

THE WHARTON SCHOOL OF THE UNIVERSITY OF PENNSYLVANIA

MGMT 803: HIGH TECHNOLOGY ENTREPRENEURSHIP

SPRING 2003, QUARTER III

(revised version, 2/14/03)

Professor Lori Rosenkopf

Office: 2018 SH-DH

Phone: 8-6723

E-mail: rosenkopf@wharton.upenn.edu

Home page: <http://www-management.wharton.upenn.edu/rosenkopf>

Section 001, MW 12-1:20, JMHH G90

Office hours: MW 1:30-2:30 or by appointment

WebCafe: <http://webcafe.wharton.upenn.edu/eRoom/mgmtb/803-sp03-1>

Entrepreneurial opportunities often exist when industries are either created or transformed by emerging new technologies. This course deals with the strategic issues entrepreneurs must address in order to exploit such opportunities. It is likely to be of greatest appeal to students who are interested in starting, building or growing a company in a technology-intensive industry. The ideas presented, however, have clear relevance for a broader range of students, including those interested in venture capital, consulting or general management in technology-intensive industries.

The course requires that you master and integrate material from a number of disciplinary and functional areas. It is divided into two parts. The first focuses on the pre-entry stage of identifying and evaluating opportunities. It draws upon theoretical work on patterns of industry evolution in order to identify likely opportunities for entrepreneurs. The second part of the course explores how, after successful entry, a firm can create a sustainable position.

Prerequisites: When taking MGMT 803, it is strongly recommended that students must either have completed MGMT 801 or be taking it concurrently. This is because we do not review the form and content of a business plan, which is critical knowledge for either project you choose for the course. If taking it concurrently, students may not evaluate the same business idea for both classes. Furthermore, students are obligated to disclose prior evaluations of the business idea or the company from previous courses or business plan competitions. This ensures that the students can make adequate progress beyond their prior conceptions of the idea. Failure to disclose previous efforts will constitute a violation of the honor code.

Course Materials: The bulkpack required for MGMT 803 is available from Wharton Reprographics. The cost of a reasonable number of additional in-class handouts will be charged to every enrolled participant at the end of the term by the University Bursar as “Option B” supplemental materials.

Grading:

30%	Class participation
20%	Group formation activities (assignment, group set-up, meeting with instructor)
20%	Oral presentation of project
30%	Written presentation of project

Class Participation: Nothing is more critical to success in this course than thorough preparation, regular attendance and active participation throughout the term. Since case method discussion is the primary pedagogical device, much of the actual learning will take place in class. We will use not only the cases but also the group projects as topics of discussion. As a result, if you are unprepared for class and/or do not actively participate in discussion of other group’s topics you will not learn. Missed classes will reduce your class participation score – and more importantly, everyone’s experience in the class. If you do have to miss a session, it will be your responsibility to find out what you have missed from classmates.

Group Business Plan Project: (Option 1) Groups of 4-5 students will submit a business plan for a technology-intensive venture. The concept for the business may come from a student’s own interests, or may be obtained by pursuing an invention disclosure from Penn’s Center for Technology Transfer. A small subset of invention disclosures from the engineering school this past spring are posted on webCafe for your convenience, as well as CTT links and contacts. The analysis should include the following sections: executive summary; company, products, and services; customer and market analysis; strategy analysis, marketing and operations, management and organization, milestone events and key risks, and financials. (Again, specifics about each of these sections were covered in MGMT 801.) Group members and topics must be finalized by January 24, at which point you must sign up for your group to meet with me during class time on January 27. The business plan is due on February 26, the last day of class, and each group will also make an oral presentation of the plan on that day.

(Option 2) Groups of 2-3 students will submit a case study of a newly public (i.e., completed IPO within last two years) technology company. The study should include the history of formation of the company, its business model, product and market development, capital formation, and performance to date. Your group must have access to managers in the firm – studies relying solely on public information are not sufficient. All other deadlines and deliverables from Option 1 also apply here.

Jan 13 Course Introduction

Mini-cases: “Developments to watch,” *Business Week*, Jan 28, 2002 (Handout)

Jan 15 Formation of Group Project Teams

The purpose of this class session is to facilitate the formation of project groups.

Reading:

McGrath, R. and I. MacMillan. (2000). “Assessing Technology Projects Using Real Options Reasoning,” *Research and Technology Management*, Vol 43, No. 4, July-August 2000, p. 35-49. (Bulkpack #1)

Group formation assignment (due by 9 am on day of class):

Post a brief (1-2 paragraphs) description of a technology-intensive venture that you might want to start in the group formation folder on webCafe. Or, if you wish to pursue option 2, post a description of the firm you would like to study and your means of gaining access to the firm. Indicate whether you would like the opportunity to present your idea in class to solicit other group members. I will allocate time in class based on the number of requests, but plan to be able to present the idea in less than five minutes.

Jan 22 Sources of Technology: University Technology Transfer

Readings:

Berneman, L., Denis, K. and C. Wright. (2002). “Using Term Sheets to Get What You Need and to Negotiate For What You Want in Industry-University Licenses,” draft chapter for AUTM (Association of University Technology Managers) Manual. (#2)

Roberts, E.(1991) Ch. 4 “The Technological Base of the New Enterprise,” *Entrepreneurs in High Technology*, Oxford University Press: Oxford. (#3)

Guests:

Louis Berneman and Thomas Fitzsimons
University of Pennsylvania Center for Technology Transfer

Discussion Issues:

- How does one access technology developed at universities?
- How should one manage relations with the university?
- What type of deal structure is appropriate when dealing with a university?
- How should one evaluate doing such a deal?

Group formation activity (due no later than Jan 24):

Sign up your group members and your proposed topic on the signup sheet in the group formation folder in webCafe. Choose a time to meet in my office during the Jan 27 class session.

Jan 27 Group Meetings with Instructor, 2018 SH-DH

Jan 29 Identifying Opportunities

Readings:

Abernathy, W.J. and K. B. Clark, (1985) “Mapping the Winds of Creative Destruction,” *Research Policy*, 14:3-22. (#4)

Day, G. S. and P. J. H. Schoemaker (2000). “Avoiding the Pitfalls of Emerging Technologies,” in *Wharton on Managing Emerging Technologies*, Wiley, pp. 24-52. (#5)

Inc. Magazine, “The Disruptive Start-Up: Clayton Christensen on How to Compete with the Best,” February 1, 2002. (#6)

Case: Digital Imaging in 1995: Opportunities in the Descent to the Desktop (#7)

Discussion Issues:

- How would digital cameras be categorized or evaluated by each of the readings? What are the implications of these categorizations for entrepreneurs? Do entrepreneurs or incumbents have an advantage in the digital camera market? Why?
- What characteristics would help to make an entrepreneur successful in this market?
- Based on the readings, when in general might technological discontinuities create opportunities for entrepreneurs as opposed to incumbents?

Feb 3: Understanding customer needs

Readings:

von Hippel, E. (1986) “Lead Users: A Source of Novel Product Concepts,” in *Readings in the Management of Innovation*, Harper Business Press, pp.352-366. (#8)

Leonard-Barton, D. (1995) Ch. 7 “ Learning from the Market,” in *Wellsprings of Knowledge*, Harvard Business School Press. (#9)

Case: Alpha-Beta Technology, Inc – Pioneering Carbohydrate Technology (#10)

Discussion Issues:

- Of the four identified indications for Betafectin which one should Alpha-Beta choose in 1991 for clinical trial? Why?
- Should customer needs or technological potential drive the development of innovative new products? How can a firm balance these two?
- How might one evaluate the market potential for a radically new technology?

Feb 5 Managing Alliances

Reading: Miles, G., Preece, S., and M. Baetz. (1999). “Dangers of Dependence: The Impact of Strategic Alliance Use by Small Technology-Based Firms”, *Journal of Small Business Management*, 20-29. (Handout)

Case: Millennium Pharmaceuticals, Inc. (Handout)

Discussion Issues:

- Why has Millennium been able to establish so many alliances and what are the advantages / disadvantages of relying on alliances for growth?
- What are the sources of revenue that Millennium derives from its alliances?
- How have the partnership strategy and the deal structures favored by Millennium evolved over the alliances described in the case?
- What lessons can you take about how to negotiate alliances?
- Should Millennium continue with its partnership strategy or should it seek to become an integrated pharmaceuticals company?

Feb 10 **No class.** Use this time to work with your team on your project. The classroom is available as a meeting place.

Feb 12 High-Tech Entrepreneurship: One Success Story

Guest: Bill Hilliard
Visiting Scholar, Sol Snider Entrepreneurial Center, Wharton
Founder and CEO, Sonnetech (now E-Color)

Note: Sign up your group members and your proposed topic on the signup sheet in webCafe. Choose a time to meet in my office during the Feb 17 class session.

Feb 17 Group Meetings with Instructor – 2018 SH-DH

Feb 19 Standards

Reading: Shapiro, C. and H. Varian. (1999). “The Art of Standards Wars”, *California Management Review*, 8-32. (Handout)

Case: Adobe Systems Incorporated (Handout)

Discussion Issues:

- How was Postscript established as a de facto standard? How did Adobe make money from Postscript, despite its being an “open” standard?
- Which firm is currently in a stronger position to control defacto standards in the eBook space: Adobe or Microsoft?
- What should Adobe do? How can they win the standards war? Should they focus on eDocs or eBooks? Will the eBooks market tip or will there be multiple standards? How can Adobe make money in this market?

Feb 24 Sources of Technology: Spin-offs - Legal issues

Reading: HBS Note: “Note on Patents and Trade Secrets” (Handout)

Guest: Bruce Bernstein, BTG International

Feb 26 Presentations