

Healthcare Ventures Spring 2025
15.367/HST.978 Syllabus

Class Sessions: Tuesdays, 3-4pm (all virtual, via Zoom) and **Thursdays, 4-6pm (in-person, E62-233 MIT Sloan)**

Note: students are expected to attend both the Tuesday and Thursday sessions.

email TA Madelyn Hoying (hoyingm@mit.edu) or see Slack (once you've joined the class, Zoom link for virtual sessions)

Course Website: <https://linq.mit.edu/healthcareventures> **Class Schedule (below)**

Required pre-class Survey for all participants

All participants must submit the pre-class survey by **9 AM on Tuesday, February 4, 2024** via

<https://forms.gle/bvVsWBmv7GuER4RKA>



Class Description

Healthcare Ventures explores the process of early-stage healthcare venture creation and models the process of entrepreneurship, amid navigating healthcare's complexities. The course is an opportunity for those who seek careers at the intersection of healthcare innovation, medical technology startups, global health and healthcare venture capital. Our Mission is to cross-train more scientists and entrepreneurs in how to create and fund high impact healthcare startups amid the best time in the history of medical innovation. The world needs thousands of entrepreneurs to attack problems, new and ancient, across the fragmented medical industrial complex.

This course lends a taste of the process needed to discover, evaluate, and test new technologies and business models with broad potential to impact human health. Course content and process have taken principles from MIT Hacking Medicine, Product-Market Fit, Human-Centered Design Thinking, Agile Sprints, Business Model Canvas and tailored them to the complexities and tectonic shifts of healthcare, both in the US and globally. An emphasis will be placed on understanding the Business Models and Economic Buyers for your healthcare innovation while developing a plan to design and launch a product or service.

Outside Speakers

Over half of the classes will include outside speakers from startups, venture capital, healthcare systems, government, pharma and med tech. Past years speakers hail from Google Ventures, United Healthcare, Teladoc, Sequoia Capital, A16Z, Blue Cross, Bain Capital, IDEO, Aetna, VA Healthcare, HHS, Verily/GoogleX, GE Ventures, Langer Lab, Podimetrics, Path.ai, Atrius Health ACO. As years progress, more of our most popular outside speakers are alumni of the course who founded companies or work in VC: Pillpack/Amazon, BioFourmis, PatientPing, Ginger/Headspace, Founders Fund, RA Capital, SimpliFed, PhastDiagnostics, Iterative Health, Multiply Labs, and more to come.

Pre-Requisites: None. Undergrads welcome!

This class fulfills a requirement for the **MIT Sloan Healthcare Certificate**.

Most Tuesday sessions (recitations) will be used to provide an opportunity for teams to work together, with faculty help, to refine the work assigned for the week. **Most Thursday sessions** will have: 1) Outside Speakers from Startups, VC, government and industry 2) Faculty lectures on class topics 3) Team breakout sessions.

Action Learning Lab

This course is a graduate-level action-learning lab with a major objective of providing participants with a near real-world experience of testing early-stage healthcare venture design and pitching. Classmates and faculty mentors include a mix of Engineers/Scientists, MBAs, Physicians, MPHs, and entrepreneurs from the Boston area ecosystem, and teams are formed in a way that leverages that diversity. Participants are expected to come ready to actively engage with their teams and to coordinate tasks in and out of class to build a case for their venture. During class sessions, participants will report on their progress and receive customized assignments and advice for work outside the classroom.

It is impossible to cram everything healthcare entrepreneurs need to understand and each healthcare venture is a unique beast. Teammates will teach each other. The class brings very diverse students together on a journey and we celebrate cognitive diversity and lived experience. MBAs, Physicians, PhDs, MPHs, undergrads, and patients each bringing unique skills and lived experience which often provide important insights on the product development journey. Some MBA students may have covered topics in prior classes, but applying product development and venture finance in a healthcare context is specialized. We must also give a basic understanding to healthcare professionals where this is their first exposure to startup development.

Joining a Team formed in class is Required

Startups are a team sport. Lone wolves don't make nearly as fast progress and cognitive diversity on a team will result in more informed decisions while teaching important leadership skills. Students will be assigned to teams for the first two weeks for a warmup investigation. Then teams are allowed to self-assemble into new teams (usually 6-8 teams) of no more than 6-7 participants. Those participants who are not on a team by the 2nd week of class will be assigned by the faculty. We strongly encourage teams to have diverse representation in terms of background expertise, as those teams tend to make the most progress. The first few classes will offer a semi-structured opportunity for you to meet one another (in person on Feb 6).

To help, you can get to know the other participants by reviewing the intros in Slack. Slack invites will be provided in early February for all those who have been accepted. In the pre-class survey, you can provide information about project areas you're interested in, and also indicate your topical interests (see below) and areas of expertise.

If you have already conceptualized or done preliminary work around a potential solution for a pain point in healthcare, the Healthcare Ventures faculty invites you to share it with us for consideration as one of the class projects. We need ideas that are still in a sufficiently early, formative stage so they can be developed during the class and thus provide a foundation on which the key concepts of new medical venture development can be taught. These concepts include, but are not limited to, defining your market, understanding your customers, identifying and evaluating various stakeholders, analyzing the competition, and defining a value proposition and product/market fit.

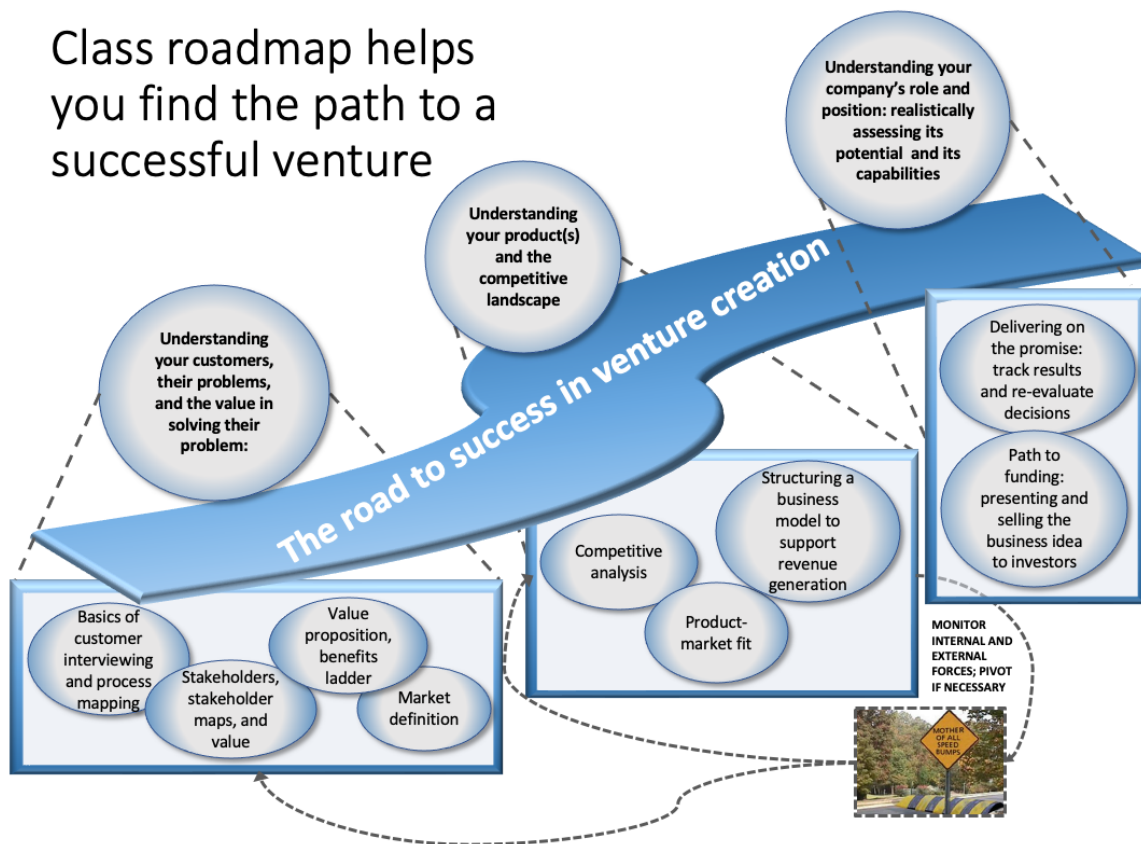
The objective of the class is to help you to understand and engage in the process of evaluating and developing a business opportunity. The class is not intended to create a viable business opportunity at the end of the semester. So, an idea would not be acceptable if it is too far along to benefit from the disciplined approach to entrepreneurship that we teach in class.

If you don't have an idea, that's OK too; you will be able to choose a team/project that interests you. In past years, members of the class have advanced many interesting, impactful problems, and some have actually served as the foundation for building successful businesses. Please contact our TA to arrange an appointment with one of the faculty members so that we understand your idea in sufficient detail to ensure it meets the criteria outlined above, and to make sure you get the most out of taking the class. We look forward to speaking with you!

Cross-registration website for Wellesley, Mass College of Art, & Harvard

For more info about cross-registration, please visit the MIT cross-registration website <https://registrar.mit.edu/registration-academics/registration-information/cross-registration>. For cross-registrant who is graduating this semester and has a concern about the dates that grades will be provided, please know that we have resolved this satisfactorily in prior years by agreement of the course staff; please reach out to the TA to let us know, and to learn the details.

Class roadmap helps you find the path to a successful venture



COURSE FACULTY:

Zen Chu (zenven@mit.edu)	https://www.linkedin.com/in/hackmed
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TA Madelyn Hoying (hoyingm@mit.edu)

Certificate of Accomplishment & Grading

All course participants will be given a signed certificate of accomplishment at the conclusion of the course. The certificate will be personalized with the student name, team name, and date. These will be presented on the final day of class.

Grades will be based on class participation, assignments, and team project.

- Attendance & Participation: 20%
- Team Projects: 80%
 - Assignments 25%
 - First Advisory Panel Presentations: 20%
 - Final Team Presentation: 35%

Slack Base

Because of the community nature of the class, resources are NOT distributed through Stellar or Canvas (MIT's online course management system). All classroom resources will be shared on the class Slack base and obtaining access will be coordinated on an individual basis. The Slack base will be a useful communications tool between and amongst teams, and we will utilize this to make class-wide announcements, as well as to communicate directly with individuals and teams.

Attendance

Because this class is an interactive, team-based course, regular attendance is mandatory. Thursdays are in person at MIT Sloan E62-233 (100 Main Street, Cambridge MA) and the expectations are that teams are in person for group work. Zoom access and recordings will be provided for practicing physicians and sick students, but expectations are that students attend most Thursday classes in person. Please contact the TA if you need to miss more than one class.

Assignments

Tentative assignments for the semester are posted in Slack. These assignments are subject to change, based on the unique needs of the teams. The final assignments will be described in a class session, and the Slack updated with any modifications. Assignments are generally issued during the Thursday session. Unless told otherwise, a draft of the assigned work is due by 3pm Tuesday (to be used during the Tuesday workshops), and the final version is due by 12pm on Thursday.

Most Assignments are to be completed by the team, and only one submission per team is expected. Teams will need to determine how to distribute the workload and synthesize the work prior to submission.

2025 Course Schedule: Lectures subject to change based on speaker availability and class needs.
Tues virtually, Thursdays 4-6pm in person.

	Unit name	Type	2025 date	Day	Topic
Understanding the problem	HCV Bootcamp and Team formation	Rec	4-Feb	Tue	Course overview, intro to design thinking
		Lec	6-Feb	Th	Defining and validating needs
		Rec	11-Feb	Tue	Report out on bootcamp projects Pitching class project ideas
	Interviewing	Lec	13-Feb	Th	Design thinking Interview primer, emotional intelligence;
		Rec	18-Feb	Tue	<i>No class (Monday schedule)</i>
	Stakeholders	Lec	20-Feb	Th	Stakeholders, Introduction to Decision Making units Stakeholder maps Introduction to team charters
		Rec	25-Feb	Tue	Workshop stakeholder maps
	Value Proposition and Decision Making Units	Lec	27-Feb	Th	Value Proposition Benefits ladder Decision Making Units
		Rec	4-Mar	Tue	Workshop VP, DMU Review team charter
	Market Definition and Competitive	Lec	6-Mar	Th	Market Definition Introduction to Competitive Landscape
		Rec	11-Mar	Tue	Dry run advisory panel presentations
	Advisory Panel #1	Lec	13-Mar	Th	Advisory Panel #1
		Rec	18-Mar	Tue	<i>SIP Week - no class</i>
		Lec	20-Mar	Th	<i>SIP Week - no class</i>
		Rec	25-Mar	Tue	<i>Spring Break</i>
Rec		27-Mar	Th	<i>Spring Break</i>	
Competitive Analysis	Lec	1-Apr	Tue	Review status based on hw submissions	
	Lec	3-Apr	Th	Competitive analysis	
	Rec	8-Apr	Tue	Workshop competitive analysis	
Pitches	Lec	10-Apr	Th	Conversational pitches Adapting to changing landscapes	
	Rec	15-Apr	Tue	Project feedback	
Understanding the company	Product Market Fit	Lec	17-Apr	Thu	Product Market Fit
		Rec	22-Apr	Tue	Workshop product market fit
	Business Model	Lec	24-Apr	Th	Structuring a Business Model to Support Revenue Generation
		Rec	29-Apr	Tue	Project feedback
Bringing it all together	Strategic Partnering	Lec	1-May	Thu	Business Development and partnering
		Rec	6-May	Tue	Workshop strategic partner ideas
	Launch!	Lec	8-May	Th	Final class presentations
		Rec	13-May	Tue	Path to funding; presenting and selling the business idea to investors

Example Themes and Companies for Healthcare Ventures

Teams will be formed at the start of the class as described above in the Team section. Participants tend to aggregate by areas of interest. After teams are formed in the early classes, you will begin by exploring problems that can be addressed, guided by the team's areas of interest. In the second block, you will consider and test potential value propositions, and finally, in the third block, you will craft a business model and pitch. Teams will witness the development, challenges, and progress of the other teams attacking different areas of healthcare in the course at regular intervals. By the end of the course, students will have experienced best practices in identifying and validating health venture opportunities, amid the challenges of navigating the healthcare/disease mapping, team dynamics, and venture capital pitching process.

These themes represent areas of significant opportunity, but often these artificial categories are subject to hype cycles and don't capture the true problems to solve on behalf of patients and other stakeholders. Our class focuses on problem deep dives and "jobs to be done" to reveal product functionality that existing competitors, especially large slow healthcare institutions, do not or cannot deliver:

- Administrative automation and digitization (Cedar, Olive)
- Disease management and precision medicine (FlatIron, Omada, GRAIL, Hinge Health)
- Screening and diagnostics (Path.ai, Arterys, Modern Fertility)
- Drug discovery using new techbio tools (Atomwise, Insitro) or assays (Emulate Bio, Curi Bio)
- Clinical trials enrollment and management (DNAexus, Science 37, Obvio Health, Medable)
- Clinical intelligence and enablement (Unite Us, BrightInsight)
- Scheduling, access and benefits management for primary/specialty/urgent care (OneMedical, Carbon Health, Cricket Health)
- Specialty care (Somatus, Cricket Health)
- Pharma supply chain (Capsule, Truepill)
- Health plans, benefit management, RWE (Carrot, Lyra, Tempus, Medbanks)
- Virtual care delivery (PillPack, Teladoc, hims & hers, Doctor on Demand)
- Women's health (SimpliFed, Maven, Elvie, Tia)
- Bioelectronics medical devices (Galvani, SetPoint, Presidio Medical)
- Preventative Health & fitness (Fitbit, Withings, AliveCor, Apple)
- Genomics and TechBio (23andMe, Color Genomics, GRAIL)
- Healthcare/DAO/Fintech (Molecule.to, VitaDAO)
- Remote monitoring (BioFourmis ResMed, VirtualClinic, vitalconnect, eCaring)
- Artificial Intelligence applications in healthcare (radiology, Abridge scribes, pathology)

It's okay if you don't know yet or don't have a strong preference! This is by no means a complete set and a clear value proposition, key user, clear payor will reveal new opportunities.

Testimonials from past students:

"Multiply Labs transformed from a research idea into a startup during Healthcare Ventures. The discussions with the mentors and the guidance of the class faculty were invaluable to shape our early business model. Most importantly, the class made us reflect deeply about the numerous and interconnected stakeholders in the US healthcare systems. The challenges that we identified during Healthcare Ventures have shaped the evolution of our startup until today - and many of the solutions that we converged to first emerged during the class!" — Fred Parietti, PhD, Founder of MultiplyLabs backed by Founder Fund

"The team behind Healthcare Ventures is dedicated to providing individualized guidance, both inside and outside the class. Despite being extraordinarily busy, every instructor was willing to take extra time to share feedback, brainstorm ideas, and open up their networks and experiences to us. Some of the most important strategic decisions we've made at Karuna were shaped by those conversations."

— Joe Kahn, Founder of Karuna Health, backed by VCs FirstRound, Slow Ventures, Founder Collective, Lerer Hippeau

"As a Harvard Master of Public Health student, Healthcare Ventures allowed me to bring my public health background and apply them to numerous healthcare startup ideas, adding evidence-based skills to the challenges of building viable healthcare businesses. The class was a phenomenal way for me to meet other students across MIT and Harvard who are passionate about healthcare."

— Jane Rho, Harvard Masters of Public Health 2020, now leads DaVita Ventures

"Healthcare Ventures brings together expert advisors and a cohort of passionate, intelligent colleagues to facilitate the venture creation process, a model that I've taken with me into my current venture. I come into the class from a graduate program with my own startup in mind, but the class made it into a reality." — Andy Chen, Harvard Ph.D. 2019

Essential Reading References

- Biodesign: The Process of Innovating Medical Technologies 2nd Edition - Paul G. Yock et. al
- Disciplined Entrepreneurship - Aulet, Bill
- Four Steps to the Epiphany Blank - Steven Gary
- Venture Deals Feld - Brad
- The Lean Startup - Reis, Eric
- The 30 Best Pieces of Advice for Entrepreneurs in 2017: The most insightful and transformative pieces of advice we published on the Review in 2017, curated for your perusal and continued excellence. Relevant to everyone working in tech, not just founders http://firstround.com/review/the-30-best-pieces-of-advice-for-entrepreneurs-in-2017/#t_u=1492537739_oaHDzo.

Additional materials will be shared on Slack and customized for teams.

Expectations During Remote sessions

Below are the standard Expectations of Remote Students at MIT Sloan which we will adhere to in Healthcare Ventures:

- Connect to the video conference meeting five minutes before class start time and to be entirely settled in a controlled environment by the beginning of the class meeting. Your calendar should be blocked off, your staff be made aware of this time, and considered equivalent to any meeting which cannot be interrupted.
- Set usernames to display your full name, program, and graduating year (e.g. John Doe, MBA21). Do this at the initial login prompt in the "Screen Name" field. If you have signed up for an account at <https://mit.zoom.us>, then it will get the information from your profile.
- Be present and attentive during class. Students who are engaged in other activities, unresponsive in the chat, disruptive to the class, or failing to meet any of these expectations will be put on a brief hold by the TA. A report will be sent to the staff whenever a remote participant is placed on hold multiple times in a single meeting.
- Maintain an uninterrupted video image of one's entire face throughout the duration of the class. Interruptions of a remote student's image are considered the equivalent of a local participant exiting the classroom or inviting distractions into the classroom. This includes poor framing, bandwidth, lighting, colleagues entering your office, driving while joining the meeting, and/or obstructions to a student's webcam. If you have a Lenovo and cannot enable your camera, [please follow the steps in this support article on IT Support Guides](#).
- Interact with instructors and local participants through audio or chat. The TA is not responsible for vocalizing your questions in class. S/he can draw the faculty member's attention towards your request.
- Direct all content-specific questions to the TA and technical support questions about your personal technology to Zoom (<https://zoom.us/support>).
- Do not operate a vehicle while attending class.
- Wear headphones, preferably with a built-in microphone.
- Report all feedback to the [Improvement Survey](#).