

Industrial Organization Theory I

Time: Tuesdays and Thursdays 2:00PM - 3:15PM
Location: MCHU 308
Website: Listed on HuskyCT (blackboard): <https://lms.uconn.edu/>
HuskyCT will be used for announcements, posting of problem sets and solutions, additional course documents, review exams, quizzes and more.

Instructor: Talia Bar

Office: Oak Hall 335

Email: talia.bar@uconn.edu

Telephone: (860) 486-3550

Office hours: Thursday 3:30AM-4:30PM, or by appointment. Announcements about office hour changes or additions will be made on HuskyCT.

Background Expectations

1. Graduate level microeconomics theory including some background in game theory.
2. Mathematical Economics or other mathematical background (in particular, familiarity with solving optimization problems).

Students come to this class with mixed background. Please do not hesitate to let me know if you are having difficulty with any of the topics covered. Depending on the situation, I might review concepts in class, or refer you to extra readings. Note however that it the student's responsibility to make up any materials they are assumed to have covered in UConn's first year Economics PhD micro sequence. Course expectations are the same, even if you entered the class with weaker background.

Description:

In this graduate level industrial organization theory course we study monopoly behavior and strategic interactions between firms in oligopoly markets. The goal is to familiarize students with some industrial organization contributions and methodology.

The course is divided to two parts. The first part covers a list of classic IO topics, and the second covers more modern materials. Topics may include price discrimination, durable goods, entry deterrence and accommodation, horizontal mergers advertising, R&D behavior and patent policy. As time permits, and depending on students' research interests we might cover additional topics such as two sided markets, or social networks in industrial organization. The course will make use of microeconomic theory technics in optimization, dynamic programming and game theory as methods for analysis of oligopoly models.

After this course it is hoped that students will be better able to:

- Define and explain important concepts in Industrial Organization.
- Describe the models we learned and lessons learned from these models.
- Formally write, and solve profit maximization problems as appropriate given the assumptions on market structure and firm conduct.
- Solve for equilibrium outcome in models similar to those we covered in class.
- Predict the effect of changes in economic environments (the parameters of the model) on the outcomes of model. (Comparative Statics analysis).
- Interpret mathematical conditions in economics terms, and formalize economic ideas.
- Independently read and understand applied theory papers in Industrial Organization and related fields, identify the crucial assumptions they make to drive the papers' conclusions.
- Gain experience writing and presenting academic work.
- Identify strategies that help firms gain market power and soften competition.

- Explain the role and important considerations of anti-trust laws.

Lectures: The course meets twice a week. It is mostly lecture based. I write on the board on most lectures, power point presentations are used on occasion. Questions and discussion during class are highly encouraged. There will be occasional short in class activities, time devoted to problem solving, or lectures of other formats. On some lectures, student will be “cold called” to answer questions. Students will be asked occasionally to read or prepare certain material to discuss or present in class. Towards the end of the semester, student will present an academic paper or research proposal in class.

Requirements and Grading:

a. Exam Will cover material from part I. Tentative date: April 6.

b. Homework assignments, quizzes

Homework assignments: A variety of homework assignments will be given throughout the semester. Some will be problems to solve, these are intended to improve your understanding of the material, demonstrate how the abstract concepts learned in lecture can be applied, allow you to learn methodology used by theoretical economists, and improve your analytical skills. Some assignments will involve reading research articles, or preparing certain materials for a following lecture. You might be asked to make short in class presentations based on homework readings. Collaboration among students in working on homework assignments is encouraged (but this does not include the exam which will require independent work).

Quizzes may be administered in class or as homework.

c. Final Project and Presentation

You will need to prepare literature review or a research proposal which includes a literature review on an industrial organization topic of your choice (but subject to my approval). With either option, you will need to make an in class presentation at an assigned date in March or April.

Review: Your written review would need to cover 3-5 papers. It should be 3-5 pages long (12 point font, double-spaced), including title and references. Your class presentation must focus on **one** of the papers.

The following restrictions would apply to your literature review:

- (i) Your review must cover at least 3 **related** journal articles.
- (ii) The topic you review must be unambiguously related to IO. If you are in doubt, some possible criteria could be: is the JEL classification of the paper IO? Is the topic covered in some IO text book? Does it deal with markets, imperfect competition and/or firm strategy?
- (ii) At least one of the 3 articles (preferably the one presented in class) must appear in a reputable general interest journal (such as AER, AEJ micro, RES), or a reputable field journal (such as RAND Journal of Economics, Journal of Industrial Economics, Journal of Economics and Management Strategy, International Journal of Industrial Organization, Journal of Law and Economics).
- (iii) The paper you choose to present must be a theory paper, or at least include a model and some theoretical analysis. It needs to be have been published later than 2000. The other papers in the review need not be theoretical and can be working papers or older ones.
- (iv) A thoughtful review is expected, (including interesting comparisons between papers, a critic and/or suggestions for future research).
- (v) Project presentation should fit one 75 minutes' lecture (plan for about one hour leaving time for discussion). The paper you present in class must be one you have worked hard to understand. Please include a motivating introduction of the main questions the paper addresses, a description of the model, the methodology and main results. Please do your best to prepare your presentation so that the rest of us can learn from it.

Email me your review topic, the references and a link to the paper you will present by **February 15**.

Research proposal as an alternative: If you come up with a research question that you might want to pursue, instead of submitting a literature review, you could submit a research proposal. This will include a motivated research question, a related literature review (although not necessarily as long as if you were only submitting a review), some preliminary work the research you propose (for example a preliminary version of a model, and maybe preliminary findings), a discussion of expected outcomes. Length requirement is the same as indicated above for the review.

Presentations will be held in class sometime between end of spring break and the end of the semester. I will assign you a presentation date.

(vi) About a week before your presentation you will need to send an email to all students with your title, references, the paper and if possible a link to the paper.

To choose a review topic and papers you may follow one of the following strategies:

1. Think of an IO question that interests you and use key words to search for references on line.
2. Choose a page or subsection from Tirole's or another text and follow its references to expand the topic. Look for more recent papers that cite this work, or that relate to the topic of your choice.
3. Browse some journals or the web to find a topic or paper you are interested in. Start with one paper and find some of its references. Search for additional papers on the topic.
4. Look at recent IO or general interest conferences to get a sense of what scholars in the profession are working on.

Peer Reviewers: Students will be asked to offer feedback to peers on class presentations. You need to send your comments in an email sometime between the day of the presentation and the next class. The goal of the peer review is to provide feedback that will help your peers improve their presentation skills. The feedback should include at least one positive comment, and at least one suggestion for improvement.

e. Active Participation

Students are expected to be active learners in this course. You are expected to attend class regularly (of course if you are sick or have another important reason to miss class that is ok), try your best on class assignments, ask and answer questions, help peers, provide feedback on projects, don't engage in distracting activities during class (e.g. checking email, texting).

Grading Scheme

- Participation, short presentations and in class quizzes 20%
- Homework assignments 20%
- Midterm exam 30%
- Project and presentation 30%

Academic Integrity

Students in this course are expected follow the code of Academic Integrity. Academic misconduct is dishonest or unethical academic behavior that includes, but is not limited, to misrepresenting mastery in an academic area (e.g., cheating), intentionally or knowingly failing to properly credit information, research or ideas to their rightful originators or representing such information, research or ideas as your own (e.g., plagiarism)." You may not collaborate on the take home independent assignment. In my course, collaboration on homework is allowed unless otherwise noted, collaboration on some in class quizzes may allowed but only a student who is present for the entire lecture may submit a quiz. Submitting a quiz for a student who is not present is considered a violation of academic integrity.

Absolutely no collaboration or outside help is permitted on exams or “independent take home assignments”. On in class exams, student may not use any device that connects to the internet during an exam, and may not talk to other students for any reason. Internet use is permitted for homework. The university policy and other useful information can be found at <http://provost.uconn.edu/syllabi-references>

Additional course conduct Expectations:

- To make the most of the time we spend in this class, I encourage all students to be active participants, ask questions, express opinions, and listen to others. Please honor the uniqueness of your fellow classmates, and appreciate the opportunity we have to learn from each other. Please respect your fellow students’ opinions and refrain from personal attacks or demeaning comments of any kind. Be polite and considerate.
- Avoid disturbing others who are still taking a test. If you cannot leave without disturbing another student, please stay until that student is also done with his test.
- Students are expected to regularly attend the lectures. Students who miss class are responsible to make up the material they missed with the help of a classmate and/or the text book.
- Students are encouraged to engage in the material in various ways, and experiment different learning styles to find what works best for them. Work independently, and work in groups. Attend lectures. Practice and review.
- Check your schedule for exam conflicts and discuss conflicts with me before add/drop period ends and before you make travel arrangements. Let me know about other reasons to need a makeup final as soon as possible.

Getting Help: You are encouraged to take advantage of office hours and to ask questions by email, or in class. Ask your classmates for help, and offer help to others. Form study groups. Students are also welcome to schedule an appointment to discuss any personal issues. I appreciate your willingness to raise issues that may stand in the way of your success in this course.

Disabilities and Accommodations

In compliance with the University of Connecticut policy and equal access laws, I am available to discuss appropriate academic accommodations that may be required for students with disabilities. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances, so arrangements can be made. Students in need of accommodations should go to the center for students with disabilities (see <http://www.csd.uconn.edu/>) to verify their eligibility for appropriate accommodations.

If you are eligible for accommodations such as extra time during exams, please provide documentation and coordinate with me no later than a week prior to every exam, please verify that any needed arrangements were made.

Readings:

The primary recommended reading for the first part of the course is Tirole, J. (1988), *The Theory of Industrial Organization*, MIT Press). The book will mostly be used as a reference book, I will not usually assign required readings or problems from the book, but I will refer students to relevant chapters for better understanding of the material covered in class. If you are unable to obtain a copy of the book due to its cost, please feel free to discuss this with me. Additional relevant journal articles readings are listed below, unless otherwise noted, the reading list is optional. For the second part of the course there will be an additional list of *required* reading which we will come up with together by the end of February. It would consist of papers students prepare for presentations, and complimentary papers I might present.

Some students might benefit from consulting with an undergraduate level text book. You may want to refer to Shy, O. (1995), *Industrial Organization: Theory and Applications*, MIT Press (which has both advanced analysis and stronger emphasis on the law). Or *Industrial Organization Contemporary Theory Empirical applications*, 4th or 5th edition, by Pepall, Richards, Norman. See more details about the text book choice on blackboard. Cabral *Introduction to Industrial Organization* (which is less technical and has additional examples, was aimed at business school students). Also, some of the course material is covered Mas Colell, Whinston and Green, or other graduate level Microeconomics and Game Theory text books.

TENTATIVE COURSE OUTLINE

Part 1

- I. Introduction
- II. Monopoly (price discrimination, durable goods)
- III. Product differentiation
- IV. Entry (Deterrence and Accommodation, Taxonomy of Business Strategy, Limit Pricing)
- V. Mergers
- VI. Advertising
- VII. Innovation economics: R&D and Patent Policy

Part 2

Topics in Industrial Organization theory and Student presentations (topics and reading list TBA). Students will select topics for a literature review and presentation. Each student will get to choose and present at least one topic, I might add papers on the same or different IO topics. Example of topics

- Intellectual property and patent reform
- Certification
- Two sided markets
- Social networks in IO
- The economics of social data

Two or more students may select the same topic, and there can be overlap in the papers contained in students' literature reviews (this way students can work together on reading the papers) but the students would need to coordinate to cover a different paper in class.

References for the first part of the course (subject to change)

Most of the lectures are based on Tirole, J. *Theory of Industrial Organization*. We will use game theory tools, a suggested reference is Fudenberg, D. and J. Tirole (1991), *Game Theory*, MIT Press. The relevant chapter in Tirole's IO book, or any other game theory reference can also be useful.

Monopoly

Tirole, Chapter 1-4

Bulow, J. (1982), "Durable Goods Monopolists," *Journal of Political Economy*, **90**, 314-332.

Bulow, J. (1986), "An Economic Theory of Planned Obsolescence," *Quarterly Journal of Economics*, 101, no. 4, (November 1986):729-49.

Carlton, D. and M. Waldman (2002), "The Strategic Use of Tying to Preserve and Create Market power in Evolving Industries," *RAND Journal of Economics*, **33**, 194-220.

Oi, W. (1971), "A Disneyland Dilemma: Two-Part Tariffs for a Mickey Mouse Monopoly," *Quarterly Journal of Economics*, **85**, 77-90.

Waldman M. (2003) "Durable Goods Theory for Real World Markets" *Journal of Economic Perspectives*, Vol. 17, #1 p. 131-154

Product Differentiation

Tirole, Chapter 7

d'Aspremont, C., J. Gabszewicz, and J.-F. Thisse (1979), "On Hotelling's Stability in Competition," *Econometrica*, **17**, 1145-1151.

Hotelling, H. (1929), "Stability in Competition," *Economic Journal*, **39**, 41-57.

Singh, N. and X. Vives (1984), "Price and Quantity Competition in a Differentiated Duopoly," *RAND Journal of Economics*, **15**, 546-554.

Entry, Entry Deterrence and Accommodation, Taxonomy of Business Strategy

Tirole, Chapter 8

Bagwell, K. and G. Ramey (1996), "Capacity, Entry, and Forward Induction," *RAND Journal of Economics*, **27**, 660-680.

Bulow, J., I. Geanakoplos, and P. Klemperer (1985), "Multimarket Oligopoly: Strategic Substitutes and Complements," *Journal of Political Economy*, **93**, 488-511.

Dixit, A. (1980), "The Role of Investment in Entry Deterrence," *Economic Journal*, **90**, 95-106.

Fudenberg, D. and J. Tirole (1984), "The Fat Cat Effect, the Puppy Dog Ploy, and the Lean and Hungry Look," *American Economic Review*, **74**, 361-366.

Salop, Steven C. (1979), "Monopolistic competition with outside goods", *The Bell Journal of Economics*, **10** (1): 141-156

Limit Pricing, Predation

Tirole chapter 9

Milgrom, P. and J. Roberts (1982), "Limit Pricing and Entry Under Incomplete Information: An Equilibrium Analysis," *Econometrica*, **50**, 443-460.

Horizontal Mergers

Pepall, Richards and Norman Chapter 16

Farrell, J. and C. Shapiro (1990), "Horizontal Mergers: An Equilibrium Analysis," *American Economic Review*, **80**, 107-126.

Horizontal Mergers Guidelines FTC/DOJ

Advertising

Bagwall, K.. 2003. "The economic Analysis of Advertising"

Bagwell, K. and Ramey. 1994. *The Review of Economic Studies*, Vol. 61, January 1994, 153-171.

Butters, G. 1977. Equilibrium Distribution of Prices and Advertising. *Review of Economic Studies* 44:465-492.

Grossman, G. and C. Shapiro. 1984. Informative advertising with Differentiated Products. *Review of Economic Studies* 51: 63-82.

Justin P. Johnson. (2013), "Targeted Advertising and Advertising Avoidance," *Rand Journal of Economics*, 44(1), 128-144.

Van Zandt, T. (2004): "Information Overload in a Network of Targeted Communication," *Rand Journal of Economics*, 35(3), 542-560.

Milgrom, P. and J. Roberts (1986), "Price and Advertising Signals of Product Quality," *Journal of Political Economy*, **94**, 796-821.

Industrial R&D and Patents

Tirole, Chapter 10.

Choi J. P. 1991. "Dynamic R&D competition under 'hazard rate' uncertainty." *RAND Journal of Economics* 22, no 4: 596-610.

- Choi J. P. 1998. "Patent litigation as an information-transmission mechanism" *American Economic Review* 88, no 5: 1249-1263.
- Dasgupta, P. & J. Stiglitz. 1980. "Uncertainty, industrial structure and speed of R&D." *Bell Journal of Economics* 11: 1-27.
- Gilbert R. and C. Shapiro. 1990. "Optimal patent length and breadth" *RAND Journal of Economics* 21, no 1: 106-112.
- Grossman G. M. & C. Shapiro. 1987. "Dynamic R&D competition." *The Economic Journal*, 97: 372-387.
- Harris, C., J. Vickers. 1987. Racing with uncertainty. *The Review of Economic Studies* 54: 1-21
- Klemperer P. 1990. "How broad should the scope of patent protection be." *RAND Journal of Economics* 21, no 1: 113-130.
- Lemley, Mark A., and Shapiro, Carl, 2005. "Probabilistic Patents." *Journal of Economic Perspectives*, 19(2): 75-98.
- Loury G. C. 1979. "Market structure and innovation." *Quarterly Journal of Economics*. August 1979: 396-419.
- O'Donoghue T. 1998. "A patentability requirement for sequential innovation." *RAND Journal of Economics* 29: 654-679.
- Reinganum, J. F. 1981. "Dynamic Games of innovation." *Journal of Economic Theory* 25: 21-41.
- Scotchmer S. & J. Green. 1990. "Novelty and disclosure in patent law." *RAND Journal of Economics*, 21: 131-146.

Sample references for the second part of the course

The reading list for the second part of the course is finalized in October and depends on students' choice of topics and papers to present. Sample references:

Certification

Dranove D., and G.Z. Jin. 2010. "Quality Disclosure and Certification: Theory and Practice." *Journal of Economic Literature*, vol. 48(4), pp. 935–63.

Farhi, E., J. Lerner, and J. Tirole. 2013. "Fear of Rejection? Tiered Certification and Transparency." *RAND Journal of Economics*, vol. 44(4), pp. 610–31.

Two Sided Markets

Rochet, J.-C. and J. Tirole (2003) "Platform Competition in Two-Sided Markets," *Journal of the European Economic Association*, 1: 990-1029.

Rochet, J.C. and J. Tirole (2006) "Two-Sided Markets: A Progress Report," *Rand Journal of Economics*, 37: 645-667.