



EBGN 563A

Division of Economics and Business

Management of Technology

Fall Semester 2017

T/TH 11:00 – 12:15 PM • AH330

Instructor:

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Division of Economics and Business

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Office Hours: T/TH 1:00 – 3:00 PM

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Instructional activity: 3 hours lecture

Course designation: Core

Course Description

Organizations must be adaptable, strategically flexible, fast acting, and entrepreneurial if they are to survive in times of increased globalization and tremendous product-market and technological change. The creation and sustenance of organizations with these qualities require that managers – in particular, those managers who lead organizations – become proficient with respect to the strategic management of technology and innovation. This course provides a forum for the in-depth examination of select issues involving the strategic management of technology and innovation.

The *key learning objectives* of this course are to expose you to the dynamics of industries driven by technological innovation, and to train you to think strategically about technological innovation and new product development and deployment. In this course, we will explore such topics as:

- Winner-take-all industries in which firms compete fiercely to have their product chosen as the dominant standard, and where success is determined not only by a product's features and price, but also by the availability of complementary products and well-chosen alliances,
- How firms choose among multiple attractive innovation projects,
- How firms decide whether to “go it alone” or collaborate, and how firms develop a collaboration strategy,
- How firms make difficult choices between protecting their proprietary technologies versus rapidly disseminating them to build installed base and complementary goods,
- How firms can make themselves more flexible so that they can respond to rapid change--and the trade-offs this imposes,
- Techniques for improving new product development processes to maximize the likelihood of success.

The course should be of special interest to those seeking to build careers in technology-based firms or to those who simply wish to better understand the unique managerial, organizational, and strategic demands associated with competing under conditions of rapid product-market or technological change.

Required Readings and Materials

- 1) Schilling, M.A. 2016. Strategic Management of Technological Innovation. 5th Edition. New York: McGraw-Hill Publishers
- 2) Cases and Reading:
 - SeaMicro
 - TiVo 2007: DVRs and Beyond
 - Apple Inc. in 2015
 - Tesla Motors (in 2013): Will Sparks Fly in the Automobile Industry?
 - Corning Inc: A Network of Alliances
 - Lexar Media: The Digital Photography Company?
 - Intel Corporation: The Hood River Project
 - Hewlett-Packard: The Flight of the Kittyhawk
 - Fujifilm: A Second Foundation
 - Porter, Michael, 1996. "What is Strategy" Harvard Business Review, 74 (November – December), pp. 61-78

I have created a set of course materials at the Harvard Business Education web site and will post the details on how to access the course pack on canvas.

Teaching Method

The course will be lecture, case, and discussion based. Like the industries we will study, the course will be fast-paced, and every effort will be made to make the class both challenging and exciting. We will use a combination of text and cases to explore and apply the topics. Because of the fast-paced nature of the course, it is vitally important that you come to class prepared and ready to discuss the topics. If you stay up on the material you will learn more during the discussions and be successful at the assignments.

The central goal of my teaching method is to provide opportunities for you to apply course concepts in the context of the cases and simulation; through constructive application of these concepts, you will best internalize these concepts and hopefully be able to use them long after the course is over.

Policy on academic integrity/misconduct: The Colorado School of Mines affirms the principle that all individuals associated with the Mines academic community have a responsibility for establishing, maintaining and fostering an understanding and appreciation for academic integrity. In broad terms, this implies protecting the environment of mutual trust within which scholarly exchange occurs, supporting the ability of the faculty to fairly and effectively evaluate every student's academic achievements, and giving credence to the university's educational mission,

its scholarly objectives and the substance of the degrees it awards. The protection of academic integrity requires there to be clear and consistent standards, as well as confrontation and sanctions when individuals violate those standards. The Colorado School of Mines desires an environment free of any and all forms of academic misconduct and expects students to act with integrity at all times.

Academic misconduct is the intentional act of fraud, in which an individual seeks to claim credit for the work and efforts of another without authorization, or uses unauthorized materials or fabricated information in any academic exercise. Student Academic Misconduct arises when a student violates the principle of academic integrity. Such behavior erodes mutual trust, distorts the fair evaluation of academic achievements, violates the ethical code of behavior upon which education and scholarship rest, and undermines the credibility of the university. Because of the serious institutional and individual ramifications, student misconduct arising from violations of academic integrity is not tolerated at Mines. If a student is found to have engaged in such misconduct sanctions such as change of a grade, loss of institutional privileges, or academic suspension or dismissal may be imposed. The complete policy is available at:

<https://catalog.mines.edu/policiesandprocedures/>

Course Requirements

You will be expected to have familiarized yourself with the reading material prior to attending class as lecture time will be kept to a minimum. Concepts presented in the text will be discussed and debated in class. It is to your advantage to come fully prepared as part of your grade will be based on class participation. In addition, class discussions prove to be more beneficial if everyone comes prepared. Any student who, in the opinion of the instructor, has not carefully read the assigned case will have his/her final participation grade reduced by one letter grade.

More detailed course grade information is discussed below.

Grading Criteria and Method

Course grade will be determined as follows

Quizzes (4)	30%
Homework Assignments (3)	15%
Class Project & Presentation	35%
Class Participation	20%

Quizzes

Four quizzes covering the material presented in class will be given on the dates outlines in the schedule.

Homework Assignments

Three graded assignments will be given on the dates outlines in the schedule.

Class Project and Presentation

The most important assignment you will be completing this semester is the writing report illustrating the application of one or more of the frameworks developed in class to an industry or firm of your choice. You will work in groups of 5-7 for this assignment. Typical reports will focus on either a company (or a particular product of a company) and a critical strategic issue the company is currently facing. You might not be able to gather enough information on your product/company to analyze every aspect of management of technology covered in our course, but you should try to conduct the analysis appropriate to at least six chapters in our text (excluding the introduction chapter), and these chapters must span all three sections of the course (industry dynamics of technological innovation, formulating technological innovations strategy, implementing technological innovation strategy). To help get your started I suggest you complete the following industry level analysis.

- What are the principal drivers of industry evolution and market structure in your industry?
- What is the basis of competition in the industry? How do firms in your industry capture the value that they have created? Does this differ across firms? What role do complementary assets and uniqueness play in this process? Will this change in the future?
- Draw the value chain for your industry. Where is most of the value captured? Why? Is the structure of the chain likely to change?

Format Guidelines. The report should be typed in **12 point times new roman** font, one-inch margins, and a minimum of **1 1/2 line spacing**. There are no formal requirements regarding the length of the report, but typical reports range from **10-20 pages (plus exhibits)** when spaced at 1 1/2 lines. At the end of the semester you will be asked to assess your team members' contribution; this assessment may be used to scale your grade on the assignment if necessary.

Presentation. Your team will give a Powerpoint presentation of your analysis (providing enough detail about your case to make it coherent) in class. You will have **15 minutes** to present.

Class Participation and Attendance:

The class discussion grade is based on quality, not quantity? Naturally, students who are absent cannot participate and will receive no credit for the days when they are not present. Students who miss class sessions for "legitimate" reasons can avoid having points deducted from their final participation grade by informing me via email (mheeley@mines.edu) of the reason for the absence (no later than the day of the absence).

It is particularly important that you are prepared on the days that we will be conducting a case analysis. While I will provide some questions to guide your analysis, you should be ready to discuss all aspects of the case. The analysis will be the product of our discussions in class. Remember, any student who, in the opinion of the instructor, has not carefully read the assigned case will have his/her participation grade reduced by one letter grade.

Additional Course Information

The Writing Center, located in Stratton 306, is there to help all members of the Mines community with writing projects at any stage of the writing process. Writing Consultants can help you understand an assignment; brainstorm, develop and organize ideas; cite sources; narrow your focus; and/or fine-tune your writing for polish, clarity, adherence to grammatical conventions, etc. To make an appointment, please visit our online scheduling system at: <http://mines.mywconline.com>.

The Colorado School of Mines is committed to ensuring the full participation of all students in its programs, including students with disabilities. If you are registered with Disability Support Services (DSS) and I have received your letter of accommodations, please contact me at your earliest convenience so we can discuss your needs in this course. For questions or other inquiries regarding disabilities, I encourage you to visit disabilities.mines.edu for more information.