15.013 — INDUSTRIAL ECONOMICS FOR STRATEGIC DECISIONS

FALL 2018

This subject is designed to provide a working knowledge of the analytical tools of industrial economics that bear most directly on the strategic decisions that firms must make. The kinds of decisions that will be of interest to us include: setting prices and output levels; advertising; investments in new production capacity; the introduction of new products, brands, and quality variations; investments in R&D; and the use of patents. Throughout the course, our emphasis will be on industry structure, its relationship with the way firms interact strategically, and its implications for market power. The analysis of industry structure, strategic interactions among rival sellers, and strategies for entering an industry, or for deterring entry or controlling its impact, will be covered with a mix of theory and case material.

Students taking this course should have a good background in microeconomics — specifically, course 15.010 or its equivalent. In addition, some background in finance (course 15.401 or the equivalent) is strongly recommended.

No textbook will be assigned for this course. However, a set of readings in PDF format is available on the Canvas course site. These readings include my lecture notes, along with various articles and book chapters. In addition, we will assign a number of HBS cases; they are not available on Canvas, but instead can be purchased via StudyNet. (A link to the Study.net site, along with access information, is on the Materials page of the 15.013 Canvas site.) Also, from time to time we will post additional readings on Canvas.

Grading in the course will be based on four different aspects of your performance:

- **Classroom participation** (25% of grade) — All students are expected to have read the assigned materials, to attend class, and to participate actively in class discussions.

- **Strategic oligopoly game** (15% of grade) — You and your teammate will be graded on your performance, measured by your cumulative profits, in this semester-long game. Your performance will be evaluated relative to the overall average performance of both sections of 15.013, **not** the performance of your industry.

- **Exercises** (32% of grade) — We will assign 9 written “exercises” over the course of the semester. *You are only required to turn in 8 of these exercises.* (If you do all 9, we will drop the lowest grade.) You may do these exercises individually or in groups of up to three students. To receive credit, exercises must be submitted on time, and as hard copies.

- **Final exam** (28% of grade) — This will be an in-class exam. (Closed-book, but you can bring an 8.5 x 11” sheet of paper with notes, formulas, etc. on both sides.)
**Class Attendance:** You are expected to attend all classes, and to arrive in class promptly. You are also expected to have done the required reading and be prepared to participate actively in class discussion. I will begin most classes by “cold calling” on several students.

**Laptop Computers and Phones:** Given the importance of class participation, we ask that you do not open your laptop computer during class. There are only two exceptions to this rule: (1) presentations and discussions of exercises, where spreadsheets or other results are on your computer; (2) students with special needs (e.g., handwriting difficulties), who get permission in advance to use their computers. The same rules apply to iPads and phones. *As tempting as it might be to check your phone every 10 minutes, please turn it off and put it away during class.*

**Group Work:** You are expected to participate fully in any exercise or other assignment that has your name on it. It is absolutely unacceptable to “rotate” assignments among members of a group, or take credit for an assignment in which you were not fully involved. You may allocate the work needed for the assignment (e.g., one person does internet research, another develops a spreadsheet model, etc.), *but every member of the group must be substantially involved in the assignment.*

**DATES TO REMEMBER**

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<tr>
<th>Date</th>
<th>Event Description</th>
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<tr>
<td>Monday, Sept. 10</td>
<td>Please submit via the template on Canvas a short (1- or 2-paragraph) “biography” describing your background and interests. Include a photograph, and the phonetic spelling of your name.</td>
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<tr>
<td>Wednesday, Sept. 12</td>
<td>Exercise 1 is due. In addition, you should turn in a note on your choice of partner for the strategic oligopoly game.</td>
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<td>Wednesday, Sept. 19</td>
<td>NO CLASS, Yom Kippur.</td>
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<td>Monday, Sept. 24</td>
<td>Trial Play of Strategic Oligopoly Game. (Submit by 5:00 pm.)</td>
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<td>Monday, Oct. 1</td>
<td>First real play of Strategic Oligopoly Game. (Submit by 5:00 pm.)</td>
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<td>Monday, Oct. 8</td>
<td>NO CLASS, Columbus Day. However, game play is due at 5:00 pm.</td>
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<td>Monday, Oct. 22</td>
<td>NO CLASS, SIP week. However, game play is due at 5:00 pm.</td>
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<td>Wednesday, Oct. 25</td>
<td>NO CLASS, SIP week.</td>
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<tr>
<td>Monday, Nov. 12</td>
<td>NO CLASS, Veterans Day. However, game play is due at 5:00 pm.</td>
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<td>Wednesday, Nov. 21</td>
<td>NO CLASS, Thanksgiving vacation.</td>
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<td>Monday, Dec. 3</td>
<td>Last play of Strategic Oligopoly Game.</td>
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<td>Monday, Dec. 10</td>
<td>FINAL EXAM (90 minutes, in-class).</td>
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<tr>
<td>Wednesday, Dec. 12</td>
<td>Debriefing, and results of strategy game. Discussion of additional topics as time permits.</td>
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TENTATIVE OUTLINE

Sept 5    Wed  Introduction: Sources and Uses of Market Power. Overview of the course. Market structure, market power and the value of the firm. Strategic decisions that affect market structure and market power. Competing in the market versus competing for the market.

Sept 10   Mon  Intertemporal Production Constraints, Pricing, and Market Power. How the dynamics of cost affects pricing and market power. Production and pricing with a learning curve. The learning curve in the strategic oligopoly game. The production and pricing of depletable resources. Effects of uncertainty over future market conditions. The option value of oil reserves. Why are oil prices so volatile? Can we predict oil prices?

Read: R. Pindyck & D. Rubinfeld, Microeconomics, Section 15.8.
Lecture Notes on Intertemporal Production and Pricing, Sections 1-5.

Turn in brief biography and photo via Canvas/Google form.
Be prepared to answer questions on learning curve and oil well problem.


Read: R. Pindyck & D. Rubinfeld, Microeconomics, Section 11.6.
Lecture Notes on Market Definition, Concentration, and Advertising.
Readings on beer.

Exercise 1 due.
Hand in choice of game partner.


Read: Notes on Internet Economics and Internet Music.
Sept 19  Wed  NO CLASS (Yom Kippur).


Read:  Spotify. [HBS Case #9-516-046]
Lecture Notes on Pricing, Section 2.

Exercise 2 due.
Trial play of Strategic Oligopoly Game. Submit by 5:00 pm.


Read:  “WebMD (A)”  [HBS Case #9-701-007]
“WebMD (B)”  [HBS Case #9-701-133]
Readings on WebMD.


Read:  Lecture Notes on Vertical Structure, Sections 1, 3 and 4.
Pindyck & Rubinfeld, Microeconomics, Review Section 11.4.

Exercise 3 due.
First real play of Strategic Oligopoly Game. Submit by 5:00 pm.


Read:  Lecture Notes on Game Theory, Sections 1—6.
**Oct 8**  
*Mon*  
NO CLASS (Columbus Day). *However, game play is due by 5:00 pm.*

**Oct 10**  
*Wed*  
The Value of Information and Strategic Timing of Investments. Competing with asymmetric information, and the role of uncertainty. Does better information make a firm better off? Should you convey information to your competitors? Informational cascades and “wisdom after the fact.” Rational versus irrational bubbles. The 2008-2009 credit freeze. Bubbles in housing markets. The timing of entry decisions. Learning from nature and learning from others: oil, real estate, and R&D.


*Exercise 4 due.*

**Oct 15**  
*Mon*  

Read: Lecture Notes on Entry and Reaction to Entry. “Strategy in the Twenty-First Century Pharmaceutical Industry: Merck and Pfizer.” [HBS Case #9-707-509]

**Oct 17**  
*Wed*  
Entry Decisions under Uncertainty. Analyzing and predicting the behavior of new entrants. Learning from an entrant. The option to invest and the value of waiting. The disposable diaper industry. The importance of process R&D. Diapers as an “experience good.” Consumer-driven price discrimination. Should Kao invest early in premium diapers?

Read: Pindyck & Rubinfeld, *Microeconomics*, Examples 13.6 and 15.4. “Kao Corporation.” [HBS Case #9-591-012]

*Exercise 5 due.*

**Oct 22**  
*Mon*  
NO CLASS. (SIP week.) *However, play of strategic oligopoly game is due by 5:00 pm.*

**Oct 24**  
*Wed*  
NO CLASS. (SIP week.)

Read:  “Boeing 787: Manufacturing a Dream.” [HBS Case #9-615-048]
Readings on Commercial Aircraft Industry.

Exercise 6 due.


Read:  Pindyck & Rubinfeld, Microeconomics, review Section 11.5.
Lecture Notes on Bundling and Brand Proliferation, Sections 1-2.
Lecture Notes on Pricing, Section 3.

Nov 5  Mon  Brand Proliferation.  Discussion of attribute space and its use in economic analysis. Local competition among brands in attribute space. Choosing the attributes for new brands. Brand proliferation, entry deterrence, and market power. Analysis of the breakfast cereal industry.

Read:  Lecture Notes on Bundling and Brand Proliferation (complete).


Read:  Lecture Notes on Network Externalities, Sections 1-5.
Lecture Notes on Pricing, Section 4.
“Philips’ Compact Disk Introduction (A).” [HBS Case #9-792-035]

Exercise 7 due.

Nov 12  Mon  NO CLASS (Veterans Day holiday.)

However, play of strategic oligopoly game is due by 5:00 pm.


“Fasten: Challenging Uber and Lyft with a New Business Model.” [HBS Case # 9-616-062]


Lecture Notes on Network Externalities, Section 6.

*Exercise 8 due.*

**Nov 21  Wed**  NO CLASS (Thanksgiving vacation).


Read:  “Apple Pay.” [HBS Case # 8-516-027]


Read:  Lecture Notes on R&D and Patent Licensing.

*Exercise 9 due.*
Dec 3  Mon  R&D, Patenting, and Licensing (continued). Continued discussion of R&D and patent licensing decisions. Licensing to raise prices vs. licensing to lower prices. Licensing to become the standard: Intel in computer processors. Complementary patents: cross-licensing versus the formation of “patent pools.” IP blocks and Systems-on-a-Chip.

Read:  Lecture Notes on R&D and Patent Licensing.

Last play of Strategic Oligopoly Game. Submit by 5:00 pm.


Dec 10  Mon  FINAL EXAM. (Closed-book, but you can bring an 8.5 x 11” sheet of paper with notes, formulas, etc. on both sides.)

Dec 12  Wed  Wrap-Up Class. Results of strategic oligopoly game – meet your competitors! General discussion of topics related to course.