

ECO 6340 – Industrial Organization Course Syllabus

Course Information

<i>Course Number/Section</i>	ECO 6340 Section 001
<i>Course Title</i>	Industrial Organization
<i>Term</i>	Spring '07
<i>Days & Times</i>	TR 4:00-5:15 P.M., CB 1.124

Professor Contact Information

<i>Professor</i>	Dr. Barry J. Seldon
<i>Office Phone</i>	972-883-2043
<i>Email Address</i>	seldon@utdallas.edu (I prefer phone calls to email)
<i>Office Location</i>	Green 3.806
<i>Office Hours</i>	Mon. 10:00-11:15 or by appointment (call to set appointment)
<i>Other Information</i>	Fax: 972-883-2735

Course Pre-requisites, Co-requisites, and/or Other Restrictions

It is assumed that the student has taken Microeconomics I (ECO 5301) or Microeconomics for Applications (ECO 5321). The student should be comfortable with applying calculus and should have a rudimentary knowledge of game theory, as is covered in ECO 5301. For those who have not taken a course in game theory, we will have a review of important concepts as well as one or two Saturday meetings at the beginning of the semester as necessary.

Course Description

This course surveys major topics in the field of Industrial Organization. It also serves as a foundation course to prepare the student for further study in the area of Industrial Organization. The course focuses mainly upon the theory of the firm and the industry, with an emphasis upon oligopoly theory; but it also addresses empirical applications of the theory. While it emphasizes oligopolies, there will be occasional consideration of competitive and monopolistic markets. The latter market structures may be useful as benchmarks against which to compare the predicted outcome of oligopoly markets, and in some cases may be of interest in their own right when considering some of the topics of this course. We will focus upon market structure, firm conduct, and economic performance of industries. Of special interest is firms' strategic behavior in price and non-price competition. The types of behavior, or conduct, include oligopoly pricing and production, strategic entry deterrence, location strategies, product differentiation, advertising, and research and development. The effects of firms' conduct upon economic welfare and feedback effects upon market structure are examined.

The knowledge that the student will derive from the course is useful for further study of firms and markets as well as the effects of regulatory and legal systems (such as antitrust law or competitive policies) upon firms; and how firms operate under regulatory and legal regimes. The knowledge is also useful in further study of the internal operation of firms. All these topics are covered in the field of Industrial Organization. Topics covered in this field are useful not only for academic consideration, but also in private enterprises, including financial and legal institutions; in Federal and state regulatory agencies; and in international trade.

Student Learning Objectives/Outcomes

1. To understand how price and non-price competition among firms affect economic welfare.
2. To analyze and evaluate models of competitive, oligopolistic, and monopoly markets.
3. To analyze and evaluate how firms' structure and conduct affect economic welfare and how these results feed back to effect structure and conduct.

Required Textbooks and Materials

Required Texts

Oz Shy, *Industrial Organization: Theory and Applications*, Cambridge, MA: The MIT Press, 1995.

(NOTE: The sixth printing (2001) is preferred; there were more typographical errors in earlier versions of the book.)

Jean Tirole, *The Theory of Industrial Organization*, Cambridge, MA: The MIT Press, 1988.

On reserve in the library (although the student is encouraged to buy his/her own copy):

Stephen Martin, *Advanced Industrial Economics* (2nd ed.), Oxford, UK Blackwell Publisher, 2002.

(NOTE: The first two textbooks are strictly theoretical with little reference to empirical work; Martin's textbook discusses theory as well as some empirical work. A few sections from this book are listed under assigned readings; the student may wish to read other sections concerning theory – Martin has an excellent discussion of the development of the theory – and empirical work.)

Required Materials

None.

Suggested Course Materials

Suggested Readings/Texts

See pp. 4–5 below.

Suggested Materials

None.

Assignments & Academic Calendar

Topics, Reading Assignments, Due Dates, Exam Dates

Listed on the next page is a schedule for topics, associated readings, and exam dates. Class lecture will parallel the Shy and Tirole textbooks, but the lecture will also include material not covered in either text in cases where additional material will add to the students' knowledge of Industrial Organization. Lecture time will not be spent on readings from Martin, since they are generally easy to understand and are meant to illustrate to the student how one uses the theory to construct empirical models. The schedule below is tentative; we may slow down the lecture when necessary or speed up when possible. For this reason, you need to attend class to know exactly where we are. The date for the mid-term exam is subject to change; *the mid-term exam will be given after we have covered the material and readings listed before the mid-term exam*. The date for the final exam is fixed. The final exam is scheduled to take one hour and fifteen minutes, beginning at the starting time specified below.

Tentative Schedule for Semester
(Required readings are below. See following pages for supplemental articles)

Jan 8 –12	<i>Topic:</i> Introduction to Industrial Organization <i>Readings:</i> Shy, Ch. 1, “Introduction,” Sec. 1.1-1.1.2, Tirole, Unnumbered first chapter, “Theory of the Firm,” Sec. 1-1.2.¹
Jan 15 – 19 & Jan 22 – 26	<i>Topic:</i> Game theory <i>Readings:</i> Shy, Ch. 2, “Basic Concepts in Noncooperative Game Theory,” (entire ch. including appendices), Tirole, Ch. 11, “Noncooperative Game Theory: A User’s Manual,” Sec. 11.1-11.5.1.
Jan 29 – Feb 2 & Feb 5 – 9	<i>Topic:</i> Competing Through Quantity and Price: Homogeneous Goods <i>Readings:</i> Shy, Ch. 6, “Markets for Homogeneous Goods,” Sec. 6.1-6.5.2 and Sec. 6.7, Tirole, “Introduction” to Part II (pp. 205-208), Tirole, Ch. 5, “Short-Run Price Competition,” 5.1-5.4 and Sec. 5.6-5.7.2.5, Martin, Ch. 7, “Empirical Studies ...,” Sec. 7.1-7.4.
Feb 12 –16	<i>Topic:</i> Competing Through Quantity and Price: Heterogeneous Goods Shy, Ch. 7, “Markets for Differentiated Products,” Sec. 7.1-7.2.1, Tirole, Ch. 7, “Product Differentiation:...,” Sec. 7.2.
Feb 19 – 23 & Feb 26 – Mar 2	MIDTERM EXAM: The exam will cover the material listed above. The date of the exam is <i>not</i> exact. We will have the exam <i>after</i> we cover the material above. <i>Topic:</i> Product Differentiation in Geographic or Characteristic Spaces <i>Readings:</i> Shy, Ch. 7, “Markets for Differentiated Products,” Sec. 7.3-7.3.4, Shy, Ch. 12, “Quality as Vertical Product Differentiation,” Sec. 12.2-12.2.2, Tirole, Ch. 2, “Product Selection, Quality, and Advertising,” Sec. 2.1-2.1.4, Tirole, Ch. 7, “Product Differentiation:...,” Sec. 7.1-7.1.3 and 7.5.1 Martin, Ch. 7, “Empirical Studies...,” Sec. 7.4.1-7.4.2.
Mar 5 – 9	SPRING BREAK
Mar 12 – 16 & Mar 19 – 23	<i>Topic:</i> Barriers to Entry and Strategic Entry Deterrence <i>Readings:</i> Shy, Ch. 8, “Entry Barriers,” Sec. 8.3-8.5, Tirole, Ch. 8, “Entry, Accommodation, and Exit,” Sec. 8.1-8.3.3, Tirole, Ch. 9, “Information and Strategic Behavior:...,” Sec. 9.1-9.6, Martin, Ch. 11, “Market Structure...,” Sec. 11.9-11.9.5.
Mar 26 – 30 & Apr 2 – 6	<i>Topic:</i> Advertising² <i>Readings:</i> Shy, Ch. 11, “Advertising,” Sec. 11.1-11.1.2 and 11.3-11.5.3, Tirole, Ch. 7, “Product Differentiation:...,” Sec. 7.3-7.3.3.
Apr 9 – 13 & Apr 16 – 20 ³	<i>Topic:</i> Research and Development <i>Readings:</i> Shy, Ch. 9, “Research and Development,” Sec. 9.1-9.4.2, Tirole, Ch. 10, “Research and Development and...,” Sec. 10.1-10.4, Martin, Ch. 7, “Empirical Studies...,” Sec. 7.5-7.5.1, Martin, Ch. 14, “Research and Development” Sec. 14.7-14.7.2
Apr 26	FINAL EXAM, 2:00-3:15⁴

¹ The Shy and Tirole textbooks have unnumbered preliminary (introductory) sections in each chapter. For the specified chapters listed above, I expect you to read these sections.

² The Martin text has no examples of empirical studies of advertising. There are a number of articles by many economists on this topic.

³ Friday, April 20, is the last day of university classes, so our last class is Thursday, April 19.

⁴ The date of the final exam is fixed according to University scheduling. Although the University allows for two hours use of the classroom, our Final Exam is designed for, and will be allocated, one hour and fifteen minutes.

Supplemental Articles

Readings below are not required, but provide deeper understanding for those who intend to concentrate on IO. Also, this list is not exhaustive; it is intended only to point students toward articles that are seminal *or* instructive *or* recent. Recent articles are useful when you begin researching a topic because they indicate some of the current problems being considered and, as well, they provide a starting point for tracing the history of a topic through the review of literature and the list of references. It is important to note which references show up time and again because, no matter how unfamiliar you are with a topic, this will suggest the important articles in a strand of the literature. Note that I do not list many of the articles referred to in the texts. The fact that they are discussed in the texts indicates that they are important, classic pieces. Also, I do not include any of my own articles because you all have access to my *Curriculum Vitae* so you can find them. The articles are listed below in chronological order

Topic: Competing Through Quantity and Price: Homogeneous Goods

Seade, Jesus, "On the Effects of Entry," *Econometrica*, Vol. 48 No.2 (Mar. 1980), pp. 479-489.

Kreps, David and José Scheinkman, "Quantity Precommitment and Bertrand Competition Yield Cournot Outcomes," *Bell Journal of Economics*, Vol. No. 2 (Autumn 1983), pp. 326-337.

Daughety, Andrew F., "Reconsidering Cournot: The Cournot Equilibrium is Consistent," *Rand Journal of Economics*, Vol. 16 No. 3 (Autumn 1985), pp. 368-379.

Spulber, Daniel, "Bertrand Competition When Rival's Costs are Unknown," *Journal of Industrial Economics*, Vol. 43 No. 1 (Mar. 1995), pp. 1-11.

Novshek, William and Prabal Roy Chowdhury, "Bertrand Equilibria With Entry: Limit Results," *International Journal of Industrial Organization*, Vol. 21 No. 6 (June 2003), pp 795-808.

Moreno, Diego and Luis Ubeda, "Capacity Precommitment and Price Competition Yield the Cournot Outcome," *Games and Economic Behavior*, Vol. 56 No. 2 (Aug. 2006), pp 323-332.

Topic: Competing Through Quantity and Price: Heterogeneous Goods and

Topic: Product Differentiation in Geographic or Characteristic Spaces

(Note: Heterogeneous goods and product differentiation are closely related.)

Caplin, Andrew, and Barry Nalebuff, "Aggregation and Imperfect Competition: On the Existence of Equilibrium," *Econometrica*, Vol. 59 No. 1 (Jan. 1991), pp. 25-59.

Deneckere, Raymond and Michael Rothschild, "Monopolistic Competition and Preference Diversity," *Review of Economic Studies*, Vol. 59 No. 2 (Apr. 1992), pp. 361-373.

Vickrey, William S., forward by Simon P. Anderson and Ralph M. Braid, "Spatial competition, monopolistic competition, and optimum product diversity," *International Journal of Industrial Organization*, Vol. 17 No. 7 (Oct. 1999), pp 953-963.

Janssen, Maarten C. W. and José Luis Moraga-Gonzalez, "Strategic Pricing, Consumer Search and the Number of Firms," *Review of Economic Studies*, Vol. 71 No. 4 (Oct. 2004), pp. 1089-1118.

Barron, John M., Beck A. Taylor, and John R. Umbeck, "Number of Sellers, Average Prices, and Price Dispersion," *International Journal of Industrial Organization*, Vol. 22 No. 8-9 (Nov. 2004) pp. 1041-1066. (Note: Combines theory with empirical analysis of a homogeneous good which is nevertheless sold at different prices. How can this be? Read and find out.)

Pennings, Enrico, "Optimal Pricing and Quality Choice When Investment in Quality is Irreversible," *Journal of Industrial Economics*, Vol. 52 No. 4 (Dec. 2004), pp. 569-589.

Topic: Barriers to Entry and Strategic Entry Deterrence

Harrington, Joseph E., "Limit Pricing when the Potential Entrant is Uncertain of its Cost Function," *Econometrica*, Vol. 54 No.2 (Mar. 1986), pp. 429-438.

Martin, Stephen, "Oligopoly Limit Pricing: Strategic Substitutes, Strategic Complements," *International Journal of Industrial Organization*, Vol. 13 No. 1 (Mar. 1995), pp. 41-65.

Sørgard, Lars, "Judo Economics Reconsidered: Capacity Limitation, Entry and Collusion," *International Journal of Industrial Organization*, Vol. 15 No. 3 (May 1997), pp. 349-368.

Mason, Charles F and Cliff Nowell, "An Experimental Analysis of Subgame Perfect Play: The Entry Deterrence Game," *Journal of Economic Behavior and Organization*, Vol. 37 No. 4 (Dec. 1998), pp. 443-462. (Note: Don't have the data? Generate your own!)

Martin, Stephen, "Sunk Cost and Entry," *Review of Industrial Organization*, Vol. 20 No.4 (June 2002), pp. 291-304.

Hoppe, Heidrun C. and In Ho Lee, "Entry Deterrence and Innovation in Durable-Goods Monopoly," *European Economic Review*, Vol. 47 No. 6 (Dec. 2003), pp. 1011-1036.

Topic: Advertising

Kihlstrom, Richard E. and Michael H. Riordan, "Advertising as a Signal," *Political Economy*, Vol. 92 No. 3 (June 1984), pp. 427-450.

Milgrom, Paul and John Roberts, "Price and Advertising Signals of Product Quality," *Journal of Political Economy*, Vol. 94 No. 4 (Aug. 1986), pp. 796-821.

Sutton, John, *Sunk Costs and Market Structure: Price Competition, Advertising, and the Evolution of Concentration*, Cambridge MA: The MIT Press, 1992.

LeBlanc, Greg, "Informative Advertising Competition," *Journal of Industrial Economics*, Vol. 46 No. 1 (Mar. 1998), pp. 63-77.

Piga, Claudio A. G., "A Dynamic Model of Advertising and Product Differentiation," *Review of Industrial Organization*, Vol. 13 No. 5 (Oct. 1998), pp. 509-522.

Tremblay, Victor J. and Stephen Polasky, "Advertising and Subjective Horizontal and Vertical Product Differentiation," *Review of Industrial Organization*, Vol. 20 No. 3 (May 2002), pp. 253-65.

Topic: Research and Development

Kamien, Morton I. and Nancy L. Schwartz, *Market Structure and Innovation*, Cambridge UK: The Cambridge University Press, 1982.

Reinganum, Jennifer F., "A Dynamic Game of R&D: Patent Protection and Competitive Behavior," *Econometrica*, Vol. 50, No. 3 (May 1982), pp. 671-688.

Nakao, Takeo, "Cost-Reducing R&D in Oligopoly," *Journal of Economic Behavior and Organization*, Vol. 12 No. 1 (Aug. 1989), pp. 131-148.

Greenstein, Shane and Garey Ramey, "Market Structure, Innovation and Vertical Product Differentiation", *International Journal of Industrial Organization*, Vol. 16 No. 3 (May 1998), pp. 285-311.

(Continued next page)

Sutton, John, *Technology and Market Structure*, Cambridge MA: The MIT Press, 1998.

Weiss, Pia, "Adoption of Product and Process Innovations in Differentiated Markets: The Impact of Competition," *Review of Industrial Organization*, Vol. 23 No. 3-4 (Dec. 2003), pp. 301-314.

Lee, Chang-Yang, "A New Perspective on Industry R&D and Market Structure," *Journal of Industrial Economics*, Vol. 53 No. 1 (March 2005), pp. 101-122.

Grading Policy

Grades will be based on a midterm exam (50%) and a final exam (50%).

Course Policies

Make-up exams

The student is expected to take the exams in class at the same time as his or her classmates. If the student does not take the exam with the rest of the class then he or she will be given a different exam from the rest of the class. The questions are likely to be more difficult, especially when the student has had more time to study than did his or her classmates.

Extra Credit

There is no extra credit. If you want to make a higher exam then study and work more diligently than you otherwise would and attend classes.

Late Work

You are expected to take exams in class with the rest of the class; see the policy on make-up exams above.

Special Assignments

None.

Class Attendance

Because lectures complement, and do not substitute for, the readings it is very important that you attend. I know there may be a class or two that you will feel compelled to miss for some reason or other. In that case, you need not contact me; but you should contact a classmate or two and tell them you will want to get class notes from them. Being forewarned, your classmate(s) may take more complete notes than they otherwise would. In the event that you do miss a class, I strongly suggest getting notes from more than one classmate because different classmates will have different opinions about what is important.

Classroom Citizenship

Students are expected to conduct themselves in an orderly fashion that will allow delivery of the material by the professor or by other students and to be courteous and open-minded during class discussion.

Field Trip Policies / Off-Campus Instruction and Course Activities

None.

Student Conduct & Discipline

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, *A to Z Guide*, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the *Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3*, and in Title V, Rules on Student Services and Activities of the university's *Handbook of Operating Procedures*. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.

Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.

Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.

Email Use

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.

Withdrawal from Class

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

Student Grievance Procedures

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's *Handbook of Operating Procedures*.

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

Incomplete Grade Policy

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of F.

Disability Services

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.

The contact information for the Office of Disability Services is:
The University of Texas at Dallas, SU 22
PO Box 830688
Richardson, Texas 75083-0688
(972) 883-2098 (voice or TTY)

Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance.

It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

Religious Holy Days

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief

executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

Off-Campus Instruction and Course Activities

Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at the website address given below. Additional information is available from the office of the school dean. ([http://www.utdallas.edu/Business Affairs/Travel_Risk_Activities.htm](http://www.utdallas.edu/Business_Affairs/Travel_Risk_Activities.htm))

These descriptions and timelines are subject to change at the discretion of the Professor.