

Technology Management Program
“Critical Issues in Early Stage Healthcare and Life Science Companies”
ENGR192C Spring 2009



University of California, Santa Barbara
College of Engineering
Course website: <http://www.ucsbengr192.com>

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CLASS: Wednesday, 6:00 to 7:50 pm
CLASSROOM: Phelps 3505

Bruce Altrock, Ph.D.
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OFFICE HRS: Wednesday's from 4-6 p.m.
Or by appointment
Trailer 937 next to Broida Hall

COURSE DESCRIPTION:

Through assigned reading and class discussions, and using the biotechnology industry as a prototype, the course will explore what makes these businesses different from other enterprises, and the special challenges (and opportunities) faced by these businesses both in the earliest stages and in maintaining long-term growth. Utilizing a textbook analyzing the industry and guest experts, this course explores key activities in both early stage and mature biotechnology companies through the processes of drug discovery, product development, and commercialization. In addition, the course will be an introduction to different areas of expertise that are required to support the business of biotechnology and will expose students to career options both for science and non-science majors. Students will apply the knowledge gained by completing a team assignment and final paper.

COURSE OBJECTIVES:

1. Understand the characteristics of the life science business and the opportunities and challenges facing these enterprises.
2. Gain insight into the factors influencing the success of a biotechnology product or company.
3. Discover the functions of divisions of a biotechnology company.
4. Learn the career paths available in a biotechnology company.

ASSIGNMENT: There are two separate assignments that students will receive a grade for in this course:

1. Team assignment:

Identify a new biotechnology business opportunity (that your team has thought of) and based on the course reading, speakers and class discussions, present a concise analysis of the resources and strategies needed to make the opportunity a success and the challenges that will need to be

addressed and overcome. Oral presentations of 15 minutes in length will take place during the scheduled final exam period on Friday, June 12 from 7:30-10:30 PM, and each member of the team will be expected to participate in the presentation. Teams must be established and names submitted to Robin Campbell by the start of class on April 22, and team product ideas must be submitted by start of class on May 6.

2. Individual assignment:

In a paper of no more than 4 pages in length, discuss the key themes presented by four guest speakers of your choice. Applying the knowledge gained from the course reading and class discussions, choose one area of expertise (of the four) and defend why it would be the most critical to the ultimate success of a biotechnology company. You are encouraged to consult with any of the speakers. Individual papers are due by no later than Friday, June 5 at 4:00 PM via email to Robin Campbell.

3. The book listed below is required, and the first discussion based on assigned readings will be April 8.

“Science Business: The Promise, The Reality and the Future of Biotech”, Gary P. Pisano, Harvard Business School Press, 2006. Order through Amazon.com.

COURSE REQUIREMENTS: Classes will be held once a week, with two back-to-back one hour sessions. In one session, guest lecturers will provide information about their areas of expertise. The second session will be a discussion of topics generated from the assigned reading. Class attendance at both sessions is mandatory, and students will be expected to come prepared to interact with the guest lecturers and participate in class discussions. Student teams will be created of not more than 4 persons, and teams must be established no later than April 22. No team may be completely comprised of graduate students.

GRADING:

33.3% Attendance and individual class participation

33.3% Individual assignment

33.3% Team assignment

192C/292C Course Speakers, Topics, and Assignments, 2009

April 1: Course Overview

April 8: Speaker: Bruce Altrock-former VP of Research, **Amgen**
“Overview/tools and considerations for research”

Discussion Topic: **The Life Science Business;** Pisano Chapters 1-2

April 15: Speaker: Robin Campbell
“Commercialization: From Bench to Bedside”

Discussion Topic: **The Complexity of Drug R&D;** Pisano, Chapter 3

April 22: Speaker: Leslie Edwards, Director of Corporate Business Development for the College of Engineering and Math Life and Physical Sciences at **UC Santa Barbara**; former Manager of the division pharmacology and toxicology, **Miravant**
“Entrepreneurial Toxicology- a very fun job”

Discussion Topic: Drug R&D and Organizational Challenges; Pisano Chapter 4

Assignment: All Teams must be established by April 22. Names of team members, email addresses and phone numbers are due to Robin Campbell by beginning of class that day.

April 29: Speaker: Patricia Walker, Chief Medical Officer, **Kythera BioPharmaceuticals**
“Clinical Trials and Product Development—Critical Issues”

Discussion Topic: The Anatomy of a Science Based Business; Pisano Chapter 5

May 6: Speaker: TBA
“Legal”

Discussion Topic: The Performance of the Biotech Industry; Pisano Chapter 6

Assignment: Team product ideas must be submitted to Robin Campbell by beginning of class on May 6.

May 13: Speaker: Ralph Smalling--Vice President, **Amgen** (retired)
“Regulatory Affairs”

Discussion Topic: The Monetization of Intellectual Property; Pisano Chapter 7

May 20: Speaker: Geoff Slaff — Senior Vice President, Quality, **Amgen**
“Manufacturing Scale-up and Process Development”

Discussion Topic: Organizational Strategies and The Future of Biotech; Pisano Chapters 8-9

May 27: Linda Pullan-- Biotech Business Development Consultant, Pullan Consulting
“Business development in emerging biotechnology”

Team Breakouts and Presentation Preparation

June 3: Team Breakouts and Presentation Preparation

June 12: Team Presentations, Phelps 3505, 7:30-10:30 P.M.