Course Syllabus – TRBIO 410

Course Information

Course Number: TRBIO 410 WI24
Course Name: Business of Biotechnology
Term: WI 2024
Start Date: 01/03/2024
End Date: 03/22/2024
Credits: 3.0

Meeting Days / Times

Mondays and Wednesdays, 1:15-2:45pm PT / 4:15-5:45pm ET
(See Calendar in Canvas for the most up-to-date schedule.)

Location

CA: Graduate Office Dining Room (Hazen Theory Building)
FL: C212

Course Managers

Role	Last Name	First Name	Email Address
Course Director	Jalloh	Abu	ajalloh@scripps.edu
TA	Newman	Ian	inewman@scripps.edu
TA	Petty	Ellie	epetty@scripps.edu

Guest Lecturers

Last Name	First Name	Expertise	Contact Info
Aceves	Aiden	Founder, CTO, Board member	https://www.linkedin.com/in/aiden-aceves/
Fiore	Gregory	Founder, CEO, Board member	https://www.linkedin.com/in/gregory-fiore-md-33a1918/
Fitzgerald	Brittany	Investor	https://www.linkedin.com/in/brittanyfitzgerald/

Flood	Dillon	Founder, CEO	https://www.linkedin.com/in/dillon-t-flood/
Hing	Margaret	CLO, Tech Transfer	https://www.linkedin.com/in/margaret-ng-thow-hing-09b74a31/
Kunin	Jay	Angel Investor, Founder, Board member	https://www.linkedin.com/in/jaykunin/
Nguyen-Antczak	Lauren	Patent Attorney, Tech Transfer, Government Funding	lauren.nguyen-antczak@nih.gov
Reed	Hunter	Investor, Fund Manager	https://www.linkedin.com/in/hunter-reed-0950a516/
Rees	Steven	Founder, CEO	https://www.linkedin.com/in/stevendrees/
Smith	Ryan	Intellectual Property, Angel Investor, Philanthropist	https://www.linkedin.com/in/ryan-smith-1109261/
Song	David	Funder, Clinician, Fund Manager	https://www.linkedin.com/in/david-s-67267519/
Trubman	Ella	Educator, Operator, Grant Manager	https://www.linkedin.com/in/ella-trubman-a1b9591/
Voren	George	Founder, Investor, Operator	https://www.linkedin.com/in/george-voren-6202785b/
Waters	Alex	Founder, Operator, Educator, Board member of for-profit and non-profits	https://www.linkedin.com/in/watersalex/

Course Description

The biopharmaceutical sector is vital to the economy of major U.S. cities. Local and state governments are increasingly encouraging people to join or move to their regions to contribute to the growth of new biotech hubs. This growth relies on the involvement of academic researchers, start-up founders, and experienced professionals from established companies. These individuals must compete or collaborate to convert scare resources -- or better yet, renewable resources -- into tangible benefits for humans, the ecosystem, and our built environment.

This course is therefore designed to prepare future founders, funders, and operators to thrive in an uncertain marketplace. We will begin the course by forming teams of 4-5 "co-founders" of a fictitious startup whose asset would be licensed from Scripps Research. Grading is heavily weighted in favor of group activities over individual assignments. As such, individuals are accountable to their teammates/"co-founders" for performance in the class.

The course will cover four matrixed modules that are built from the perspective of a future technical founder. Each module would be punctuated with assignments/deliverables that are tied to the lecture at hand:

- Module 1:
    - Lectures: Bayh-Dole Act & The Origin of Academic Tech Transfer; Corporate Law Consideration for NewCo Formation
    - Deliverables: Individuals would submit bio, demonstrate LinkedIn presence, and review a list of Scripps Research assets that they are considering for their fictitious NewCo
- Module 2:
    - Lectures: Intellectual Property, Contracts, and Compliance
    - Workshops & Deliverables: Business Model Canvas, Team Formation, Company Name, Elevator Pitches
- Module 3:
    - Lectures: Partnerships (Build, Buy, Sell), Negotiation, The Startup from an Operator's Perspective
    - Workshops: The Art of Pitching
    - Deliverables: updated Business Model Canvas
- Module 4:
    - Lectures: Product Development & Lifecycle, Clinical Trial & Regulatory Compliance, Health Economics
    - Workshops & Deliverables: Pitch Deck and Executive Summary drafts

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, business and legal language.
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: 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
CLO2: Dive into funding strategies that NewCos utilize, inclusive of Angel, F&F, pureplay VC, corporate/captive VC, and strategic partnerships
CLO3: Develop a familiarity with the concept of due-diligence (scientific, regulatory, intellectual property, and the intangible gut feeling of a subject matter expert)

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:

- Individual Score (40%)
    - Class Attendance (12%)
    - Bio (5%)
    - LinkedIn Presence (5%)
    - Elevator Pitches (5%)
    - Asset Review (5%)
    - Course Surveys (8%)
- Group Activities (weighted score, 60%)
    - NewCo formation (5%)
    - Business Model Canvas (10%)
    - Executive Summary iterations (10%)
    - Pitch Deck Iterations (10%)
    - Final Exam, i.e., Pitch (25%)

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
Mon Jan 1, 2024	No Class (New Year's Day)
Wed Jan 3, 2024	Orientation
Mon Jan 8, 2024	Bayh-Dole Act & The Origin of Academic Tech Transfer
Wed Jan 10, 2024	Business Model Canvas I
	Introducing Yourself
Mon Jan 15, 2024	No Class (Martin Luther King Jr. day)
Wed Jan 17, 2024	Due-Diligence (w/ Aiden Aceves)
	Asset Selection
	Asset Selection | Self-Evaluation
Mon Jan 22, 2024	Workshop: Team Formation & Drafting of Team's BMC
Wed Jan 24, 2024	The Art of Pitching (w/Hunter Reed)
	Company Name
	Company Name | Performance Review
Mon Jan 29, 2024	Workshop: Elevator Pitch (w/Alex Waters)
	Elevator Pitch
Wed Jan 31, 2024	Corporate Law Consideration for NewCo Formation (w/Marshall Olin)
	BMC | Draft
	BMC | Draft | Performance Review
Mon Feb 5, 2024	Intellectual Property (w/Lauren Nguyen-Antczak)
Wed Feb 7, 2024	IP Diligence (w/ Ryan Smith)
Mon Feb 12, 2024	Partnerships | Build, Buy, Sell (w/Steven Rees)
Wed Feb 14, 2024	Workshop: Negotiate Your License (w/Margaret Hing, Marshall Olin, Elaine Skowronski & Will Marrs)
Mon Feb 19, 2024	Presidents' Day (No Class)
Wed Feb 21, 2024	Executive Summary | Draft
	Executive Summary | Draft | Performance Review
Mon Feb 26, 2024	Fundraising & Planning Capital Formation (w/Aiden Aceves)
Wed Feb 28, 2024	The Startup from an Operator's Perspective (w/George Voren)
	BMC | Final
	BMC | Final | Performance Review
Mon Mar 4, 2024	Health Economics (w/ David Song)
Wed Mar 6, 2024	Workshop: Practice Pitching (w/David Song & George Voren)
	Pitch Deck | Draft
	Pitch Deck | Draft | Performance Review
Mon Mar 11, 2024	Product Development & Lifecycle
Wed Mar 13, 2024	Clinical Trial & Regulatory Compliance - Founder's Perspective (w/Greg Fiore)

Mon Mar 18, 2024	Non-Dilutive Fundraising (w/Ella Trubman)
	Office Hour
	Executive Summary | Final
	Executive Summary | Final | Performance Review
Wed Mar 20, 2024	Pitch
	Pitch Deck | Final | Performance Review
	Pitch Deck | Final