



# 15.567 THE ECONOMICS OF INFORMATION STRATEGY, STRUCTURE AND PRICING

FALL 2006

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**SCHEDULE OF SESSIONS**

September		October		November		December	
Wed 9/06	The Economics of Information	Mon 10/02	Information Complements	Wed 11/01	MidTerm Exam	Mon 12/04	Student Presentations <i>Due: Presentations</i>
Mon 9/11	Rhapsody <i>Due: 1 pager</i>	Wed 10/04	Encryption, DRM and Authentication	Mon 11/06	Wikipedia <i>Due: 1 pager</i>	Wed 12/06	Student Presentations
Wed 9/13	Differential Pricing	Mon 10/09	<i>Holiday</i>	Wed 11/08	Free Software	Mon 12/11	Student Presentations
Mon 9/18	Bundling and Aggregation	Wed 10/11	Search and Competition <i>Due: Pricing Ex.</i>	Mon 11/13	Enterprise 2.0 <i>Due: 1 pager</i>	Wed 12/13	The Information Economy Future <i>Team project due</i>
Wed 9/20	NTT DoCoMo <i>Due: 1 pager</i>	Mon 10/16	Digital Value Chain <i>Due: Value Chain</i>	Wed 11/15	Digital Transformation		
Mon 9/25	<i>Holiday</i>	Wed 10/18	The Long Tail <i>Due: Project Topic</i>	Mon 11/20	Google <i>Due: Change Matrix CANCELLED</i>		
Wed 9/27	Amazon	Mon 10/23	SIP week	Wed 11/22	Matrix of Change Presentations		
		Wed 10/25	SIP week	Mon 11/27	Information Worker Productivity		
		Mon 10/30	Reputation and Superstars <i>Debate</i>	Wed 11/29	Intangible Assets		

Please check the class website before every class for announcements, assignments and schedule changes.

## ***CLASS INFORMATION***

**Class Time:** Mon, Wed: 4-5:30 PM, E51-376

**Class Web Site:** <http://sloanspace.mit.edu>

See also <http://digital.mit.edu> for the MIT Center for Digital Business

**Office Hours:** Mondays, 5:30-6:30pm and by appointment.

## ***COURSE PERSPECTIVE AND DESCRIPTION***

Information, especially digital information is different in many ways from other goods and services. Yet, information is still subject to the laws of economics. The purpose of this course is to explore some of the economics of information and understand how they affect strategy, structure and pricing.

We will use lectures, cases, class discussion, guest speakers, exercises and team projects to examine a variety of topics including the pricing of information goods, bundling and other forms of aggregation, network effects, digital rights management, search and competition, targeted advertising, web 2.0 and enterprise 2.0, knowledge management, the economics of reputation and recommender systems, and a variety of other topics. Fundamental economic principles will be illustrated using business case studies. At times, we will also discuss emerging digital technologies, business methods and industry structures.

Rapid and radical changes inevitably create opportunities for great wealth creation – and destruction. Players empowered with knowledge of the underlying economics, business and technological principles will be at an advantage in such an environment.

## ***COURSE NORMS AND EXPECTATIONS***

We have woven a number of cases into the structure of this course, and as such, it is crucial to appreciate that students in the class are co-producers of class discussions and collective learning. For this to happen, class members need to listen carefully to one another and build on or critique prior comments. Discussions need to stay on track, and it is the responsibility of the faculty and students to collectively accomplish this. The discussion should be a conversation in which all participants recognize that they have an obligation to advance our understanding of the issue at hand. Your contributions to this learning process will be appraised in addition to the content of what you contribute.

Because this course relies heavily on class participation for its success, class norms and expectations regarding class behavior are very important:

1. Attendance at every class is required. Please schedule other activities at times other than when the Economics of Information meets. Please arrive on time and stay from the beginning of class to the end. If you must miss a class, please advise the Teaching Assistant in advance. You are allowed up to two excused absences before missing class seriously affects your grade. For classes you must miss, it is your responsibility to find out from your classmates what materials were covered, what items were distributed in class, and what key points were collectively advanced.
2. Please come to class prepared to discuss the readings. In every class, we will "cold call" students whose hands are not raised. If something has prevented you from being prepared for class that day, you should let me know before the start of class.
3. Technology allows us to be connected almost anywhere and anytime. However, there are times when it is most productive *not* to be electronically connected. Class sessions are one such time. During class sessions, please turn off cell phones, beepers, laptops or other such equipment.
4. Please bring your name card to every class and for the first several weeks, please sit in the same seat each class. This will make it easier for me to get to know you and to make sure you get appropriate credit for your contributions.

Students who are thoroughly prepared for each session will benefit the most from this class. What's more, they also add to the learning of their classmates. Hence, if you don't feel comfortable with these expectations, then this is not a good course for you to take this semester.

### **ASSIGNMENTS AND GRADING**

This is a 9 unit course (3-0-6 H-level graduate credits). Grades will be assigned on the following basis:

Class participation (including debates)	35%
Individual Assignments (One pagers, Value Chain, Pricing Exercise and Matrix of Change)	20%
Midterm Exam	10%
Team project	35%

There are seven brief individual assignments in the course: Four One-page Mini Case Analyses, one Value Chain Analysis, one Pricing Exercise and one Matrix of Change Analysis. In addition, there is a Midterm Exam and a major Team Project. Detailed explanations of each assignment and the project will be posted on the class website. Note that most assignments are due via email to [erikb@mit.edu](mailto:erikb@mit.edu) and [adamrs@mit.edu](mailto:adamrs@mit.edu) the night *before* class.

### **READINGS AND CLASS SCHEDULE**

Readings packets are available from the Copy Technology Center, E52-045. The packet includes the required readings for the course. Occasionally, optional readings will available via the web. In addition, some required readings will be handed out in class and via the web. Please note that some of the web-based readings require Acrobat PDF (Portable Document Format). A free reader can be found at <http://www.adobe.com/Acrobat/> (Why does Adobe give this software away?)

### **BOOKS FOR THE COURSE**

#### Required:

Shapiro, Carl and Varian, Hal. *Information Rules: Competitive Strategy for the Information Economy*. Harvard Business School Press, 1998.

#### Recommended:

Saloner, Garth and Spence, A. Michael *Creating and Capturing Value: Perspectives and Cases on Electronic Commerce*, John Wiley and Sons, 2001.

Brynjolfsson, Erik and Kahin, Brian, eds *Understanding the Digital Economy*, MIT Press, 2000.

Liebowitz, Stan *Re-Thinking the Network Economy: The True Forces That Drive the Digital Marketplace*, American Management Association, 2002.

Varian, Hal, Farrell, Joe and Shapiro, Carl. *The Economics of Information Technology: An Introduction*, Cambridge University Press (2005)

**CLASS SCHEDULE** (MAY BE MODIFIED SLIGHTLY TO ACCOMODATE GUEST SPEAKERS)

	September	Required	Optional
Wed 9/06	Economics of Information	Review Syllabus.  Shapiro and Varian, <i>Information Rules</i> (S&V), Ch. 1 – The Information Economy	Stigler, J. (1961) “The Economics of Information” <i>Journal of Political Economy</i>  Stiglitz, J. E. (2000). "The Contributions of the Economics of Information to Twentieth Century Economics." <i>Quarterly Journal of Economics</i> 115(4): 1441-1478.
Mon 9/11	Rhapsody	RealNetworks Rhapsody HBS Case 9-804-142  <b><u>Due at 12:01am via email:</u></b> 1 pager on Rhapsody	Smith and Mangalindan “Amazon Plans Music Service to Rival iTunes” <i>Wall Street Journal</i> , Feb. 16, 2006. p. B1 <a href="http://online.wsj.com/public/article/SB114005222162375368.html?mod=todays_free_feature">http://online.wsj.com/public/article/SB114005222162375368.html?mod=todays_free_feature</a>
Wed 9/13	Differential Pricing	S&V, Ch. 2 Pricing Information and Ch.3 Versioning Information.	Tirole (1989) <i>The Theory of Industrial Organization</i> Chapter 3: Price Discrimination Read pages 133-152, but skip subsection 3.3.2 (p 148-149).  Varian, H. (2000) “Buying, Sharing and Renting Information Goods” <i>The Journal of Industrial Economics</i> , Vol. XLVIII, Number 4, December 2000.
Mon 9/18	Bundling and Aggregation	Bakos, Yannis and Erik Brynjolfsson “Aggregation and Disaggregation of Information Goods: Implications for Bundling, Site Licensing and Micropayment Systems,” in Varian and Kahin, Eds. <i>Internet Publishing and Beyond: The Economics of Digital Information and Intellectual Property</i> , MIT Press, 2000.  Van “RCN seeks to make a la carte programming standard” <i>Chicago Tribune</i> , February 20, 2006. ( <a href="http://www.chicagotribune.com/business/chi-0602200179feb20,1,5118373.story?coll=chi-business-hed">http://www.chicagotribune.com/business/chi-0602200179feb20,1,5118373.story?coll=chi-business-hed</a> )  <b>Select teams for team project</b>	Bakos and Brynjolfsson. (1999) "Bundling Information Goods" <i>Management Science</i> , Vol. 45, No. 12 pp. 1613-1630.  Bakos and Brynjolfsson (2000) "Bundling and Competition on the Internet" <i>Marketing Science</i> , Volume 19, Number 1 (Winter 2000), pp. 63-82
Wed 9/20	Network Effects and Increasing Returns	S&V Ch 5 and 7 NTT DoCoMo 9-805-124  <b><u>Due at 12:01am via email:</u></b> 1 pager on NTT DoCoMo	Liebowitz, <i>Re-Thinking The Network Economy</i> : Ch 2: pp 9-22; S&V Ch.6: Arthur, B. “Increasing Returns and the Two Worlds of Business.” <i>Harvard Business Review</i>
Mon 9/25	Holiday		
Wed 9/27	Amazon	Case: Amazon.com: Marching Toward Profitability Stanford University case EC-25; June, 2006.	Zeng and Reinartz, “Beyond Online Search: The Road to Profitability”, <i>California Management Review</i> , Winter, 2003.

	<b>October</b>		
Mon 10/02	Information Complements	Parker and Van Alstyne, "Strategies for Two-Sided Markets" <i>Harvard Business Review</i> (in press, 2006)  Case: Adobe Systems Incorporated, HBS 9-801-199.	Parker and van Alstyne, 2002, "Two-Sided Network Effects: A Theory of Information Product Design", <i>Management Science</i> , Oct, 2005.
Wed 10/04	Encryption, DRM Authentication	S&V, Ch. 4 Davis, Randall "The Digital Dilemma" <i>Communications of the ACM</i> , February, 2001.	Eric Hellweg, "Subscription Music's Curious Silence" <i>Technology Review</i> , February 18, 2005.  RSA FAQ: <a href="http://www.rsasecurity.com/rsalabs/node.asp?id=2152">http://www.rsasecurity.com/rsalabs/node.asp?id=2152</a>
Mon 10/09	<i>Holiday</i>		
Wed 10/11	Price Competition	Smith, Bailey and Brynjolfsson, Erik "Understanding Digital Markets" in Brynjolfsson and Kahin, eds <i>Understanding the Digital Economy</i> , MIT Press, October, 2000.  <u><b>Due at 12:01am via email:</b></u> <i>Price Dispersion Exercise</i>	Bakos, Y. (1997)"Reducing Buyer Search Costs: Implications for Electronic Marketplaces" <i>Management Science</i> , Volume 43, Issue 12 (December 1997), 1676-1692  Brynjolfsson, E. and Smith, M. (2000) "Frictionless Commerce? A Comparison of Internet and Conventional Retailers" <i>Management Science</i> , Vol. 46, No. 4 (April 2000), pp. 563-585  Salop, S. and Stiglitz, J. (1977) Bargains and Ripoffs: A Model of Monopolistically Competitive Price Dispersion, <i>Review of Economic Studies</i> , 44(3) October, 493-510  Stiglitz, J. "Imperfect Information in the Product Market." Ch. 13 in Schmalensee, R. and R. Willig (eds.), <i>Handbook of Industrial Organization</i> , Vol. 1. 769-844. Elsevier Science, 1989. (Read especially pp. 771-823.)
Mon 10/16	Digital Value Chain	BMG Entertainment, HBS Case 9-701-003 (See Sloanspace for links to online resources) <u><b>Due at 12:01am via email:</b></u> <i>Value Chain Analysis</i>	
Wed 10/18	The Long Tail	Anderson, Chris. "The Long Tail," <i>Wired</i> , < <a href="http://www.wired.com/wired/archive/12.10/tail_pr.html">http://www.wired.com/wired/archive/12.10/tail_pr.html</a> >  Brynjolfsson, Erik, Yu (Jeffrey) Hu, and Michael D Smith. 2003. "Consumer Surplus in the Digital Economy: Estimating the Value of Increased Product Variety at Online Booksellers," <i>Management Science</i> 49 (11) 1580-1596.  Garrity, Brian. 2006. "DMG Bets on 'Long Tail'," <i>Billboard</i> 118 (7) 12, 18 Feb 2006.	Brynjolfsson, Erik, Yu (Jeffrey) Hu, and Duncan Simester. 2006. "Goodbye Pareto Principle, Hello Long Tail" Center for Digital Business Working paper, Jan 2006.  Lee Gomes, "It May Be a Long Time Before the Long Tail Is Wagging the Web" <i>Wall Street Journal</i> ; Jul 26, 2006; p. B1.  Varian, Hal R. 2005. "Reading Between the Lines of Used Book Sales," <i>New York Times</i> 28 Jul 2005.  Sonderegger, Paul. 2005. "Searching the Long Tail," <i>KM World</i> 14 (10) S6-S7, Nov/Dec 2005.
Fri 10/20		<u><b>Due at 5pm via email:</b></u> <i>Team project topic, description and timetable</i>	
Mon 10/23	<i>SIP week</i>		
Wed 10/25	<i>SIP week</i>		

Mon 10/30	Reputation & Superstars  (Two Debates)	<p><i>If your last name starts with the letter A through L, then read:</i></p> <p>Dellarocas, "The Digitization of Word-of-Mouth: Promise and Challenges of Online Feedback Mechanisms." <i>Management Science</i>, October, 2003.</p> <p><i>If your last name starts with the letter M through Z, then read:</i></p> <p>Seabright, Paul and Helen Weeds, "Market Power in Broadcasting: Where are the Rents?", <i>The Economic Regulation of Broadcasting Markets</i>, Paul Seabright and Jurgen von Hagen (eds.), Cambridge University Press, 2007 (in press).</p>	<p>Resnick, P. and R. Zeckhauser "Trust Among Strangers in Internet Transactions: Empirical Analysis of eBay's Reputation System" <i>The Economics of the Internet and E-Commerce</i>, (2002)</p> <p>Resnick and Zeckhauser, "Economics of Recommendations" <i>American Economic Review</i> (1999)</p> <p>Rosen, S. (1981). "The Economics of Superstars." <i>American Economic Review</i> 71(5)</p> <p>Krueger, A. (2005). "The Economics of Real Superstars: The Market for Rock Concerts in the Material World." <i>Journal of Labor Economics</i> 23(1): 1-30.</p>
	<b>November</b>		
Wed 11/01	Midterm	Review readings and class notes	
Mon 11/06	Web 2.0	<p>Wikipedia case, Northwestern Univ. 2006.</p> <p><b><u>Due at 12:01am via email:</u></b> 1 pager on Wikipedia</p>	Eric S. Raymond (2001). The Cathedral and the Bazaar" in <i>The Cathedral &amp; the Bazaar</i> . O'Reilly.
Wed 11/08	Free Software	<p>Richard Stallman, "Why software should not have owners" in <i>Free Software, Free Society: The Selected Essays of Richard M. Stallman</i>.</p> <p>Summary of the Digital Millennium Copyright Act by U.S. Copyright office</p>	<p>Lerner, Joshua and Tirole, Jean, "The Scope of Open Source Licensing" (November 2002).. <a href="http://ssrn.com/abstract=354220">http://ssrn.com/abstract=354220</a></p> <p>Lessig, L., <i>Free Culture: How Big Media Uses Technology and the Law to Lock Down Creativity</i>, (2004), Penguin Press.</p>
Mon 11/13	Enterprise 2.0	<p>Wikis at DrKW HBS 9-606-074</p> <p><b><u>Due at 12:01am via email:</u></b> 1 pager on Wikis at DrKW</p>	McAfee, A. "Enterprise 2.0," <i>Sloan Management Review</i> , 2006.
Wed 11/15	Digital Transformation	Brynjolfsson and Short, "eBusiness Transformation: the Matrix of Change" Center for Digital Business Working Paper, 2006.	<p>Brynjolfsson, Erik, Amy Renshaw and Marshall Van Alstyne The Matrix of Change: A Tool for Business Process Reengineering, <i>Sloan Management Review</i>, (Winter 1997) pp. 37-54.</p> <p>"eBusiness Transformation" Center for eBusiness Workshop Report.</p>
Mon 11/20	Advertising and Targeting	<p>Google, Inc. HBS 9-806-105, Feb 2006</p> <p><b><u>Due at 12:01am via email:</u></b> <i>No assignment due: Matrix of Change Analysis Cancelled</i></p>	
Wed 11/22	Team Projects	Team Projects meetings	
Mon 11/27	Information Worker Productivity and Innovation	Aral, Brynjolfsson and Van Alstyne "Information Worker Productivity" Center for Digital Business Working Paper, 2006.	<p>Von Hayek, F.A. "The Use of Knowledge in Society." <i>American Economic Review</i> 35:4 (September 1945): 519-530.</p> <p>Brynjolfsson and Zhang, "Innovation Incentives for Information Goods" Jaffe, Lerner and Stern, eds. <i>Innovation Policy and the Economy</i>, National Bureau of Economic Research, 2007 (in press)</p>
Wed 11/29	Information, Replication and Intangible Assets	Brynjolfsson, McAfee, Sorell and Zhu "Scale without Mass: Business Process Replication and Industry Dynamics", Center for Digital Business Working Paper, 2006.	Brynjolfsson and Hitt, "Beyond Computation" <i>J. of Economic Perspectives</i> , Fall, 2000.

	<b>December</b>		
Mon 12/04	Student Presentations	<i><u>Due via email:</u> Team project presentation slides and/or presentation outline</i>	
Wed 12/06	Student Presentations		
Mon 12/11	Student Presentations		
Wed 12/13	The Future of the information economy	<i><u>Due via email:</u> Final Project Report</i>	<p>Pick one:</p> <p>Kelly, Kevin “We are the Web” <i>KurzweilAI.net</i> Jan, 2006  <a href="http://www.kurzweilai.net/meme/frame.html?main=memelist.html?m=1%23664">http://www.kurzweilai.net/meme/frame.html?main=memelist.html?m=1%23664</a></p> <p>Kurzweil, Ray “Reinventing Humanity The Future of Human-Machine Intelligence” <i>KurzweilAI.net</i> Feb, 2006,  <a href="http://www.kurzweilai.net/meme/frame.html?main=memelist.html?m=1%23664">http://www.kurzweilai.net/meme/frame.html?main=memelist.html?m=1%23664</a></p> <p>Joy, Bill “Why the Future Doesn’t Need Us”, <i>Wired</i>, 8.04  <a href="http://www.wired.com/wired/archive/8.04/joy.html">http://www.wired.com/wired/archive/8.04/joy.html</a></p>

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