Expanded Course Description UC Berkeley:
Letters and Science MCB & Haas Business School

Introductory Course for the Undergraduate Biotech-Business Program

Course Number: MCELLBI/ BUS ADM C95B
Course Title: Introductory Course for the Undergraduate Biotech-Business Program
Instructors: Professor Robert Tjian, PhD; Adjunct Professor David Kirn, MD; Adjunct Professor Larry Lasky, PhD; Professor Michael Rape, PhD
Offered: Spring
Duration of Course for Summer Session: n/a
Units: 2 units

Estimated total number of hours of student work per week: 6 hours total (2 hours in class, including lectures and group projects; 4 hours reading, homework).

Course Format: 2 hours per week in one class session including lectures, guest speakers
May be repeated for credit? No **Courses that restrict credit and how much?** None

Prerequisites: None; prefer students interested in applying for the Biotech-Business Program

Grading: Pass/No Pass - attendance is required, and only 2 absences are permitted to pass the course
Homework 20%
Class Participation 50%
Final Project 30%

Brief Course Description for catalog: (one paragraph)
This course offers an introduction to the field of biotechnology and will cover the history of the field, its impact on medicine and society, key methodologies, important therapeutic areas, and the range of career options available in the biopharmaceutical industry. Students will hear from lecturers with expertise ranging from molecular biology to clinical trial design and interpretation. Several case studies of historically impactful scientists, entrepreneurs, and biotherapeutic companies will be presented. Intended for students interested in the Biology+Business program.

Course Objectives:

(1) To foster understanding and appreciation for the medical and societal impact of the biopharmaceutical field and industry;
(2) To educate students on the history of the field and industry, including key methodologies, technologies, scientists, entrepreneurs, and companies;
(3) To introduce the key steps in the process of discovery, development and commercialization of novel therapeutics;
(4) To educate students on careers in the biopharmaceutical industry

Desired Course Outcomes:

Students will understand the following: (1) the impact of the biopharmaceutical industry on medicine and society, (2) the history of the biotech industry, (3) the methods, product technologies and development methodologies that have driven the evolution of the field, (4) the nature of the ecosystem and specific careers in the biopharmaceutical industry, (5) the product design and development process (with a focus on biotherapeutics), including opportunities and challenges.

Room Share:

n/a

Course Reference Materials:

Course Books: recommended reading

- **Biotechnology Overviews: Technical**
  - Biotechnology (Cell Press; 2nd Edition; 2016) – David Clark, Nanette Pazdernik
    - Clark, David P., and Nanette Jean. Pazdernik. *Biotechnology*. 2nd ed., Academic Cell, 2016.
- **Entrepreneurship Overviews:**
  - The Lean Startup (2011) – Eric Ries: Foreword, Introduction, Chapt 8
    - Ries, Eric. The Lean Startup. The Crown Publishing Group, 2011.

Syllabus:

Should include the following: an outline of the topics to be covered in the course-this can be as a week-by-week syllabus, or other detailed format which conveys how the course will be presented; a reading list or summary of the works to be used; an explanation as to how the requirements of the course are to be met and evaluated, this must include a statement of the type of final examination planned.

Course Outline: Details by Week

Week	Topic		Speakers
Module 1: Biotechnology Industry Overview, Ecosystem, Business Development, Mergers/Acquisitions, Entrepreneurship			
1 1/23	Course Overview, Summary of the Bio-Biz Program; Overview of the Biotech Industry: Societal Impact, Key Companies and Transformative Therapeutics		• D Kirn (course lecturer) • Intro Bio-Bus Program Remarks: • Mike Botchan (Program Overview)
2 1/30	Overview of the Biotech Ecosystem: Roles, careers and Relationships in the Biopharmaceutical Industry		• D Kirn (course lecturer) • Visiting Speaker: Kevin Whittlesey, PhD (Regulatory Sci) • Visiting Speaker: Mark Robinson (Mergers & Acquisitions)
3 2/6	Biotechnology Entrepreneurship: Vision Setting, The Lean Start-Up Approach and Start-Up Case Studies (Onyx, 4D Molecular Therapeutics)		• D Kirn (main lecturer) • Visiting Entrepreneur Panel: David Schaffer, PhD; Melissa Kotterman, PhD; Leisa Johnson, PhD
Module 2: Hedging Your Bets for a Successful Outcome			
4 2/13	So many ideas, so little time: How do you identify science that has a high probability of clinical success?		Larry Lasky
5 2/20	Proteolix and Oncomed: two case histories that illustrate how things go right and wrong on the biotech road		Larry Lasky
6 2/27	You never know: an intellectual property story that illustrates the importance of patents		Larry Lasky Guest lecturer TBD
Module 3: tbd			
7 3/6	A Historical Perspective of Agricultural Biotechnology: From GMOs to Gene Editing		Brian Staskawicz
8 3/13	From an idea to a company: the story of Nurix		Michael Rape
9 3/20	Operating in complex IP space: genome editing in biotechnology		Michael Rape
Spring Recess 3/27	Spring Recess - no class meeting		Spring Recess - no class meeting

10 4/3	How not to start a company: the history of thalidomide		Michael Rape
11 4/10	Overview of key phases of commercialization in biotech - Source, develop, Launch, Sustain; how are biotechs looking at digital solutions to enhance the value of their therapeutics		Kim MacPherson
12 4/17	Going from academic bench research to company formation: The Tularik experience		R. Tjian
13 4/24	Industry panel (to be confirmed)		
Module 5:			
14 5/1	Different models of Biotech VCs		R. Tjian
15 5/8	Careers in Biotech : Opportunities		R. Tjian