Course Syllabus – TRBIO 410

Course Information

Course Number: TRBIO 410 SP23
Course Name: Business of Biotechnology
Term: SP 2023
Start Date: 04/04/2023
End Date: 06/23/2023
Credits: 3.0

Meeting Days / Times

Tuesdays and Thursdays, 1:00-2:30pm PT / 4:00-5:30pm ET
(See Calendar in Canvas for the most up-to-date schedule.)

Location

CA: Graduate Office Dining Room (Hazen Theory Building)
FL: B387
Online via Zoom

Course Managers

Role	Last Name	First Name	Email Address
Course Director	Jalloh	Abu	ajalloh@scripps.edu
TA	Rodriguez Garcia	Mario	mrgarcia@scripps.edu
TA	Newman	Ian	inewman@scripps.edu
TA	Pan	Crystal	ypan@scripps.edu

Course Description

The biopharmaceutical industry is a cornerstone of the economies of major American cities, and more and more local and state governments are finding ways to incentivize their citizens or attract newcomers to help build the next biotech hub. Sustaining this momentum requires the participation of academic researchers, start-up founders, and program directors within established companies.

All of the aforementioned parties must compete or collaborate to convert scare resources -- or better yet, renewable resources -- into tangible benefits for humans, our ecosystem, and our built environment.

This course is aimed at training the next generation of founders, funders, and operators to be competitive in an uncertain market place. We will study the market landscape starting from a third-person view of our projects as grad students and postdocs, then zoom out to our collective projects as members of The Scripps Research Institute, and zoom out even more to a few biotech ecosystems. With this context in mind, we will circle back to our chosen ideas/inventions/concepts, draft a market landscape report, highlighting the optimal opportunities or lack thereof, develop a plan (including how to create a market in the absence of one), and then sell our vision in order to attract talent and stakeholders.

In summary, this course integrates modern business concepts from an bioentrepreneur's viewpoint. Participants must be able to work as a small startup unit as they collectively frame their ideas into a competitive -- convincing and achievable -- narrative that will help you transition your project from the institute to the incubator.

Program Learning Outcomes

By the end of the program, students will have accomplished these objectives:

PLO1: Original Research – graduate students are expected to develop the skills critical for generating high-quality research output. This would include absorbing, recalling, and contextualizing scientific knowledge, evaluating scientific information and data, creating testable hypotheses and investigating hypotheses, mastering scientific tools and techniques, displaying ethical behavior, and receiving and giving feedback.
PLO2: Communication – graduate students are expected to demonstrate the oral, written, and media skills to effectively communicate the impact of a study or a body of work to the greater scientific community and to the public at large using a number of methods.
PLO3: Critical Thinking – graduate students are expected to develop a self-directed process to analyze information, form opinions or judgments, and use this process to improve the quality of their scientific thoughts, navigate problems, and make informed decisions.
PLO4: Intellectual Curiosity – graduate students are expected to acquire the capacity to build their intellectual curiosity and demonstrate problem solving approaches that serve their professional growth and ability to impact a field.
PLO5: Career and Professional Development – graduate students are expected to develop a variety of transferable skillsets throughout their graduate experience, including management and leadership, inclusiveness, resilience, scientific rigor, collaboration, accountability, time management, teamwork, networking, and career planning.

Course Learning Outcomes

Upon completion of this course students will be able to:
CLO1: Identify the intrinsic contributors in a biotech company at different stages of growth and development
CLO2: Understand the role of extrinsic contributors, i.e., the **ecosystem/the concept of** "cluster-luck", to the probability of success of a biotech company
CLO3: Learn about how academic researchers can interface with the biopharmaceutical industry and how to take advantage of some of these local resources to form a NewCo and network with the movers and shakers in the biotech field
CLO4: Dive into funding strategies that NewCos utilize, inclusive of Angel, F&F, pureplay VC, corporate/captive VC, and strategic partnerships
CLO5: Develop a familiarity with the concept of due-diligence (scientific, regulatory, IP, and the intangible gut feeling of an SME)

Background Preparation (Prerequisites)

This course is designed for individuals with a strong scientific background and does not require formal preparation. Strong interest in developing technologies beyond discovery is necessary.

Course Materials

Reference materials will be handed out before each lecture.

Course Format

The course will start out with a few orientation lectures from members of the Office of Technology Development (OTD) and invited outside speakers. The course then progresses into in-depth team-driven market research on select topics. The syllabus is meant as a guide, but will be morphed to address competency gaps identified by instructors, TA, and the students.

Attendance Statement

Students are expected to attend all classes and to be on time. Students who are unable to attend class must seek permission for an excused absence from the Course Director. Unapproved absence or late attendance for 3 or more classes may result in a lower grade being assigned or an incompletion recorded. Should you anticipate missing a class, please arrange to get notes from a fellow student, preferably from the teammates to whom you are accountable.

There will be a number of opportunities for class discussion, and thus students must come to class and be prepared to participate. Along these lines, if something is not clear, please ask. In general, students may feel free to interrupt the lecturer with questions, unless the lecturer explicitly states a preference for holding questions until the end. Students may also email the Course Director and/or TA with questions or arrange an in-person meetings, as needed.

Scientific and Professional Ethics

The work you do in this course must be your own. Feel free to build on, react to, criticize, and analyze the ideas of others but, when you do, make it known whose ideas you are working with. You must explicitly acknowledge when your work builds on someone else's ideas, including ideas of classmates, professors, and authors you read. If you ever have questions about drawing the line between others' work and your own, ask the course professor who will give you clear guidance. Exams must be completed independently. Any collaboration on answers to exams, unless expressly permitted, may result in an automatic failing grade and possible expulsion from the Graduate Program.

Technology Requirements and Support

For issues related to Canvas, please contact the Graduate Office by email at: gradprgm@scripps.edu or by phone at: 858-784-8469.

Course Grading

In accordance with the academic policies of the Skaggs Graduate School, the course objective of mirroring real world experience of company creation, and the indispensable value of developing soft skills for bioentreneurship, all grades would carry an equally weighted score of 25%. The following four entities would grade the group project in succession:

1. Self-Assessment
2. Peer-Review in the form of due-diligence
3. TA Due-Diligence
4. Course Director's Opinion

The final grade would be cumulative of the following events:

- 25% Individual Class Attendance
- 25% One-minute Elevator Pitches (5 opportunities)
- 25% Business Model Canvas
- 25% Pitch Deck (FINAL)

Letter Grade	Percent	GPA	Description
A	93-100	4.00	Outstanding achievement. Student performance demonstrates full command of the course subject matter and evinces a high level of originality and/or creativity that far surpasses course expectations.
A-	90-92	3.67	Excellent achievement. Student performance demonstrates thorough knowledge of the course subject matter and

			exceeds course expectations by completing all requirements in a superior manner.
B+	87-89	3.33	Very good work. Student performance demonstrates above-average comprehension of the course subject matter and exceeds course expectations on all tasks as defined in the course syllabus. There is notable insight and originality.
B	83-86	3.00	Satisfactory work. Student performance meets designated course expectations and demonstrates understanding of the course subject matter at an acceptable level.
B-	80-82	2.67	Marginal work. Student performance demonstrates incomplete understanding of course subject matter. There is limited perception and originality.
C+	77-79	2.33	Unsatisfactory work. Student performance demonstrates incomplete and inadequate understanding of course subject matter. There is severely limited or no perception or originality. Course will not count toward degree.
C	73-76	2.00	Unsatisfactory work. Student performance demonstrates incomplete and inadequate understanding of course subject matter. There is severely limited or no perception or originality. Course will not count toward degree.
P	73-100	0.00	Satisfactory work. Student performance demonstrated complete and adequate understanding of course subject matter. Course will count toward degree.
F	0-72	0.00	Unacceptable work/Failure. Student performance is unacceptably low level of knowledge and understanding of course subject matter. Course will not count toward degree. Student may continue in program only with permission of the Dean.
I		0.00	Incomplete is assigned when work is of passing quality but is incomplete for a pre-approved reason. Once an incomplete grade is assigned, it remains on student's permanent record until a grade is awarded.
W		0.00	Withdrew from the course with Dean's permission beyond the second week of the term.

- All courses will be recorded and maintained in the student's permanent academic record; only courses that apply towards the degree will appear on the academic transcript. Non-credit or audited courses will not appear on the transcript.
- 4 core courses taken for a letter grade (pass = B- or higher for a core course)
- 2 elective courses taken pass/fail (pass = A, B, C for an elective)

Course Summary:

Date	Details
Tue Apr 4, 2023	The Ecosystem
Thu Apr 6, 2023	Co-founder Team Formation
Tue Apr 11, 2023	Academic Spinoffs
Thu Apr 13, 2023	Intellectual Property
Tue Apr 18, 2023	Market Analysis
Thu Apr 20, 2023	NewCo Formation
Tue Apr 25, 2023	Due Diligence
Thu Apr 27, 2023	Business Plan
Tue May 2, 2023	Business Model Canvas I
Thu May 4, 2023	Continuing Education
Tue May 9, 2023	Business Model Canvas II
Thu May 11, 2023	Product Development
Tue May 16, 2023	Regulatory Compliance
Thu May 18, 2023	Fundraising I
Fri May 19, 2023	Commencement (No Class)
Tue May 23, 2023	Agreements
Thu May 25, 2023	Fundraising II
Mon May 29, 2023	Memorial Day (No Class)
Tue May 30, 2023	Benchmarking Analysis
Thu Jun 1, 2023	Corporate Development I
Tue Jun 6, 2023	Corporate Development II
Thu Jun 8, 2023	Pitching I
Tue Jun 13, 2023	Pitching II
Thu Jun 15, 2023	Office Hour
Mon Jun 19, 2023	Juneteenth (No Class)
Tue Jun 20, 2023	Pitching III
Thu Jun 22, 2023	Pitching IV