

## **15.912: STRATEGIC MANAGEMENT OF INNOVATION AND ENTREPRENEURSHIP**

### **Two Sections:**

**15.912A Spring H1 MWF1-2:30 E51-149**

**15.912B Spring H1 MWF2:30-4 E51-149**

Professor Jason Davis

Office hours: Tuesday 1:30-3:00 (signup sheet on door / email Adel for appt.)

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This course provides a series of strategic frameworks for managing high-technology businesses focusing on the strategic management of innovation and entrepreneurship, especially as it builds upon patterns of technological and market change, prior research on product development and new ventures, and the structure and development of organizational capabilities.

The course utilizes lectures, case analyses, simulations, and independent readings. The readings are drawn from research in technological innovation, entrepreneurial management, and organizational theory. The case studies provide an extensive opportunity to integrate and apply these abstract tools in a practical context. Because of the explosion of entrepreneurial innovation in the iPhone and Android smartphone ecosystem, and the fact that I am currently researching it, the class will feature examples from application-focused ventures in this space.

Grades will be determined by class participation, one two-page paper, and a final paper based on a group project. The group project – which may be written in groups of 3 people – consists of an in-depth exploration of innovation and entrepreneurship in an industry or venture of your choice. Many students choose to focus their two page papers and final paper on the same topic and, thus, “build up” to the final paper due at the end of the semester. There is no final exam.

This is an advanced capstone course in the strategic management of innovation and entrepreneurship. I build upon material presented in 15.900, Strategic Management, and make some linkages to 15.910: Innovation Strategy and 15.911: Entrepreneurial Strategy. However, there are no formal pre-requisites for this course – all are welcome. Knowledge or work experience of basic concepts in innovation and entrepreneurship in high technology settings is also useful for background to this course.

## COURSE REQUIREMENTS AND EXPECTATIONS

### Grading

Class attendance and participation	40%
Two two-page paper	20%
Project and final paper	40%

### Class Attendance and Participation:

Most of your participation grade will be based on attending class on time and adding value during the case discussions.

Of course, we understand that sometimes absences are necessary (e.g., sickness, interviews, etc.). Therefore, to give you a chance to make up the missed day's participation, we ask that you do the following: please write a 1 page memo either answering the questions (if it is a case day) or applying the frameworks in the lecture notes online to a company or industry of your choice. While making up absences with memos is optional, please do remember that participation is a big component of your grade. These memos should be handed to your TA before class the week after your absence. Also, we please ask that you let us know (email Professor Davis and your TA) before a class absence if possible.

### Two-Page Paper:

You will do one two-page paper focused on a strategic analysis of industry conditions for innovation and entrepreneurship. Papers should be one to three pages long, excluding tables or figures, double or 1.5 spaced, 11 or 12 point font and 1 inch margins. This paper is designed to be short to enable you to focus on high-quality analysis and succinct summarization of your arguments. Details are below.

Due date	Topic
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<b>February 20</b>	Analyze the strategic foundations of your industry. What does the current industry structure imply for entry and possible competitive advantage? What are the key resources, who holds them, and can substitutes be created? Are these industry conditions conducive to innovation and entrepreneurship? Is this a good or bad market to enter? Why?
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### Project: Final Paper and Class Presentations

In this class you will conduct a project that culminates in a final paper. The final paper should illustrate the application of one or more of the frameworks developed in the class to an industry or company of your choice. There are multiple possible approaches to this final paper. For example, you may either (1) select an industry, and then provide an analysis of industry structure, technological opportunities, and the entrepreneurial ecosystem or (2) propose a new opportunity, and critically evaluate its potential based on industry structure and the innovativeness of the idea, noting how the venture should best be organized to execute the opportunity. Other formats are possible – if you have another creative idea, please run it by me.

A brief paragraph outlining your topic and listing your teammates is **due in class on February 22<sup>nd</sup>**. Your team will also present your topic to your classmates on February 25<sup>th</sup>. For this, you should prepare

no more than 3 powerpoint slides describing the main industry and/or opportunity you will explore, potential data sources, and emerging intuitions about what your analysis will entail. These **slides are due February 24<sup>th</sup>** at 10pm (email to your TA).

**The final paper is due March 13<sup>th</sup>.** No extensions can be given, so please plan ahead. It should be roughly ten to fifteen pages in length and can be completed either individually or in groups of two or three.

Also, all groups must also prepare a 15 minute (maximum) presentation of the findings of their project (in 5 slides or less). These **slides are due March 10<sup>th</sup>** before 10pm (email to your TA) and should be viewed as a “trial run” or brief summary of your paper’s findings. Selected groups will be asked to present their slides during class on March 11<sup>th</sup> so please come prepared to present if you are called upon.

Note: you do not have to do this final project (paper + presentations) with the same people (or about the same industry) with whom you wrote your Two-Page Paper, although many groups in the past have found this to be an effective strategy to gradually build up their knowledge about a firm or industry of interest over the semester. My goal is to support you in writing about a topic that interests you.

Previous titles have included:

The future of fuel cells -- What happened to GO? -- Structuring Corporate Research at Otis Elevator -- Seiko-Epson's Message Watch in the Taiwan Market -- Red Hat and Linux: The battle for a standard – Sony vs Microsoft in the video game market – The future of Nanotechnology

### **Summary of Course Deliverables:**

**February 20<sup>th</sup>:** Two-Page Paper (hardcopy to TA)

**February 22<sup>nd</sup>:** Paragraph Outlining Final Paper Topic (hardcopy to TA)

**February 24<sup>th</sup>:** Topic Presentation Slides (please email to TA on Feb 24<sup>th</sup>; present them on Feb 25<sup>th</sup>)

**March 10<sup>th</sup>:** Final Presentation Slides (please email to TA on March 10<sup>th</sup>; be prepared to present them on March 11<sup>th</sup>)

**March 13<sup>th</sup>:** Final Paper (hardcopy to TA)

### **Collaboration**

Group work is not only acceptable but actively encouraged. Indeed *I would strongly recommend that you form a study group* with a few friends who can meet to discuss the readings before each class. My experience suggests that this will significantly increase both your enjoyment of the course and the amount that you find yourself learning.

### **Reading Packets & the Web**

Teaching notes will be available on the course web site, while other assigned readings are available from MIT Sloan’s Copy Tech (E52-045), with the exception of those cases which are noted in the syllabus as being distributed in class. When you pick up your course packet, please check to be sure that it is complete. The transparencies from each lecture, links to points of interest (e.g., company web sites) and critical course information such as due dates will also be posted on the web.

## **COURSE SCHEDULE**

### **I. STRATEGIC FOUNDATIONS**

Day 1	INDUSTRY STRUCTURE Apple Inc.	February 6th
Day 2	DEVELOPING AND LEVERAGING RESOURCES Microsoft's Search	February 8th
Day 3	PROJECT TIME Team Formation and Jumpstart Analysis	February 11th
Day 4	STRATEGY AS SIMPLE RULES Mahindra and Mahindra (A)	February 13th
Day 5	CLASS DISCUSSION	February 15th

### **II. INNOVATION**

Day 6	SCIENCE AND TECHNOLOGY A123Systems	February 20th
Day 7	PRODUCT DEVELOPMENT Medtronic's Cardiac Pacemakers	February 22 <sup>nd</sup>
Day 8	TEAM PRESENTATIONS	February 25th
Day 9	OPENING UP R&D Intel: Photolithography in Crisis (A)	February 27th
Day 10	CLASS DISCUSSION	March 1st

### **III. ENTREPRENEURSHIP**

Day 11	NEW VENTURE DESIGN Iridium	March 4th
Day 12	BUSINESS MODELS LinkedIn (A)	March 6th
Day 13	PROJECT TIME Analysis and Write-up	March 8th
Day 14	TEAM PRESENTATIONS	March 11th
Day 15	WRAP-UP	March 13 <sup>th</sup>

## COURSE DETAILS

### I. STRATEGIC FOUNDATIONS

Day 1 INDUSTRY STRUCTURE February 6th  
Apple Inc. 712490

Questions for Discussion

Is the PC Industry a good or bad industry to be in? mp3 players? Smartphones?  
What are the critical technology trajectories in the last 20 years and how do they shape each of Apple's businesses?  
What is your recommended next steps for Apple in the PC and smartphone businesses?

Suggested Readings

Porter, Michael, 2008, "The Five Competitive Forces that Shape Strategy." Harvard Business Review.

Day 2 DEVELOPING AND LEVERAGING RESOURCES February 8th  
Microsoft's Search, 709346

Questions for Discussion

Why is Microsoft pursuing the market for search-based advertising?  
How large is its competitive disadvantage, and how might they improve their performance over time?  
What strategic option should Microsoft's executives pursue?

Suggested Readings

Henderson, Rebecca and Clark, Kim, 1990, "Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms." Administrative Science Quarterly, 35: 9-30.

Day 3 PROJECT TIME February 11th  
Team Formation and Jumpstart Analysis

Day 4 STRATEGY AS SIMPLE RULES February 13th  
Mahindra and Mahindra (A), 609065

Questions for Discussion

Should Davasia go ahead with Goyle's modified Sactor project?

Suggested Readings

Eisenhardt, Kathleen and Sull, Don, 2001, "Strategy as Simple Rules." Harvard Business Review, January: 107-116.  
Davis, Jason, Eisenhardt, Kathleen, and Bingham, Christopher, 2009, "Optimal Structure, Market Dynamism, and the Strategy of Simple Rules." Administrative Science Quarterly.

Day 5 CLASS DISCUSSION February 15th

## II. INNOVATION

Day 6 SCIENCE AND TECHNOLOGY February 20th  
A123Systems, 606114

### Questions for Discussion

Where should A123Systems play in the value chain?

What role does science play in this decision?

What role do the founders preferences play in how they manage this venture?

### Suggested Readings

Eisenhardt, Kathleen, Kahwajy, Jean, and Bourgeois III, L.J., 1997, "How Management Teams Can Have a Good Fight." Harvard Business Review, July-August, 77-85.

Day 7 PRODUCT DEVELOPMENT February 22nd  
Medtronic's Cardiac Pacemakers, 698004

### Questions for Discussion

Why did things go so badly wrong at Medtronic?

What role does rhythm play in Medtronic's product development process?

Of all the things that Medtronic did to "fix" it's process, what do you think was the most important? Why?

### Suggested Readings

Repenning, Nelson and Sterman, John, 2001, "Nobody Ever Gets Credit for Fixing Problems that Never Happened." California Management Review, 43(4): 64-88.

Eisenhardt, Kathleen and Brown, Shona, 1998, "Time Pacing: Competing in markets that won't stand still." Harvard Business Review, March-April: 59-69.

Day 8 TEAM PRESENTATIONS February 25th

Day 9 OPENING UP R&D February 27th  
Intel: Photolithography in Crisis (A), 600032

### Questions for Discussion

What are the strengths of Intel's approach to R&D? Do you see any weaknesses?

What would you recommend that Sandy Wilson do? Of the three options outlined on page 10 of the case, which do you think makes the most sense and why?

Day 10 CLASS DISCUSSION March 1st

### III. ENTREPRENEURSHIP

Day 11 NEW VENTURE DESIGN March 4th  
Iridium, 601040

Questions for Discussion

Who was to blame for Iridium's failure?

What role did Iridium's product play in the evolution of the venture?

Suggested Reading

Moore, Geoffrey "High-Tech Marketing Illusion" Chapter 1 & "High-Tech Marketing Enlightenment" Chapter 2 in Crossing the Chasm, Rev. Ed., NY: Harper Collins, 1999, pp 9-59.

Day 12 BUSINESS MODELS March 6th  
LinkedIn (A), 707406

Questions for Discussion

Why do online social networks exist? What value do they provide over substitutes?

Who is the most likely to sign up on LinkedIn? Who is most likely to value access to these people?

Day 13 PROJECT TIME March 8th  
Analysis and Write-up

Day 14 TEAM PRESENTATIONS March 11th

Day 15 WRAP-UP March 13th