

# **Econ 8747: Industrial Organization Theory**

**Fall 2017**

Professor Yongmin Chen

Office: Econ 112

Class Time/Location: 9:30-10:45 AM. MW; ECON 5

Office Hours: 3:00-5:00 PM on Monday

Course Description: Industrial organization studies the behavior of firms and the functioning of markets, as well as the role of public policy in promoting efficiency. The course will cover selected topics in industrial organization theory. Recommended textbooks include: (1) *The Theory of Industrial Organization* by Jean Tirole, MIT Press, and (2) *Industrial Organization: Contemporary Theory and Practice* by Pepall, Richards, and Norman. A good source for references is the *Handbook of Industrial Organization, Vol. 1, 2, and 3*. *HIO3* (2007, Mark Armstrong and Robert Porter edits) surveys the major developments in IO since Tirole.

Grading: Grades are based on homework and class participation (30%), a midterm exam (40%), and a term paper (30%; presentation + the paper). You are encouraged to form study groups to discuss homework and lecture materials. Requirements for the term paper will be discussed later.

The course materials are arranged by topics (the topics are listed below), and each topic is usually covered in several classes. Tirole remains the classic graduate IO textbook, and you are encouraged to read the entire book and work out the exercise problems there (even though we only cover a few parts of the book in the course). You will also be asked to write short reviews/discussions (each review/discussion is 2-3 pages long, double spaced).

A tentative course schedule is attached. There can be changes to this schedule during the semester, which will be announced in class. It is your responsibility to update course information according to announcements made in class.

## Course Schedule:

### **1. Introduction**

### **2. Monopoly Pricing**

- Monopoly pricing: an overview
- Price discrimination and differential pricing
- Nonlinear pricing
- Dynamic pricing (learning consumer demand, durable-good pricing, ...)
- Product bundling

Readings: Tirole Ch. 1

- Maskin, E., and J. Riley, “Monopoly with Incomplete Information”, RAND, 1984.
- Varian, H., “Price Discrimination and Social Welfare”, AER (1985), 870-875.
- Bagwell and Riordan, “High and declining prices signal product quality”, AER, 1991.
- \*Iñaki Aguirre, Simon Cowan and John Vickers, “Monopoly Price Discrimination and Demand Curvature”, AER, 2010.
- \*Bergemann, D., Brooks, B., and S. Morris. "The Limits of Price Discrimination," AER, 2015
- Weyl, E. Glen and Michal Fabinger. "Pass-Through as an Economic Tool: Principles of Incidence under Imperfect Competition." Journal of Political Economy, 121(3): 528-583, 2013.
- Chen, Y. and M. Schwartz. “Differential Pricing When Costs Differ: A Welfare Analysis”. RAND, 2015.
- McAfee, McMillan, and Whinston, “Multiproduct Monopoly, Commodity Bundling, and Correlation of Values”, QJE (1989), 371-384.
- Chen, Y. and M. Riordan, “Profitability of Product Bundling”, International Economic Review, 2013.
- Chen, Y and T. Zhang, 2015. “Interpersonal Bundling”, Management Science.

**Assignment 1:** (1) Exercise 1.1-1.9 in Tirole; (2) Review one starred article; (3) Discuss product bundling practices in an industry, such as the telecommunications industry

## 2. Product Differentiation and Price Competition

- A Historical Overview
- Spatial Models of Product Differentiation
- The Representative Consumer Approach
- Discrete Choice Models
- Applications: Evaluating Horizontal Mergers

Readings: Ch. 5, 6, 7 in Tirole

- Hotelling, H. (1929). "Stability in Competition", Economic Journal, vol. 39, pp. 41-57.
- Chen, Y. and M. Riordan (2007), “Price and Variety in the Spokes Model”, Economic Journal, 897-921.
- \*Perloff, J.M. and Salop, S.C. (1985). "Equilibrium with product differentiation", Review of Economic Studies, vol. 52, pp. 107-120.
- “Horizontal Merger Guidelines”, FTC and DOJ, 2010.
- Chen, Y. and M. Schwartz. “Churn vs. Diversion in Antitrust: An Illustrative Model”, Economica, 2016.

Further Readings:

- Anderson, S.P., de Palma, A. and Thisse, J-F. (1992). Discrete Choice Theory of Product Differentiation, Cambridge: The MIT Press.
- Deneckere, R. and C. Davidson (1985), “Incentives to form coalitions with Bertrand competition,” RAND Journal of Economics, 473-486.
- Shaked and Sutton (1982), “Relaxing Price Competition through Product Differentiation”, Review of Economic Studies, 3-13.
- Chen, Y. and M. Riordan (2008), “Price-Increasing Competition”, RAND.
- Stole, Lars, “Price Discrimination in imperfectly competitive markets.” HIO 3.

**Assignment 2:** (1) Exercise 5.1-5.9; 7.1-7.3 in Tirole; (2) Discuss a horizontal merger case.

**Planning for Term Paper (on a topic in IO, 15-25 pages long, double space.)**

### 3. Dynamic Models of Oligopoly

- Strategic Behavior: Ideas and Applications
- Dynamic Price Competition
- Dynamic Pricing Based on Consumer Purchase History
  - A Model of Ex-post Differentiation due to Consumer Switching Costs (Chen, 1997)
  - A Model of Ex ante Differentiation due to Heterogeneous Consumer Preferences (Fudenberg and Tirole, 2000)

Readings: Ch. 6 in Tirole

- Bulow, Jeremy, John Geanakoplos, and Paul Klemperer (1985), “Multimarket Oligopoly: Strategic Substitutes and Complements,” Journal of Political Economy, 488-511.
- Klemperer, Paul, “The Competitiveness of Markets with Switching Costs”, RAND (1987), 138-150.
- Joseph Farrell and P. Klemperer, “Competition in Markets with Switching Costs and Lock-In”, HIO 3.
- Chen, Y. “Paying Customers to Switch”, JEMS (1997), 877-897.
- \*Taylor, Curtis, “Consumer Privacy and the Market for Customer Information,” RAND, 2004.
- Fudenberg, D and J. Tirole, “Consumer Poaching and Brand Switching,” RAND (2001), 634-657
- Chen, Y. and J. Percy, “Dynamic Pricing: When to Entice Brand Switching and When to Reward Consumer Loyalty”, RAND, 2010.
- \*Hunold, M. and K. Stahl, “Passive vertical integration and strategic delegation,” RAND, 2016

**Assignment 3:** (1) Exercise 6.1-6.10 in Tirole; (2) Review a starred article.

**Proposal for Term Paper**

#### 4. Consumer Search

- (a) Price Search in Homogeneous-Product markets
  - Salop and Stiglitz's "Bargains and Ripoffs"
  - Varian's model of sales
  - Diamond's Paradox
  - Stahl's model of sequential search
  
- (b) Product Search in Differentiated-Products Markets
  - Wolinsky's model
  
- (c) Intermediaries and Consumer Search

#### Readings:

- Diamond, P. 1971. "A Model of Price Adjustment." *Journal of Economic Theory*.
- Salop, S. and J. Stiglitz, 1977. "Bargains and Ripoffs: A Model of Monopolistically Competitive Price Dispersion", *Review of Economic Studies*.
- Stahl, Dale O. 1989. "Oligopolistic Pricing with Sequential Consumer Search." *AER*.
- Varian, H. 1980. "A Model of Sales." *American Economic Review*.
- Wolinsky, A. 1986. "True Monopolistic Competition as a Result of Imperfect Competition," *QJE*.
- Chen, Y. and C. He, 2011. "Paid Placement: Advertising and Search on the Internet," *Economic Journal*.
- \*Athey, S. and G. Ellison, 2011, "Position Auctions with Consumer Search", *QJE*.
- \*Eliaz, K. and Spiegler, R. (2011). "A Simple Model of Search Engine Pricing." *Economic Journal*, Vol.121, pp F329-39.
- Chen, Y. and T. Zhang, "Intermediaries and Consumer Search," working paper, 2016

#### Additional Readings:

- Armstrong, M. and Y. Chen, 2009. "Inattentive Consumers and Product Quality," *Journal of the European Economic Association*.
- Armstrong, M, Vickers, J, and Zhou, J., "Prominence and Consumer Search", *RAND*, 2009.
- Bagwell, K. and G. Ramey, "Coordination Economies, Advertising, and Search Behavior in Retail Markets", *AER* (1994), 498-517.
- Chen, Y. and R. Rosenthal, 1996. "Asking Prices as Commitment Devices", *International Economic Review*.
- Chen, Y. and T. Zhang, "Entry and Welfare in Search Markets", *Economic Journal*, 2016.
- Janssen, M. and S. Shelegia, 2015. "Consumer Search and Double Marginalization". *American Economic Review*.

**Assignment 4:** (1) Review a starred article; (2) Review the main results in each of the models discussed in (a) and (b) above.

**Exam** (Monday, April 3)

## **5. Innovation and Intellectual Property Rights**

### A. Overview

- Basic Questions for the Economic Analysis of Innovation
- Some Statistics about Innovation Inputs and Outputs
- Analytical Framework

### B. Market Structure and Innovation Incentive

- The Schumpeterian View (1942)
- Arrow's Analysis (1962): Process Innovation
- Preempting Monopoly: Gilbert and Newbery (1982)
- Product Innovation: When is Arrow's Ranking Reversed?
- Vertical Organization and Innovation Incentive
- Exclusive Contracts and Innovation

### C. Intellectual Property Rights (IPRs) and Innovation

- The Fundamental Trade-off: Static vs. Dynamic Efficiency
- Common Forms of IPRs
- Optimal Patents: Single Innovation
- The Division of profits in sequential innovation
- Antitrust and Innovation
- Patent Damages/Remedies
- IPRs and Continual Innovation
- IPRs and Innovation in Developing Countries

### Readings:

- U.S. National Science Board. "[Science and Engineering Indicators 2014](http://www.nsf.gov/statistics/seind14/)".  
<http://www.nsf.gov/statistics/seind14/>
- Arrow, K. (1962). "Economic Welfare and the Allocation of Resources for Innovations," R. Nelson ed. *The Rate and Direction of Inventive Activity*, Princeton University Press.
- Chen, Y and T. Puttitanun (2005). "Intellectual Property Rights and Innovation in Developing Countries", *Journal of Development Economics*, 78: 474-493.
- Gilbert, R. and Newbery, D. (1982). "Preemptive Patenting and the Persistence of Monopoly," *American Economic Review*, 72: 514-526.
- Chen, Y and M. Schwartz (2013). "Product Innovation Incentives: Monopoly vs. Competition", *Journal of Economics and Management Strategy*.

- Chen, Y and D. Sappington (2010). “Innovation in Vertically Related Markets”, Journal of Industrial Economics.
- Chen, Y and D. Sappington (2011). “Exclusive Contracts, Innovation, and Welfare”, American Economic Journals: Microeconomics.
- Chen, Y. (2014) “Refusal to Deal, Intellectual Property Rights, and Antitrust”. Journal of Law, Economics, and Organization.
- Chen, Y., S. Pan and T. Zhang (2014). “(When) Do Stronger Patents Increase Continual Innovation?” Journal of Economic Behavior and Organization.
- Chen, Y. and D. Sappington (2016). “An Optimal Rule for Patent Damages under Sequential Innovation,” working paper.
- Green, J. and S. Scotchmer (1995). “On the Division of Profits in Sequential Innovation”. RAND Journal of Economics, 26: 20-33.
- Gilbert, R. and C. Shapiro. (1990). "Optimal Patent Length and Breadth," RAND Journal of Economics, 21: 106-112.
- Hunt, R. (2004) “Patentability, Industrial Structure, and Innovation”. Journal of Industrial Economics.
- O’Donoghue, T., S. Scotchmer, and J-F. Thisse (1998). “Patent Breadth, Patent Life and the Pace of Technological Progress”. Journal of Economics and Management Strategy.
- Scotchmer, Suzanne. 2004. *Innovation and Incentives*. Cambridge: MIT Press.
- Segal, I. and M. Whinston. (2007) “Antitrust in Innovative Industries”. American Economic Review.
- Shapiro, C. (2016). "Patent Remedies," American Economic Review, 106: 198-202.
- Vickers, John. 2010. "Competition Policy and Property Rights." Economic Journal, 120: 375-392.

Assignment 5. (1) Exercise 10.1-10.10 in Tirole; (2) Discuss an issue or a case related to patenting or innovation.

## **Presentation and Completion of Term Papers**

### **University Policies**

#### **Students with Disabilities**

If you qualify for accommodations because of a disability, please submit to me a letter from Disability Services in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact: 303-492-8671, Center for Community N200, and <http://www.colorado.edu/disabilityservices>.

If you have a temporary medical condition or injury, see guidelines at <http://www.colorado.edu/disabilityservices/go.cgi?select=temporary.html>

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Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, Please make your requests to me within the first two weeks of the semester. See full details at [http://www.colorado.edu/policies/fac\\_relig.html](http://www.colorado.edu/policies/fac_relig.html)

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Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, color, culture, religion, creed, politics, veteran's status, sexual orientation, gender, gender identity and gender expression, age, disability, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. See policies at <http://www.colorado.edu/policies/classbehavior.html> and at [http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student\\_code](http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student_code)

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