

MANA 7341 STRATEGIC MANAGEMENT OF TECHNOLOGY AND INNOVATION (SMTI)

Fall 2015 (6:00 p.m. to 9:00 p.m.) Thursdays, 27 August – 3 December

Professor:	Laura B. Cardinal	Office Hours:	by appointment
E-mail:	lbcardinal@bauer.uh.edu	Assistant:	Sonnie Curry
Office:	Melcher 325D	Office:	Melcher 315
Phone:	713.743.2559	Contact Info:	713.743.4650 / slcurry@bauer.uh.edu

COURSE MATERIALS

- 1) Study.Net Coursepack [Purchase] @ http://www.study.net/r_mat.asp?crs_id=30070139
- 2) Harvard Coursepack [Purchase] @ <https://cb.hbsp.harvard.edu/cbmp/access/38984176>
- 3) Library Guide [Access] @ http://guides.lib.uh.edu/mana7341_Cardinal
- 4) OPTIONAL Harvard Coursepack [Purchase] @ <https://cb.hbsp.harvard.edu/cbmp/access/38986664>

Students are *required* to purchase the Harvard and Study.Net Coursepacks (per copyright law—both vendors provide a list of purchasers). The Library Guide readings are available via the link provided and do not have copyright fees per fair use laws. There is an Optional Harvard Coursepack for HBR articles that cannot be printed via the Library Guide. Students who have not purchased the required coursepacks will receive an incomplete for the course.

COURSE OVERVIEW

Over the next decade or two, entire industries will be restructured, with many incumbents losing their positions to new entrants emerging from beyond traditional industry boundaries. By 2035, the oil, automobile, chemical, utility, food, forest products, and education industries have the potential to look radically different than they do today. The communications, electronics, computer hardware, computer software, financial services, and knowledge industries will lead the charge in radically redefining the way in which we serve human needs. This is the world in which you will spend your professional careers. Acquiring a map to help navigate these treacherous waters will be essential to survival.

The course has two main focal points: (1) understanding innovation – sustaining and disruptive – and (2) creating new capabilities. Sustaining innovations build on existing capabilities. Disruptive innovations require fundamentally new sets of capabilities. Evolutionary economics and casual observation suggest that managing disruptive innovation is exceedingly difficult, regardless of whether the firm is proactively attempting to create its own disruptive technology or reactively trying to catch a competitor.

Who should take this course?

- ✓ People who are interested in becoming general managers – or consultants
- ✓ People interested in careers in product management, strategic planning, marketing, sales, patent law, market concept development
- ✓ People interested in public policy concerning new emerging technologies
- ✓ People who want to understand the logic of innovation in complex firms and anticipate that they will work at established corporations
- ✓ People who expect to become involved with internal corporate entrepreneurship
- ✓ People who expect to be involved with venture capital
- ✓ People working in entrepreneurial firms or founding a firm where they expect to engage in innovation and/or anticipate displacing established competitors in the future
- ✓ People who expect to analyze and make assessments of high-technology firms as stand-alone entities or as entities involved in the acquisition or divestiture process

COURSE OBJECTIVES

- ✓ Develop an awareness of the range, scope, and complexity of the issues and problems related to the environment of business as it pertains to management of technology and innovation
- ✓ Develop an understanding of the "state of the art" of the management of technology and innovation
- ✓ Develop a conceptual framework for assessing emerging technology trajectories
- ✓ Develop fine-grained conceptual frameworks to aid in strategic analysis
- ✓ Develop critical thinking skills and the ability to analyze business situations and recommend appropriate actions as they pertain to the management of technology and innovation

Attaining the Course Objectives

To pursue the course objectives effectively, you must meet the following requirements:

- 1) Preparation and active discussion of course material (readings, cases, lectures)
- 2) Professionalism in class
- 3) On-time completion of all assignments
- 4) Participate in the simulation case

a. Preparation and active discussion of course material

For the learning process to be effective, you will need to prepare carefully before class and contribute actively during class. Preparation involves both thoroughly analyzing and *developing a personal position* on issues raised in the cases and readings. Unless you have thought about and adopted a personal position, it is very hard to learn from others' contributions in the class. This does not mean that you have "solved" the case, in the sense that you have identified the one best answer to the issues facing the firms and managers in the case. Invariably, given the complexities of the real world, there is no single answer. Instead, thorough preparation means that you read the materials, consider the issues raised by the case and assignment questions, and carry out appropriate quantitative and qualitative analysis to arrive at a thoughtful position concerning the options that face the firms and managers in the case. By actively participating in class discussions, you will sharpen your own insights and those of your classmates. Discussion during the case method enhances our learning. Case discussions generate a dynamic process of vigorous questioning and responding, examination and debate among students and discussion leader. Because strategy issues are often characterized by ambiguity, complexity, and/or uncertainty, this course is more about asking the right questions than it is about knowing the right answers. Walter Wriston has said, "*Good judgment comes from experience. Experience comes from bad judgment.*" As in the "real world," the case method replicates trial-and-error experience of seasoned managers, thereby deepening judgment. It also does so in the low risk environment of the classroom where career casualties are not at stake.

Conversation Guidelines:

- i. *Listen before you speak.* Polite conversationalists do not walk up to a group and begin talking. Even if they are quite familiar with the individuals they approach, they wait to find out what is being discussed at the moment. Make genuine connections with the important points being made. We are not in conversation mode when we forget to take seriously what has already been said.
- ii. *Connect with points already made.* Inept conversationalists make a passing reference to the current conversation, but move quickly to what they had on their minds before joining the group. More interesting conversationalists continue to make genuine links to the ideas of others. As a result, the content they intend to share upon arrival is shaped by the conversation, and shapes the conversation. By extension, the generation of new ideas that could only have come from engaging with others is the sign of successful conversation.
- iii. *Be interesting.* We don't listen long to those who repeat previous points or make remarks that are tangential to the main thread of conversation. The good conversationalist thinks about people he

or she is talking to, considers what would interest them, edits content to make sure that these connections are clear, and then says something the others have not thought of before. If you were lucky enough to meet an author in the conversation that interests you – does the author interest you or the conversation? Imagine that you have just met your favorite author or captain of industry. If you are a good conversationalist, you will not be completely tongue-tied, but will work hard to think of the most interesting thing you can say. You will try to avoid saying what your new acquaintance already knows.

- iv. *Be self-critical.* Be critical in your thinking and in your comments, but also try to be constructive and respectful of different points of view (even when you strongly disagree).
- v. *Substantiate your ideas.* Quality of contributions is what matters, not quantity. When you make a statement, be sure you can support your claim —this is more important than being right or wrong.

Some factors that have an impact on effective class contribution:

- ✓ No single individual should dominate the discussion. Make your points, and then let others have a chance to make theirs. An “equal time” rule will be in effect.
- ✓ Is the contributor a good listener? For example, does the person extend, rather than merely repeat, what others have just said?
- ✓ Is the contributor willing to interact with other class members?
- ✓ Are the points that are made relevant to the discussion? Are they linked to the comments of others? Are they linked to current or past course material?
- ✓ Do the comments add to our understanding of the situation?
- ✓ Does the contributor distinguish among different kinds of data (i.e., facts, opinions, beliefs, concepts, etc.)?
- ✓ Is there a willingness to test new ideas, or are all comments, “safe?” For example, does the contributor repeat case facts without analysis and conclusions?
- ✓ Can the contributor substantiate (substantiate means to support) his/her statements?
- ✓ Are the comments critical, but also constructive and respectful of different points of view (even when you strongly disagree)?

b. Readings, cases, and lectures

Case discussion, and team assignments will take place against a backdrop of conceptual material that is acquired through selected readings and brief lectures. The course has a mix of “new” and “classic” cases and/or articles. The latter ones offer the opportunity to discuss fundamental and timeless issues and challenges faced by companies. Please study them in that spirit and do not dismiss them out of hand simply because they seem “old.” Ask yourself – as we will in class – what can I learn from this situation and how do I generalize to other companies? If the course were merely about current events, you would not learn the fundamental tools needed to navigate over the course of your career. Rather, you would have current examples that you could “pull from a hat” that would become dated in six months to a year’s time.

c. Professionalism in class

We are running this class as a series of professional business meetings where your presence, attention, and professionalism are counted on.

- ✓ Sessions start on-time.
- ✓ One key area of professionalism is the ability to listen. This includes the rule of NO LAPTOP or OTHER ELECTRONIC DEVICES during class unless otherwise noted or permitted.
- ✓ Absences and lack of preparedness will hurt your grade.
 - Attendance is required for all class sessions.

- If you miss class, you owe me a detailed summary of the readings and case for the missed session before the start of the next session. This will not make up for the missed class, but it will keep you from accumulating negative points. Please email.
- If you need to miss a class, *you are required to provide advance notice by email* or, if you cannot provide advance notice, an email note afterwards to explain the absence. If you do miss a class, it is your responsibility to find out from your classmates what materials were covered, what additional assignments were made, and what handouts you may have missed.
- With three absences you will receive a zero for Individual Class Contribution. If you have more than three absences you will fail the course.
- ✓ I will be prepared for each class and expect the same of you. You should let me know before the start of class if some emergency has made it impossible for you to be adequately prepared for that class.
- ✓ The University of Houston Academic Honesty Policy is strictly enforced by the C. T. Bauer College of Business in this course. The policy can be found in the University of Houston Student Handbook at http://www.uh.edu/provost/uhhonesty_policy.html. Beyond the policies discussed in the Handbook additional academic honesty violations for this course include:
 - You should not use previous notes, on-line materials, assignments, class lectures or materials from courses where these materials may have been taught (at University of Houston or other universities). Such use will only hurt your own learning experience (Over 150,000 MBAs are granted in the U.S. alone each year. You want more than a piece of paper!)
 - In turn, you should not share or pass down notes, assignments, materials, lectures, etc. from your class to future classes. You harm the learning experiences of others.
 - *All case discussions are to occur in real-time during class*. This means that you should not read about the company or the decision the company is facing (faced) using materials outside of the case itself or our class readings prior to our class discussion of the case.
 - All writing for assignments is to be original work and all sources are to be properly cited. No writing is to be plagiarized.
 - All copyright law is to be followed.

d. Assignments (individual and team) and grades

Some of your assignments will be conducted in teams and some individually. Please keep in mind that individual work is precisely that: “individually conducted from beginning to end.” Team work will be conducted within your teams and without assistance from others. Any breach in individual or team work will be considered a violation of the University of Houston Academic Policy. If you have any questions concerning the boundaries of what is appropriate for either your individual or team assignments, please ask. You will also receive an individual contribution score for each class session. This score will be comprised of your in class discussion and contribution, but also any pop quizzes covering the reading material.

Detailed memos will be posted for each assignment. All assignments are due according to the class schedule. Late assignments are not accepted. No exceptions.

Final course grades will be assigned at the end of the semester. Grades will be determined as follows:

Individual Scientist Interview Plan, Essay, and Executive Summary	35
Individual Class Contribution	50
Team Science and Technology History and Presentation	50
Individual Back Bay Battery Preparation and Class Participation	Yes/No
Team Science and Technology Final Analysis	65
TOTAL RAW POINTS	200

Peer Evaluation:

At various junctures in the course, team members may be asked to provide peer evaluations. I expect that in the vast majority of instances, all team members will “pull their own weight” when it comes to team assignments. In the rare instances when team members either fail to adequately contribute to the team effort, or at the other extreme, when specific individuals make extraordinary contributions, I would like to be made aware. If either of the above situations arises in your team, please submit a written note with the specifics. Peer evaluations will be used to make borderline decisions in determining your final grade. *Free-riders will not be tolerated.*

e. Special accommodations for students with disabilities

The C. T. Bauer College of Business would like to help students who have disabilities achieve their highest potential. To this end, in order to receive academic accommodations, students must register with the Center for Students with Disabilities (CSD) (tel.: 713.743.5400), and present approved accommodation documentation to the professor in the first two weeks of the semester.

PROFESSOR LAURA B. CARDINAL
B.A., Ph.D. (University of Texas at Austin)

Dr. Laura B. Cardinal is Professor of Strategic Management at the C. T. Bauer College of Business, University of Houston. Previously, Dr. Cardinal was a faculty member at Tulane University, UNC, Duke University, and SMU. While at the A. B. Freeman School of Business at Tulane University she served as the Director of the Burkenroad Institute for the Study of Ethics and Leadership and the Area Coordinator for Strategy and Entrepreneurship. She earned her Ph.D. from the University of Texas at Austin where she was a National Science Foundation (NSF) grant recipient. Her areas of expertise include managing innovation and R&D capabilities and understanding the evolution and adaptation of control systems and strategy in founding firms. Dr. Cardinal has published articles in the *Academy of Management Journal*, *Organization Science*, *Strategic Management Journal*, *Global Strategy Journal*, *Journal of Accounting and Economics*, *Journal of Engineering and Technology Management*, *Journal of Organizational Behavior*, and the *Journal of Product Innovation Management*.

Dr. Cardinal sits on several boards – the Board of Directors of the Strategic Management Society and the Board of Governors of the Academy of Management. She is an Associate Editor of the *Academy of Management Annals (AMA)*, and serves on the editorial boards of the *Academy of Management Journal (AMJ)*, *Organization Science (OS)*, the *Strategic Management Journal (SMJ)*, the *Academy of Management Discoveries (AMD)*, and the *Journal of Organization Design (JOD)*. She has served on grant panels at the National Science Foundation (NSF) for the Innovation and Organizational Change Division. She previously served as the Chair for the Competitive Strategy Interest Group of the Strategic Management Society and as the Program and Division Chair for the Technology and Innovation Management Division of the Academy of Management.

As Director of the Burkenroad Institute, Dr. Cardinal was responsible for the Annual Symposium on Business and Society. The 17th Annual Symposium addressed “The Quest for Fool’s Gold: The Risks and Rewards of Emerging Technologies.” The 16th Annual Symposium addressed “Leadership and the Eye for Innovation.” And the 15th Annual Symposium addressed “Critical Moments in Leadership: Changing the Rules of the Game.”

Dr. Cardinal has been an invited keynote or plenary speaker at a range of venues. Noteworthy speaking engagements include: Athens University of Economics and Business Distinguished Public Lecture Series of the MBA Program at the Aueb; Vienna University of Economics and Business Empirical Research in Management Accounting & Control Conference; The Industrial Research Institute (The IRI is a non-profit organization of some 260 leading industrial companies that carry out over 75 percent of the industrial research effort in the United States and abroad); The China-U.S. Joint Conference in Beijing on Technological Innovation Management sponsored by the National Science Foundations of China and the U.S.; The Center for Innovation Management Studies; The Consortium for Corporate Entrepreneurship; The Epoxy Plastics Division of the Society of Plastics; The Center for the Study of Work Teams; KPMG’s Ph.D. Project; and the KPMG-John M. Olin Conference on Organizations, Incentives and Innovation. She is an annual speaker at the Strategic Management Society and the Academy of Management.

Dr. Cardinal is an award-winning teacher. She teaches classes on managing innovation and technology, strategic management, and sustainable enterprise (social and environmental entrepreneurship). While at Tulane she won teaching awards in both the evening professional MBA and the full-time MBA programs for the strategic management core and the managing innovation and technology elective courses. Dr. Cardinal serves as a mentor for several start-up incubators. Past consulting and executive education clients and business advising partners have included Sara Lee, Xerox PARC, Rockwell, Reichold Chemicals, Human Systems Innovators, Inc., and the United States Postal Service. She served on the advisory board for Cincinnati Drum and Bugle Corps. She co-developed a CD-ROM product called “Career Paths in Management” with Convergence Multimedia (distribution by Prentice-Hall). The series won the NewMedia Gold Award and the Comdex Education Award for new products in 1996. Her book, *Organizational Control* (with S. Sitkin and K. Bijlsma-Frankema), was published by Cambridge University Press in September 2010.