15.013 — INDUSTRIAL ECONOMICS FOR STRATEGIC DECISIONS
FALL 2017

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 Stellar course site, labelled “15.013 Course Reader.” These readings include my lecture notes, along with various articles and book chapters. In addition, we will assign a number of HBS (and other) cases; they are not available on Stellar, 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 Stellar site.) Also, from time to time we will post additional readings on Stellar.

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

- **Classroom participation** (28% 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** (25% 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: Students are expected to attend all classes, and to arrive in class promptly. Students 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: Given the importance of classroom 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, PDAs, smartphones, etc.

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 to take credit for an assignment in which you were not substantially involved. You may allocate the work needed to complete an assignment (e.g., one person does the internet research, another develops a spreadsheet model, etc.), but every member of the group must be substantially involved in the assignment.

DATES TO REMEMBER

Monday, Sept. 11
Please submit via the template on Stellar a short (1- or 2-paragraph) “biography” describing your background and interests. Include a photograph, and the phonetic spelling of your name.

Wednesday, Sept. 13
Exercise 1 is due. In addition, you should turn in a note on your choice of partner for the strategic oligopoly game.

Monday, Sept. 25
Trial Play of Strategic Oligopoly Game. (Submit by 5:00 pm.)

Monday, Oct. 2
First real play of Strategic Oligopoly Game. (Submit by 5:00 pm.)

Monday, Oct. 9
NO CLASS, Columbus Day. However, game play is due at 5:00 pm.

Monday, Oct. 23
NO CLASS, SIP week. However, game play is due at 5:00 pm.

Wednesday, Oct. 25
NO CLASS, SIP week.

Wednesday, Nov. 22
NO CLASS, Thanksgiving vacation.

Monday, Dec. 4
Last play of Strategic Oligopoly Game.

Monday, Dec. 11
FINAL EXAM (90 minutes, in-class).

Wednesday, Dec. 13
Debriefing, and results of strategy game. Discussion of additional topics as time permits.
TENTATIVE OUTLINE

Sept 6  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 11  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 Stellar/Google form.
Be prepared to answer questions on learning curve and oil well problem.


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

Exercise 1 due.
Hand in choice of game partner.


Read:  Notes on Internet Economics and Market Structure.
“Amazon Web Services.” [HBS Case #9-609-048]

Be prepared to answer questions on Internet and Amazon Web Services.

Read:  Apple Inc.: iPods and iTunes. [Ivey Case #9B05M046]
Readings on Internet music stores.

*Exercise 2 due.*

Sept 25  Mon  **Market Structure and Evolution: Information and Industry Transformation.** How does the greater availability of information affect industry structure? Can information technology transform entire industries? Will it transform the medical industry? Asymmetric information in the medical industry. Analysis of WebMD. What went wrong, and what would you have done? Predicting “the next big thing.”

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

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


Read:  Lecture Notes on Vertical Structure, Sections 1, 3 and 4.

*Exercise 3 due.*


Read:  Lecture Notes on Game Theory, Sections 1—6.

*First real play of Strategic Oligopoly Game.* Submit by 5:00 pm.
**Oct 4**  
*Wed*  

Read: Lecture Notes on Information and Strategic Timing of Investments.

**Oct 9**  
*Mon*  
NO CLASS (Columbus Day). *However, game play is due by 5:00 pm.*

**Oct 11**  
*Wed*  
The Strategic Timing of Investments. The timing of entry decisions. Learning from nature and learning from others: oil, real estate, and R&D. Strategic competition in the pharmaceutical industry, and the role of network externalities. Product-specific versus brand-specific network externalities in pharmaceutical markets, and the implications for R&D. First- versus second-mover advantage in pharmaceutical markets.

Lecture Notes on Network Externalities, Section 4.

*Exercise 4 due.*

**Oct 16**  
*Mon*  

Read: Lecture Notes on Entry and Reaction to Entry.

**Oct 18**  
*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: “The Disposable Diaper Industry in 2003” [HBS Case #9-703-491]  
“Kao Corporation.” [HBS Case #9-591-012]

*Exercise 5 due.*

**Oct 23**  
*Mon*  
No Class. (SIP week.)  
*However, play of strategic oligopoly game is due by 5:00 pm.*
Oct 25  Wed  No Class. (SIP week.)


Read:  Lecture Notes on Game Theory, Section 8.
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.

Nov 6  Mon  Deterrence via 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).
“The Ready-to-Eat Breakfast Cereal Industry in 1994 (A).”
[HBS Case #9-795-191]

Exercise 7 due.


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

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


Lecture Notes on Network Externalities, Section 6.


Read:  “Capital One Financial Corporation.” [HBS Case # N9-700-124]
Readings on Credit Cards

Exercise 8 due.

Nov 22  Wed  NO CLASS (Thanksgiving vacation).


Read:  Lecture Notes on Pricing
Nov 29  Wed  R&D, Patenting, and Licensing. Implications of R&D and innovation for industry evolution and market structure. When do patents protect innovations? The race to innovate. Making the R&D investment decision: strategic and non-strategic aspects. Patents as options. Discount rates for risky R&D. Sleeping patents and the decision to adopt a new innovation. Licensing decisions. The use of licensing to gain market power.

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

Exercise 9 due.
Last play of Strategic Oligopoly Game. Submit by 5:00 pm.

Dec 4  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.
“Economics of Patent Pools”


Dec 11  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 13  Wed  Wrap-Up Class. Results of strategic oligopoly game – meet your competitors! General discussion of topics related to course.