15.013 — INDUSTRIAL ECONOMICS FOR STRATEGIC DECISIONS

FALL 2005

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: pricing and output; advertising; investment 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 and cases should be purchased from Copy Technology Center, which is in the basement of the Sloan Building.

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

- *Classroom participation* (28% of grade) — All students are expected to 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 in this semester-long game. Your performance will be measured relative to the overall average performance of both sections of 15.013.

- *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.

- *Final exam* (25% of grade) — This will be an in-class exam.
**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 two or three 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.

**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, September 12**  
  Please turn in a short (1- or 2-paragraph) “biography” describing your background and interests. Include a photograph (your biocard photo is fine), the phonetic spelling of your name, and your e-mail address.

- **Wednesday, September 14**  
  Exercise 1 is due. In addition, you should turn in a note on your choice of partner for the strategic oligopoly game.

- **Monday, September 19**  
  Student Holiday. No Classes.

- **Monday, September 26**  
  Trial play of strategic oligopoly game.

- **Monday, October 3**  
  First real play of strategic oligopoly game. For the rest of the semester, game will be played every Monday.

- **Monday, October 10**  
  NO CLASS (Columbus Day). Game play can be submitted to TAs via SloanSpace or by e-mail.

- **Monday, October 24**  
  Exercise 5 and game play are both due by 9:00am.

- **Monday, October 24, Wednesday, October 26**  
  No classes, SIP week.

- **Monday, December 5**  
  Last play of strategic oligopoly game.

- **Monday, December 12**  
  FINAL EXAM (90 minutes, in-class).

- **Wednesday, December 14**  
  Debriefing, and results of strategy game. Discussion of additional topics as time permits.
TENTATIVE OUTLINE

Sept 7  Wed  Introduction: Sources and Uses of Market Power. Overview of the course. Market power and the value of the firm. Strategic decisions that affect market structure and market power.

Sept 12  Mon  Intertemporal Production Constraints and Market Power. How the dynamics of cost affects pricing and market power. The production and pricing of depletable resources. Production and pricing with a learning curve. Effects of uncertainty over future market conditions. Implications for market power. The learning curve in the strategic oligopoly game.

Read: R. Pindyck & D. Rubinfeld, Microeconomics, Section 15.7 of 5th edition, Section 15.8 of 6th edition.
Lecture Notes on Intertemporal Production and Pricing, Sections 1 – 3.

Turn in brief biography.
Be prepared to answer questions on learning curve and oil well problem.


Read: R. Pindyck & D. Rubinfeld, Microeconomics, Section 11.6 Readings on beer.

Exercise 1 due.
Hand in choice of game partner.

Sept 19  Mon  Student Holiday. No Classes.


Read: “eBay, Inc.” (A) [HBS Case #9-700-007]
“eBay, Inc.” (B) [HBS Case #9-703-499]
Note on Internet economics and Market Structure.
Additional material on eBay (to be posted on SloanSpace).

Read:  Note on Discount Rate for Risky R&D

Exercise 2 due.
Trial play of Strategic Oligopoly Game.


Read:  “WebMD (A).” [HBS Case #N9-701-007]
       “WebMD (B).” [HBS Case #N9-701-133]


Read:  Lecture Notes on Vertical Structure, Sections 1 – 3.
       Pindyck & Rubinfeld, Section 10.5 & 10.6

First real play of strategic oligopoly game.


Read:  Lecture Notes on Vertical Structure, Section 4.
       Lecture Notes on Game Theory, Section 1.

Exercise 3 due.

Oct 10  Mon  Columbus Day. No Classes.

Submit game play to TAs via SloanSpace or by email.


Lecture Notes on Game Theory, Sections 2 – 3. (Section 4 is optional).


Exercise 4 due.

Oct 19  Wed  Investments in Real Options. Introduction to real options. Investments that create options versus investments that exercise options. Option value and the Net Present Value rule. The value of flexibility. Analysis of scale versus flexibility in electric utility planning.

A. Dixit and R. Pindyck, Investment Under Uncertainty, Chapter 2.

Lecture Notes: Introduction to Real Options.

Oct 24  Mon  NO CLASS (SIP Week)

However, Exercise 5 and strategic play of oligopoly game are both due by 9:00am.

Oct 26  Wed  NO CLASS (SIP Week)
**Oct 31  Mon**  
Part I: Information and the Strategic Timing of Investments. Completion of material on real options. Learning from nature and learning from others: oil, real estate, and R&D. Investment cascades and “wisdom after the fact.” Rational bubbles.


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

**Nov 2  Wed**  

Exercise 6 due.

**Nov 7  Mon**  

Read: Lecture Notes on Game Theory, Section 5. Readings on Commercial Aircraft Industry.

**Nov 9  Wed**  

Exercise 7 due.

**Nov 14  Mon**  

Read: Lecture Notes on Bundling and Brand Proliferation: Sections 1-2.
Nov 16  Wed  **Deterrence via Bundling and Brand Proliferation (continued).** Introduction to attribute space. 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).


Lecture Notes on Network Externalities, Sections 1–3 (Section 4 is optional).
“Philips’ Compact Disk Introduction (A).” [HBS Case #9-792-035]

*Exercise 8 due.*


“Capital One Financial Corporation.” [HBS Case #N9-700-124]

Nov 28  Mon  **Strategic Entry Opportunities and Entry Deterrence.** Opportunities for entry. Small entrants facing large incumbents: “judo economics.” Methods of discouraging potential entrants, or inducing existing competitors to exit. First-mover advantage with “experience goods.” Gillette’s introduction of the Sensor and the Mach 3 razors.

Read: Lecture Notes on Entry and Reaction to Entry.

Read: Lecture Notes on Pricing

Dec 5  Mon  R&D, Patenting, and Licensing. Implications of R&D and innovation for industry evolution and market structure. The race to innovate. Making the R&D investment decision: strategic and non-strategic aspects. Sleeping patents and the decision to adopt a new innovation. Licensing decisions.

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

Exercise 9 due.
Last play of strategic oligopoly game.

Dec 7  Wed  R&D, Patenting, and Licensing (continued). Continued discussion of R&D and patent licensing decisions. Complementary patents: cross-licensing versus the formation of “patent pools.”

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

Dec 12  Mon  FINAL EXAM.

Dec 14  Wed  Wrap-Up Class. Results of strategic oligopoly game. General discussion of topics related to course.