Syllabus for Biotechnology Industry Immersion Course

MGT 290-1

Winter Quarter 2025

(Fridays, February 14- March 14)

(9:30 AM to 4:30 PM)

Instructor of Record

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Course Description

The Biotechnology Industry Immersion course introduces students to the various aspects of the biotechnology industry and provides a framework for understanding the complex forces that shape and drive it. Drawing upon UC Davis's expertise and connections to industry experts, each session will dive deeply into challenging issues in healthcare biotechnology, including drug development and diagnostic applications. The viewpoints of the healthcare provider, the consumer, the product developer, the manufacturer, the regulator, and the marketer will be explored. General Topics to be covered include:

1. An Introduction to Biotechnology History and evolution of the Biotechnology industry
2. Biotechnology based pharmaceutical.
3. Biotechnology based diagnostics.
4. Challenges and opportunities of a biotech startup, Investor perspective.
5. Challenges and opportunities of a biotech startup, CEO perspective.
6. Business processes: project management to regulatory processes.
7. Life cycle management includes marketing and commercializing drugs/technologies.
8. Implementation of biotechnology by healthcare institutions, clinical perspective, and digital healthcare (customers)
9. Innovations in the future – examples: Precision Medicine, Cell Therapy, Gene Therapy, Big Data Analytics, molecular diagnostics

Drawing on background readings, speakers' presentations, case studies, and other information, students will learn about a topic in class, tackle a specific problem in small groups of MBA and PhD students in STEM disciplines, and present their findings. Students will be given opportunities to develop cross-functional solutions to issues facing the biotech industry.

Learning Objective

Biotechnology has been a disruptive technology in the life sciences industry, especially in biomedical therapeutics and diagnostics. Continued success in the biotechnology industry requires applying extraordinary leadership and management skills in addition to scientific innovations. This course aims to increase the students' practical knowledge of operations and sustainable practices in the biotechnology industry and gain hands-on experience in solving industry-specific problems. Introducing students to

academic and industry experts will help them develop problem-solving skills in a team environment.

Course Structure

The course will last for ten sessions (2 speakers per week). Students will prepare for each session by reviewing reading materials related to the topic. During the class meeting, a biotech expert will provide background and context to discuss a given "case." At the end of the presentation, students will breakup into small groups to tackle a specific industry challenge or opportunity related to the topic and develop a solution to deal with the challenge. Each group will present their recommendation and receive the speaker's feedback on their proposed solution.

Code of Academic Conduct See http://sja.ucdavis.edu/files/cac.pdf

As with all campus courses, students are expected to abide by the UC Davis Code of Academic Conduct at the Office of Student Support and Judicial Affairs—Code of Academic Conduct (ucdavis.edu).

- **Pre-requisite recommendation (not a requirement):** Fall Quarter: MGT 490 003/MGT 298 002 FQ 2024 Pre-immersion, Biotechnology industry (1 unit)

Assignments

Participation in each session's discussion, small workgroup, and submission of papers (weekly and final). Before each session, please familiarize yourself with the presenting company and its products (see the speaker's list and their companies in the weekly schedule below).

Each week, students must submit **two to three-page papers** consisting of:

a. A summary of what the speakers discussed.
b. The managerial problem that was discussed in class.
c. Which different solutions did you hear from your classmates?
d. What is the solution that appealed to you and why?

This assignment is due the following Wednesday before 5 PM (upload on Canvas).
Two points will be deducted for each day's delay.

A 5-page **final synthesis paper** must include the following:

a. What are the important lessons you learned from various speakers? You can categorize the problems discussed by multiple speakers any way you want to and explain the solutions discussed in class for each problem category. For example, suppose the supply chain problem was discussed in class. In that case, you should discuss solutions presented concerning supply chains (e.g., technology usage, supplier contracting processes, building redundancy into the supply system).
b. Select one speaker who made the most impact on you. What part of the material covered by the speaker affected you? Explain why.
c. How does this course affect what you do (or plan to do) in the future? Be specific in your response.

This final paper is due on Sunday, March 23rd, 2025, before 5 PM. Post to Canvas

Grading (letter grade (MBA students); letter grade or S/U for PhD students)

30% Class Preparation (reading about the presenting company and its products) and the case(s).
30% Five 2 to 3-page Papers (one paper each week)
30% Final Paper (5-page synthesis of the learnings)
10% Class participation and presence (absenteeism can impact your grades)

Recommended Textbook (for deeper understanding of the subject matter) [Not Required]

Biotechnology Fundamentals, third edition, by Firod Alam Khan. CRC press. Publication year: 2020
ISBN 13: 978-1-138-61208-2

TextPak: Harvard items are found in the Equitable Access Bookshelf tool on Canvas.

Format of the class:

2025 Dates: Feb 14, 21, 28, March 7, and 14.

Format (all-day Program: AM session/PM session): The instructors will send materials to the class before the session. There will be two instructors per week. The speaker may bring colleagues to observe or assist in the case study.

- Morning (9:30 AM-12:30 PM)- After a ~45-minute presentation (overview plus the case study (**the problem**) by the instructor, the students will work in groups (MBA/PhD) to discuss solutions to the problem presented (~50 minutes). Wrap up with the instructor at the end of the session**.**
- Lunch is provided as a box lunch (The afternoon speaker is invited too). This is an opportunity to network with speakers and peers.
- Afternoon Session 1:30-4:30 PM. After a 45-minute presentation (overview plus the case study **('the problem**") by the instructor, the students will work in groups (MBA/PhD) to discuss solutions to the problem presented (~50 minutes). In the remaining time, each team will present the solutions to the speaker and get feedback.

- **Assessment: see the above assignments section.**

Week 1: Friday, February 14, 2025,

Morning Session (9:30 AM-12:30 PM):

9:30 to 10:30 AM **Welcome and Orientation** (Class logistics by **Hemant Vaidya, PhD**). Self-introductions by students. **Each class member is required to submit a resume/CV before the start of class. Form teams of MBA and PhD students (3-4 per team, depending on the class size)**

10:30 AM to 12:30 PM **Topic 1** -**Biotechnology in Clinical Practice by Prof**. ***Jan Nolta, PhD, Director of UC Davis Stem Cell Program and Gene Therapy Center***

Lunch 12:30 -1:30 PM

Afternoon Session (1:30-4:30 PM) **Topic 2: History and Evolution of Biotechnology Pharma Industry** by **Sunita Dhar MD, Executive Medical Group Director, Genentech.**

Week 2: Friday, February 21, 2025

Morning Session (9:30 AM to 12:30 PM): **Topic 5: Biotech Startup: Investor perspective, John Selep, MBA, Sacramento Angel Investor; Cofounder and Board Chair, Agtech Innovation Alliance**

Lunch 12:30-1:30 PM

Afternoon session (1:30-4:30 PM): **Topic 6**: **Biotech Startup: Company perspective**
Brad Niles PhD, MBA, PhD, CEO, ARIZ Precision Medicine, Davis, CA.

Week 3: Friday, February 28, 2025

Morning Session (9:30 AM to 12:30 PM): **Topic 3: Business Processes: Strategy, product development and regulations in Biotech Pharma Industry, Dr. Arjun Natesan PhD, and John Fikes PhD, VPs, Product Development and Product Portfolio Management, Ultragenyx**

Lunch 12:30-1:30 PM

Afternoon Session (1:30-4:30 PM): **Topic 4: Business Processes: Biotechnology drug manufacturing processes, challenges, and opportunities. Steven Chamow, PhD, Independent Consultant.**

Week 4: Friday, March 7, 2025

Morning Session (9:30 AM-12.30 PM)**: Topic 7: Business Processes: Biotechnology Diagnostics; product development: from concept to commercialization, Hemant Vaidya PhD, Past VP of R&D, Siemens Microbiology**

Lunch 12:30-1:30 PM

Afternoon Session (1:30-4:30 PM)**: Topic 8: Business Processes, Biotechnology Diagnostics, Marketing, communication, and commercialization. Fernando Beils, MBA, Sr. Marketing Executive, Qiagen, Molecular Diagnostics**

Week 5: Friday, March 14, 2025

Morning Session (9:30 AM to 12:30 PM)**: Topic 9: Contract Manufacturing: Synthego, Behind the scenes operator, Lory Tan MBA, Director, Synthego**

Lunch 12:30-1:30 PM

Afternoon session (1:30-4:30 PM)**: Topic 10: Future of biotechnology. AI in Drug Development. Jason Barbour, PhD. Cofounder Synkrino Biotherapeutics**