

Hong Kong University of Science and Technology
Department of Economics
ECON 5620 Theory of Industrial Organization
Course Outline

Instructor

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Course Webpage: <https://canvas.ust.hk>
Lecture time: Tuesdays and Thursdays 9:00 a.m.-10:50 a.m.
Lecture venue: LSK 1026

Teaching Assistant

TBA

Course Description

This course focuses on guiding students to conduct theoretical research on the following topics in IO and applied theory, including antitrust economics, relational contracts, consumer search, mechanism design, bargaining and information disclosure/design. Familiarity of first-year-PhD-level game theory is expected (though we will quickly review the basics). Other selected IO/applied theory topics will be covered if time permits. For preparation of conducting research on related topics, students are required to write a research paper.

Course Objective and Intended Learning Outcomes

The objective of the course is to introduce the basic tools students needed to read and understand the frontier of economic research in industrial organization and applied theory, as well as prepare them to conduct cutting edge research in this field. Upon completion of this course, you will be able to

1. Use industrial organization concepts or theories acquired through this course to explain and analyze real-life economic issues;
2. Form your own opinion on the contributions of a research paper and propose potential follow-up research projects;
3. Develop simple theoretical models to conduct industrial organization research.

Textbook

There is no required textbook. The following books are great references for any budding (IO/applied) theorists.

- Tirole, J., 1988. The Theory of Industrial Organization. MIT Press.
- Belleflamme, P. and Peitz, M., 2015. Industrial Organization: Markets and Strategies. Cambridge University Press.
- Mailath, G.J. and Samuelson, L., 2006. Repeated Games and Reputations: Long-run Relationships. Oxford University Press.
- Spiegler, R., 2011. Bounded Rationality and Industrial Organization. Oxford University Press.
- Krishna, V. 2009. Auction Theory. Academic Press.
- Milgrom, P. 2004. Putting Auction Theory to Work. Cambridge University Press.
- Bolton, P. and Dewatripont, M., 2005. Contract Theory. MIT press.
- Tirole, J., 2010. The Theory of Corporate Finance. Princeton University Press.

Assessment

Problem Sets (20%)

There are two to three problem sets. Group study/discussion is encouraged, but you have to turn in **your own written answers** (word-to-word copying is **not accepted**). Grading of problem sets is based on effort instead of accuracy. Late submission will be penalized.

Final Test (40%)

The final test is take-home. Students are given 24 hours to work on it, without consulting and communicating with any person. The date and time are to be determined.

Research Paper (40%)

- Objective: develop a research proposal that can be turned into a dissertation chapter.
- Due date: two weeks after the final test.
- Length: at least 8 pages (excluding title page and references).
- The paper should contain the following items:
 - *Title*
 - *Abstract*: gives a summary no more than 200 words
 - *Introduction*: motivates the project, outlines the model, states the results/conjectures (in words, no equation), explains the intuition, discusses their significance and applicability.

- *Literature review*: discuss related papers.
- *Model setup*: states all the assumptions of the model.
- *Result*: states the results/conjectures formally, and explains in more details their intuition (can use equations now). If possible, prove the results; if not, provide examples (numerical or with extra simplifying assumptions) to illustrate the idea.
- *Follow-up Plan*: suggests possible directions of further developing the proposal.

Lecture Plan

- Classical models and strategic commitment (2 lectures)
- Theory of repeated games (2 lectures)
- Applications of repeated games (2 lectures)
- Contracting under moral hazard (3 lectures)
- Consumer search (4 lectures)
- Bayesian games and auctions (2 lectures)
- Mechanism design (3 lectures)
- Bargaining/Durable-goods monopoly (2 lectures)
- Information disclosure (2 lectures)
- Bounded rationality in IO (2 lectures)

Suggested Reading List

Classical Models and Strategic Commitment (1 lecture)

- Tirole, Chapter 5, 8
- Whinston, M.D., 1990. Tying, Foreclosure, and Exclusion. *American Economic Review*.
- Aghion, P. and Bolton, P., 1987. Contracts as a Barrier to Entry. *American Economic Review*.

Repeated Games and Applications

- Mailath and Samuelson, Chapter 2 and 7
- Green, E.J. and Porter, R.H., 1984. Noncooperative collusion under imperfect price information. *Econometrica*.
- Abreu, D., Pearce, D. and Stacchetti, E., 1990. Toward a theory of discounted repeated games with imperfect monitoring. *Econometrica*.
- Abreu, D., 1988. On the theory of infinitely repeated games with discounting. *Econometrica*.

- Abreu, D., Milgrom, P. and Pearce, D., 1991. Information and timing in repeated partnerships. *Econometrica*.
- Halac, M., 2012. Relational contracts and the value of relationships. *American Economic Review*.
- Garicano, L. and Rayo, L., 2017. Relational knowledge transfers. *American Economic Review*.
- Levin, J., 2003. Relational incentive contracts. *American Economic Review*.
- Li, J. and Matouschek, N., 2013. Managing conflicts in relational contracts. *American Economic Review*.
- Baker, G., Gibbons, R. and Murphy, K.J., 2002. Relational Contracts and the Theory of the Firm. *Quarterly Journal of Economics*.
- Levin, J., 2002. Multilateral contracting and the employment relationship. *Quarterly Journal of Economics*.
- MacLeod, W.B. and Malcomson, J.M., 1989. Implicit contracts, incentive compatibility, and involuntary unemployment. *Econometrica*.

Contracting under Moral Hazard

- Fuchs, W., 2007. Contracting with repeated moral hazard and private evaluations. *American Economic Review*.
- MacLeod, W.B., 2003. Optimal contracting with subjective evaluation. *American Economic Review*.
- Shapiro, C. and Stiglitz, J.E., 1984. Equilibrium unemployment as a worker discipline device. *American Economic Review*.
- Laux, C., 2001. Limited-liability and incentive contracting with multiple projects. *RAND Journal of Economics*.
- Che, Y.K. and Yoo, S.W., 2001. Optimal incentives for teams. *American Economic Review*.
- Rajan, M.V. and Reichelstein, S., 2009. Objective versus subjective indicators of managerial performance. *The Accounting Review*.
- Prendergast, C., 1999. The provision of incentives in firms. *Journal of Economic Literature*.

Consumer Search

- Varian, H.R., 1980. A model of sales. *American Economic Review*.
- Burdett, K. and Judd, K.L., 1983. Equilibrium price dispersion. *Econometrica*.
- Anderson, S.P. and Renault, R., 1999. Pricing, product diversity, and search costs: A Bertrand-Chamberlin-Diamond model. *RAND Journal of Economics*.
- Diamond, P.A., 1971. A model of price adjustment. *Journal of Economic Theory*.

- Wolinsky, A., 1986. True monopolistic competition as a result of imperfect information. *Quarterly Journal of Economics*.
- Weitzman, M.L., 1979. Optimal search for the best alternative. *Econometrica*.
- Stahl, D.O., 1989. Oligopolistic pricing with sequential consumer search. *American Economic Review*.
- Bar-Isaac, H., Caruana, G. and Cuñat, V., 2012. Search, design, and market structure. *American Economic Review*.
- Armstrong, M., Vickers, J. and Zhou, J., 2009. Prominence and consumer search. *The RAND Journal of Economics*.

Bayesian Games and Auctions

- Krishna, Chapter 2-5
- Milgrom, Chapter 3
- Milgrom, P. and Segal, I., 2002. Envelope theorems for arbitrary choice sets. *Econometrica*.
- Bulow, J. and Klemperer, P., 1999. The generalized war of attrition. *American Economic Review*.
- Bulow, J. and Klemperer, P., 1994. Rational frenzies and crashes. *Journal of Political Economy*.

Mechanism Design

- Myerson, R.B., 1981. Optimal auction design. *Mathematics of Operations Research*.
- Cramton, P., Gibbons, R. and Klemperer, P., 1987. Dissolving a partnership efficiently. *Econometrica*.
- Courty, P. and Hao, L., 2000. Sequential screening. *Review of Economic Studies*.
- Pavan, A., Segal, I. and Toikka, J., 2014. Dynamic mechanism design: A myersonian approach. *Econometrica*.
- Rochet, J.C. and Stole, L.A., 2002. Nonlinear pricing with random participation. *Review of Economic Studies*.

Bargaining/Durable-goods Monopoly

- Fudenberg, D., Levine D. and Tirole, J., 1985. Infinite-horizon models of bargaining with one-Sided incomplete information. In *Game Theoretic Models of Bargaining*, ed. Roth, A., Cambridge, MA: Cambridge University Press.
- Ausubel, L.M. and Deneckere, R.J., 1989. Reputation in bargaining and durable goods monopoly. *Econometrica*.
- Fuchs, W. and Skrzypacz, A., 2010. Bargaining with arrival of new traders. *American Economic Review*.

- Board, S. and Pycia, M., 2014. Outside options and the failure of the Coase conjecture. *American Economic Review*.
- Dudine, P., Hendel, I. and Lizzeri, A., 2006. Storable good monopoly: The role of commitment. *American Economic Review*.
- Waldman, M., 2003. Durable goods theory for real world markets. *Journal of Economic Perspectives*.

Information Disclosure

- Johnson, J.P. and Myatt, D.P., 2006. On the simple economics of advertising, marketing, and product design. *American Economic Review*.
- Robert, J. and Stahl, D.O., 1993. Informative price advertising in a sequential search model. *Econometrica*.
- Kamenica, E. and Gentzkow, M., 2011. Bayesian persuasion. *American Economic Review*.
- Milgrom, P., 2008. What the seller won't tell you: Persuasion and disclosure in markets. *Journal of Economic Perspectives*.

Bounded Rationality in IO

- Spiegler Chapter 2-5
- DellaVigna, S. and Malmendier, U., 2004. Contract design and self-control: Theory and evidence. *Quarterly Journal of Economics*.
- Grubb, M.D., 2009. Selling to overconfident consumers. *American Economic Review*.