Hann-Caruthers, W., V. Martynov and O. Tamuz (2018) “The Speed of Sequential Asymptotic Learning,” *Journal of Economic Theory*, 173, 383-409.
8. **Rosenberg, D., and N. Vieille (2019) “On the Efficiency of Social Learning,” *Econometrica*, 87(6), 2141-2168.
9. **Harel, M., E. Mossel, P. Strack and O. Tamuz (2021) “Rational Groupthink,” *Quarterly Journal of Economics*, 136(1), 621-668.
10. **Smith, L., P. Sørensen and J. Tian (2021) “Informational Herding, Optimal Experimentation, and Contrarianism,” *Review of Economic Studies*, 88(5), 2527-2554.
11. **Dasaratha, K., B. Golub and N. Hak (2021) “Learning from Neighbors about a Changing State,” *Review of Economic Studies*, forthcoming.

Part 13: Behavioral/Non-Bayesian social learning.

1. *Eyster, E. and M. Rabin (2014) “Extensive Imitation is Irrational and Harmful,” *Quarterly Journal of Economics*, 129, 1861-1898.
2. *Eyster, E. and M. Rabin (2010) “Naive Herding in Rich-Information Settings,” *American Economic Journal: Microeconomics*, 2, 221-243.
3. **Jadbabaie, A., P. Molavi, A. Sandroni, A. Tahbaz-Salehi (2012) “Non-Bayesian Social Learning,” *Games and Economic Behavior*, 76, 210-225.

4. **Molavi, P., A. Tahbaz-Salehi and A. Jadbabaie (2018) “A Theory of Non-Bayesian Social Learning,” *Econometrica*, 86(2), 445-490.
5. **He, K. and K. Dasaratha (2020) “Network Structure and Naive Sequential Learning,” *Theoretical Economics*, 15(2), 415-444.

Part 14: Steady state learning models.

1. *Fudenberg, D. and D. Levine (1993) “Self-Confirming Equilibrium,” *Econometrica*, 61(3), 523-545.
2. *Fudenberg, D. and D. Levine (1993) “Steady State Learning and Nash Equilibrium,” *Econometrica*, 61(3), 547-573.
3. **Fudenberg, D. and D. Levine (2006) “Superstition and Rational Learning,” *American Economic Review*, 96(3), 630-651.
4. *Fudenberg, D. and K. He (2018) “Learning and Type Compatibility in Signaling Games,” *Econometrica*, 86(4), 1215-1255.
5. **Clark, D. and D. Fudenberg (2020) “Justified Communication Equilibrium,” *American Economic Review*, 111, 3004-3034.