

The Wharton School
UNIVERSITY OF PENNSYLVANIA
Department of Operations and Information Management
Syllabus for OPIM 210

Information:
Strategy and Economics

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Class Sessions: M, W 12:00-1:30
Office Hours: M and W 2:00-3:00

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This course starts from six basic assumptions:

- Information technology has enabled a wide range of new business opportunities by reducing or eliminating barriers to entry, by changing the value of physical resources, and by creating virtual substitutes for those resources.
- And yet, there is very little that is entirely new in business. Basic objectives, such as differentiation, long-term competitive advantage, customer relationship management, and intelligent pricing strategies, are still essential. Even the apparently novel business model of Google is the model that was used by American and United Airlines to control search for and distribution of seats in the airline industry. Patterns repeat themselves.
- The set of relevant patterns has been changed by recent developments in the application of information and communications technologies, and by recent software strategies such as those followed by Capital One Bank, Facebook and MySpace, Google, and a range of companies that most of us have never followed.
- Strategic business problems often do not come nicely delineated, or clearly marked as problems in multi-echelon inventory management, or in pricing of a portfolio of product, or service offerings to multiple market segments, or indeed clearly labeled as requiring algorithmic problems in any single discipline.
- The skills needed to recognize business problems can be developed, based on a changing set of frequently occurring patterns. This course seeks to teach students how to recognize patterns, act as talented diagnosticians of business strategy, and think about business strategy in ways appropriate to today's technology-enabled environment.
- It is possible to teach a course about information and strategy without teaching about technology. Thus, this course is not about technology. It is about information and information-based strategy; it will use patterns, history, and information economics to teach you how to think about new competitive environments.

We focus on problem identification and on the development of sound strategic responses. More precisely, we focus on problems caused by rapidly changing conditions in the competitive environment, most frequently caused by changes in information technologies, and on the rapid development of competitive strategies to respond to those changes. We will develop in some detail how to respond, how the organization may need to change structurally, and how systems may need to change to reflect changes in organizational structure.

The course is intended to provide students with a set of skills that will be useful in careers in consulting and in strategic management. It can be seen as an introduction to the strategic use of information technology, with a focus on changes, threats, and opportunities resulting from changes in information availability. It draws on the professor's professional experience in diverse settings, in industries ranging from securities trading to the retailing of fast moving consumer goods. It is based in part on solving problems for and with clients, in settings ranging from start-ups to senior officers at the Pentagon, and locations ranging from London to Beijing. The course attempts to integrate this experience and the experience of students and of guest speakers with relevant theory; experience and theory can be combined to develop an approach to information-based strategies that is more general than that which can be derived from any location or any competitive setting. The course provides a focused and modern complement to the strategy courses normally taken in the management department.

All aspects of the firm — production, service, sales, marketing, and strategy — will be affected by changes in information cost and information availability. Clearly, some firms will win and others will lose; nearly all will have to change. And yet, fundamental laws of economics have not been repealed. This course uses economic theory and previous experience with rapid technological change, to provide insights for the development of strategy in an increasingly digital age.

Course Objectives

Students completing the course will have a sound theoretic framework for pursuing further studies in the area of information-based strategies, including eCommerce. They will understand how information technology affects the basic strategic options available, and will understand how firms and industries are likely to be affected. They will understand the often poorly structured process of evaluating potential systems innovations. They will be able to participate in strategic planning and systems planning because they will understand the relationships among them. The course is particularly recommended for students in strategic management and marketing, and for those interested in careers in consulting or who expect to manage portfolios of new technology companies. No background in technology or in technology management is required. Students completing this course will have mastered an understanding of the competitive implications of information technology and the fundamentals of the use of information in business.

Required Text

There will be a bulk pack of readings posted electronically rather than printed, so the actual volume of printed materials will be quite small. Readings for most classes are posted on the course website, in a set of folders with the date of each class. Each folder

has the readings for that day. The URL for study.net is on the front page of the Canvas course site.

Assignments and Grading

There will be several in-class case discussions in the course. Please note that all written assignments are shown in **RED** in the electronic version of the course syllabus. Dates when there are written assignments of any kind due are noted in **RED**, both in the session-by-session course outline and at the top of each day's page in the syllabus. Written assignments should all be done in *groups of two or three* students. Written assignments must be submitted electronically to the course website at the start of the class sessions in which they are due; since assignments will usually be discussed in class on the date that they are due, it will not be possible to accept late assignments unless prior arrangements have been made. Please note that students will only have to submit **SEVEN** of the nine assignments. *If students do submit more than the required minimum number of assignments, only the **highest** assignments will be counted towards their grades; thus the later assignments can be considered make-up assignments for assignments missed for any reason or for assignments where students felt they did poorly.* Students will also be expected to do a final project for the course. For the final project students can start working in groups of three to five team members; additional details will be provided early in the semester. There will be a mid term exam during the normal class period.

The final project will count for **25%** of your course grade, class participation will count for **20%**, the midterm will count for **30%**, and the written assignments will count for **25%**. We will determine whether or not to have a final exam as early as practical.

Color Coding in the Syllabus

A **bold red session heading** indicates that something is due at the beginning of the day's class. A **session heading highlighted in yellow** indicates that the session will be held in the evening. Please note that the evening sessions are required and not optional.

Student Bios

Please send a word file containing a short biographical sketch, not a full resume, via email, to **clemons@wharton.upenn.edu**. Please title your attached file **210S15_I_NAME.doc**, where **I** is your first initial, and **NAME** is your last name. Please provide the following information:

- your expected concentration at Wharton
- your experiences relevant to the topics of this course
- your reasons for taking this course and what you hope to get out of it

Course Outline and Readings

Unit 1 — Strategy and Agility in the Face of Discontinuous Change

- Session 1 W 14-Jan **Introduction and Course Overview**
Introduction to the changing role of information in business. Changing information endowment changes everything, from human behavior to corporate strategy.
Read: *Now I Get It*, (Preface)
Read: Porter, **Competitive Advantage**, Chapter 1, Competitive Advantage
- Session — M 19-Jan **No Class — Martin Luther King Jr. Birthday**
- Session 2 W 21-Jan **Learning from the Experience of Others — The Power of Pattern Recognition**
Review of the science of business and the science of strategy formulation in the presence of discontinuous change, based on patterns observed over the past twenty years.
Read: *Now I Get It*, (Units 1 and 2)
Read: Clemons, **Financial Times**, Strategic Uncertainty
Read: Clemons, The Power of Patterns and Pattern Recognition When Developing Information-Based Strategy
- Session 3 M 26-Jan **Versioning and the Market for Information Goods**
Introduction to types and willingness to pay. Introduction to information asymmetry. Introduction to versioning contracts to maximize producer surplus.
Read: *Now I Get It*, (Unit 3)
Read: Shapiro and Varian, **Information Rules**, Chapter 3, Versioning Information
Read: Friedman, **Hidden Order**, Chapter 10 Monopoly for Fun and Profit
- Session 4 W 28-Jan **Versioning and the Market for Information Goods — Continued**
Signaling, screening, masquerading, data mining, and regulatory complexity.
Read: Akerlof, "The Market for Lemons"
Read: Clemons, Marketing on the Net / Pricing Theory (**Optional**)
- Session 5 M 2-Feb **Dealing with Information Asymmetry — Screening Mechanisms in Newly Vulnerable Markets**
Gaining competitive advantage through systems for market micro-segmentation and differential pricing; attempting to sustain advantage.
Read: Clemons and Thatcher, Capital One Case
HW1: Discussion of Screening and Competitive Advantage and Written Analysis

- Session 6 W 4-Feb **Brand Ambassadors and Brand Assassins — The Changing Role of Reputation and Image Management**
How has the role of reputation changed in a world of online reviews and online recommendation systems?
Read: Clemons and Dellarocas, "The New Role of the Chief Perception Officer: Merging Marketing and Operations"
- Session 7 M 9-Feb **Hustle at a Discontinuity, followed by Platform Envelopment: Platform Envelopment and Resource-Based Sustainable Competitive Advantage**
Was the success of Rosenbluth International a fluke? What do we know about platform extensions and resource-based competitive advantage? What does this tell us about Microsoft? What does this tell us about Google?
Read: Teece, Profiting from Technological Innovation
Read: Clemons and Row, Rosenbluth Travel Case
Visit: <http://www.techcrunch.com/2009/03/01/what-an-antitrust-case-against-google-might-look-like/>
<http://kara.allthingsd.com/20091222/as-microsoft-warily-eyes-google-buying-spree-will-it-jump-in-or-play-the-regulatory-card/>
<http://kara.allthingsd.com/20100726/yahoo-japan-confirms-google-switch-for-both-paid-and-algo-search/>
<http://techcrunch.com/2010/07/26/google-yelp/>
HW2: Channel Conflict Discussion and Written Analysis
- Session 8 W 11-Feb **The Why of Outsourcing — Understanding the Changing Risk Profile of Outsourcing**
Information Systems and the structure of manufacturing operations — the changing balance between internal production and outside procurement.
Read: *Now I Get It*, (Unit 4)
Read: Clemons, IT and the Changing Boundary of the Firm (Optional)
Read: Clemons, Reddi, and Row, Move to the Middle (optional)
Read: Bakos and Brynjolfsson, Number of Suppliers (optional)
- Session 9 M 16-Feb **The Power of Certainty — Resonance Marketing**
The role of increased information in the changing balance between cost-based strategies and value-based strategies, the changing advantage of incumbents, and the changing nature of competition.
Read: *Now I Get It*, (Unit 7, Chapters 7.1 through 7.8)
Read: Clemons and Spitler, The New Language of Consumer Behavior (Optional)
Read: Clemons, How Information Changes Consumer Behavior and How Consumer Behavior Determines Corporate Strategy (Optional)
Read: Clemons and Gao, Consumer Informedness and Diverse Consumer Purchasing Behaviors (Optional)
HW3: Written Analysis — The Logic of Resonance Marketing

- Session 10 W 18-Feb **The How Not of Outsourcing — Stasis Bank**
Understanding, designing, and managing the risk profile associated with outsourcing information systems.
Read: Clemons, Balancing Risks and Rewards of Information Services Outsourcing
Read: Clemons, Stasis Bank Case
HW4: Written Analysis — Stasis Bank Case
- Session 11 M 23-Feb **Quantitative Analysis of Resonance Marketing Examples**
Is it possible to create markets for innovation and intellectual property? When does it work? When does this not work?
Read: *Now I Get It*, (Remainder of Unit 7, including appendices)
HW5: Written Analysis — Quantitative Analysis of Resonance Strategies
BP: Team Lists and Contact Information Due
- Session 12 W 25-Feb **First Thoughts on Finding a Business Opportunity, Preparing a Business Plan**
What are your passions? Can you commercialize them? How can you determine this and how can you convince others to support you? Guest speaker from Wharton Small Business Development Center.
Read: <<To Be Determined, on creating a business plan>>
- Session 13 M 2-Mar **Information Goods as a Strategy — Monetizing the Net beyond Advertising**
Current acquisitions of social network websites and user content websites have generated considerable interest and huge bids from media companies. Is this the big play in the next round of internet-based companies or simply the next round of dotcom silliness? How can the net be used to generate revenues and profits? Surely there must be something other than advertising!
Read: Clemons, Business Models for Monetizing Internet Applications and Websites: Experience, Theory, And Predictions
Visit: http://www.forbes.com/home/opinions/2007/08/22/social-nets-marketing-oped-cx_ekc_0823social.html
Visit: http://www.forbes.com/2007/12/11/consumer-internet-buying-oped-cx_ekc_1212webbuying_slide_2.html?thisspeed=15000
Visit: <http://www.nytimes.com/2007/11/07/technology/07adco.html>
Visit: <http://www.techcrunch.com/2009/03/22/why-advertising-is-failing-on-the-internet/>

- Session 14 W 4-Mar **Making the Technology Investment Decision**
In some ways information technology investments are similar to other large capital investments with long lead times and resulting uncertainty; in other ways they have unique problems all their own.
- Read: *Now I Get It*, (Unit 10)
- Read: Clemons, Evaluation of Strategic Investments in Information Technology (Optional)
- Read: Clemons and Gu, Justifying Information Technology Investments: Balancing the Need for Speed With the Need for Certainty before Action (Optional)
- HW6: Computational exercise on business valuation**
- Session — M 9-Mar **No Class — Spring Break**
- Session — W 11-Mar **No Class — Spring Break**

Unit 2 — Redesigning the Organization

- Session 15 M 16-Mar **Two-Sided Markets, Platform Envelopment, and Third Party Payer Business Models**
Third Party Payer business models appear to be a special case of what are now commonly called two sided markets. When are they dangerous? When are they ideal for consumers but dangerous? When are they ideal for all parties?
- Read: *Now I Get It*, (Unit 5)
- Read: "The Need to Focus on the Correct Issues in Google, Power, and Antitrust", Huffington Post, 19 April 2011, <http://www.huffingtonpost.com/eric-k-clemons/the-need-to-focus-on-the- b 851102.html>.
- Read: "Why is There Still Litigation in Third Party Payer Distribution Systems in Air Travel", Huffington Post, 29 June 2011, (Optional) <http://www.huffingtonpost.com/eric-k-clemons>.
- Read: "Third Party Payer Systems: The Most Significant Regulatory Problem in the Online World?", Huffington Post, 1 July 2011, (Optional) http://www.huffingtonpost.com/eric-k-clemons/post_2164_b_888842.html.
- Read: "The Real and Inevitable Harm From Vertical Integration of Search Engine Providers Into Sales and Distribution", Huffington Post, 20 April 2011, (Optional) http://www.huffingtonpost.com/eric-k-clemons/the-department-of-justice_b_851079.html.
- Read: "The Google Consent Decree: Consumers Should Be Afraid, Be Very Afraid", Huffington Post, 21 April 2011, (Optional) http://www.huffingtonpost.com/eric-k-clemons/post_1954_b_851696.html.
- HW7: Computational exercise on the power of search**
- Session 16 W 18-Mar **Review Session before Mid-Term Examination**
Review of material in preparation for Mid-Term. (Mid-term exam will cover all material presented before this session.)

Session 17 M 23-Mar **In Class Mid-Term Examination**

Session 18 W 25-Mar **Guest Speaker — Starting Your Own Business**

Session 19 M 30-Mar **Preliminary Business Plans Due!**

Groups will submit a written description of the business opportunity that they intend to explore and will present three overheads describing the business opportunity and why the group believes it will be valuable. These business plans will be discussed in class. You will be given instructions for submitting them in advance of class.

BP: Business Plan PowerPoints (no more than six slides plus title page) need to be loaded on the course website and Business Plan Proposals needs to be submitted.

Session 20 W 1-Apr **Preliminary Business Plans Due!**

Continued discussion of preliminary business plans.

BP: Business Plan PowerPoints (no more than six slides plus title page) need to be loaded on the course website and Business Plan Proposals needs to be submitted.

Session 21 M 6-Apr **Review of Mid-Term Examination**

Session 22 W 8-Apr **Redesigning the Organization**

Often a change in information technology changes what is now possible for the firm, which changes the firm's strategy and structure.

Read: Transforming the Sales Function

HW8: Written Analysis — SNM and Plover

Session 23 M 13-Apr **Online Businesses Globally — Similarities And Differences**

Consumers around the world have very similar attitudes towards privacy, but very different attitudes towards trusting online merchants. What are the implications for online entrepreneurs?

Read: **<<To Be Determined. Class discussion will be based on materials to be drafted during the semester>>**

Session 24 W 15-Apr **Learning To See Alternative Worlds — The Power of Scenario Analysis When Dealing with Strategic Uncertainty**

Planning under uncertainty and the use of scenario analysis; discarding your old mental models in preparation for developing a new world view.

Read: *Now I Get It*, (Unit 9)

Read: Clemons, Information Technology Investments: Dealing Effectively with Strategic Uncertainty Through Scenario Analysis (Optional)

Read: Schoemaker, Scenario Planning: A Tool for Strategic Thinking (Optional)

Session 25 M 20-Apr **Scenario Assignment — Using Scenarios to Manage Uncertainty**

HW9: Written Analysis — Using Scenarios

Session — W 22-Apr **No Class — Work on Final Projects**

Session 26 M 27-Apr **In-Class Session — Discussion of Final Projects**

- Session 27 M 27-Apr **Double Evening Session — Discussion of Final Projects**
-28 *Class will run from 6 to 8.30. Sandwiches and soft drinks will be provided. In order to be polite to students presenting in the evening session, attendance will be mandatory unless individual student arranges excuse in advance. Feedback at these sessions will be essential in development of final projects.*
- Session 29 W 29-Apr **Course Summary and Integration**

**OPIM 210 — Information:
Strategy and Economics**
Suggestions for Preparing Written Case Analyses

The following simple guidelines will help you in your written case assignments for this course:

- You are, of course, not only permitted but **encouraged to meet to discuss your case assignments** before class, but all written exercises must be done individually or in your groups of two or three.
- The most important thing to remember about the exercises is that it is necessary for you to **answer the assigned questions**. In this course we are not asking you to perform a general competitive analysis, tell a captivating story, summarize the case reading, or describe the company. We are asking you to perform specific analyses, based on specific principles from economics and competitive strategy. Please be certain that your answers are responsive to the assigned questions. Likewise, please separate and number your answers to ensure that you answer each part of each question, and to help your graders when reviewing your work. Please number and place your name(s) on each page. If what you are writing does not respond directly to a specific question, it probably does not need to be written, however extra credit can be earned for especially insightful and especially terse answers.
- Next, it is critical to understand that the graders are not looking for specific key words, but they are looking for **careful strategic analyses and for specific supporting details**. On many questions, it is possible to reach dramatically different but equally valid conclusions about the case, depending on the assumptions you make or the data you use. Please be specific about your assumptions and your supporting data and clear about your analyses.
- **There is no maximum length acceptable and no minimum length required. Most cases will be three or four pages, double-spaced.** However, longer answers are not generally better or more complete. It is preferable to have a well articulated response that presents a single well considered viewpoint, well defended by specific examples; this is preferable to a lengthy unstructured summary of various points, no matter how interesting each point may be separately. Longer papers frequently mean that you have not yet decided upon your answers and have instead “written around the question” and provided multiple and contradictory responses rather than articulating a single argument.

Your answers to written case assignments will constitute just under one half of your grade for this course, and the final exam relies heavily on the form of analysis stressed in the cases; for these reasons written exercises should be done carefully. Please turn cases in at the start of the class in which they are due. Since cases will be discussed in class, written assignments done after class would enjoy a considerable advantage over those done before class discussion. Consequently, written analyses cannot be accepted late unless prior arrangements have been made.

**OPIM 210 — Information:
Strategy and Economics**

**Learning from the Experience of Others — The Power of Pattern
Recognition**

Session 2 — 21 January 2015

**Questions for Class Discussion
Not for Written Analysis**

1. What are the principal differences between strategic uncertainty or ambiguity and strategic risk? Why are the mechanisms for managing risk better understood than the mechanisms for managing uncertainty and ambiguity?
2. Do you believe that standard paradigms like conservation of energy in physical systems or finite element analysis in structural engineering have counterparts in management?
3. Can managers be taught a set of paradigms to permit rapid diagnosis of problems and rapid recognition of solutions? Are new paradigms really needed for management education?
4. What is the importance of speed in diagnosis and recognition?
5. What is the theory of *newly vulnerable markets* and how is it used as the basis of designing an entry strategy for attackers in mature industries?

**OPIM 210 — Information:
Strategy and Economics**

**Versioning and the Market for Information Goods:
Information, Information Asymmetry, and Pricing**

Session 3 and 4 — 26 and 28 January 2015

**Questions for Class Discussion
Not for Written Analysis**

1. Why is it necessary to enjoy a monopoly position before a firm can attempt to set a single, profit-maximizing price?
2. Why does a single profit-maximizing price result in a large consumer surplus and a large deadweight loss? That is, why are multiple prices better, both for higher producer profits and lower deadweight loss?
3. With perfect information, consumers would always choose the lower price if the same item was made available at different prices. How does this explain the existence of versioning, selling very similar items at different prices? Why is versioning, to set very different prices on very closely related items after damaging good ones, more common with information goods than with purely physical goods?
4. If a firm knew customer type (good or bad risk, expensive or inexpensive to serve, etc.) how would it use this information?
5. Why does a signal have to be expensive or difficult to send? What if consumers got a 20% reduction in their insurance for taking a 2-hour *attitude training and anger management* class? What if they got the same 20% reduction only after perfect attendance at a 12-month class with an exam after each session? What if you got a 20% reduction in health insurance costs for joining a health club for \$100? What if you got the same reduction only for playing varsity hockey?
6. What is the difference between a signal and a screen? Why is the use of screening mechanisms and screening contracts in business so much more common than the use of signals?
7. Why are there complex social issues associated with information asymmetry? Why are these issues becoming more complex? Why are regulators becoming suddenly more interested in corporate use of screening contracts and data mining?
8. Why are these issues complex enough that regulators often get their analyses wrong in subtle ways that have huge implications for the markets?