

Entrepreneurship in Health IT and Biotech

MET College [CS 582](#) / AD 582 (Spring 2025) On Campus,
Mondays 2:30 – 5:15pm Classroom MET 122 (1010 Commonwealth)

John D'Amore, MS

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Office hours: Mondays at 5:15pm (after class) and by appointment

Course Description

The course introduces basic business concepts in biomedical, biotech and information technology (IT) entrepreneurship and provides hands-on experience in creating, proposing and justifying a business model for healthcare IT or biotech startup. Foundational study and research of entrepreneurship, business models, international healthcare systems and innovation compose the first three modules of the course. For the final three modules, students work in teams to propose founder roles, business ideas and analysis leading to a business plan. After providing market needs and competitive analysis of proposals, they visualize and assess overall business models, including strengths, weaknesses, opportunities and threats analysis. Finally, they present their business models including the empathy map and the canvas blocks, defending their business proposal.

Prerequisites: None

Required Books (see important note on FirstDay before purchasing!)

- Shimasaki, Craig. Biotechnology Entrepreneurship. 2nd Edition, 2020. ISBN: 978-0-12-815585-1. Amazon Link: <https://www.amazon.com/Biotechnology-Entrepreneurship-Commercializing-Innovative-Technologies/dp/012815585X>
- Emanuel, Ezekiel J. Which Country Has the World's Best Health Care? 2020. ISBN: 978-1541797734 Amazon Link: <https://www.amazon.com/Which-Country-Worlds-Best-Health/dp/1541797736>

Optional Books:

- Ness, Roberta B. Innovation Generation: How to Produce Creative and Useful Scientific Ideas. New York: Oxford University Press, 2012.
<https://www.amazon.com/Innovation-Generation-Produce-Creative-Scientific/dp/0199892598>

Course Information and Website

Information: <https://www.bu.edu/csmet/cs582/>

BU Learn: https://learn.bu.edu/ultra/courses/_268459_1/outline

Instructor Information

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John D'Amore has over twenty years' experience in healthcare, health IT and medical informatics. Currently, Mr. D'Amore is the President of More Informatics. Previously, he was Co-Founder, President and CTO of Diameter Health, Inc., a software company focused on data integrity and normalization to improve the clinical, operational and financial performance of health providers. The company drew on his research of medical interoperability standards. The company raised over \$30 million in venture capital and was successfully acquired by Availity, Inc. in 2022. Prior to that, Mr. D'Amore served as Vice President at Allscripts where he was instrumental in the technical and strategic development of Best-in-KLAS software. Previously, Mr. D'Amore was Director of Decision Support with Memorial Hermann Healthcare System and a consultant to the biotechnology and medical device industries.

Mr. D'Amore earned a master's degree in clinical informatics from the University of Texas School of Biomedical Informatics, and a bachelor's degree in biochemistry from Harvard College. Mr. D'Amore research in medical informatics has been published in peer-reviewed journals, such as the *Journal of the American Medical Informatics Association*, *Applied Clinical Informatics*, *Population Health Management* and the *American Journal of Public Health*. Mr. D'Amore has presented at national and international conferences such as NCQA, HIMSS, AMIA, HL7, DevDays and Medical Informatics World and regularly serves as consultant and invited speaker on health information technology.

Grading Criteria

The final grade for this course will be based on the following:

- **Quizzes (20%):** In class (closed book) quizzes based on assigned reading
- **Discussions (20%):** Online discussion topics, in-class participation, in-class elevator pitch of established startup
- **Assignments (20%):**
 - Angel & Venture Capital (individual submission)
 - Case study responses (individual submission)
 - Empathy map (individual submission)
 - Business canvas & SWOT analysis (team submission)
- **Final Project (40%):** Pitch deck with oral presentation. Submission of written business plan.

Schedule & Due Dates (Some dates may change)

CS 582/ AD 582 Schedule & Due Dates

Date	Topic	Readings Due	Submission or Quizzes Due
January 26	Module 1 - Introduction (L1)	Order book. Begin reading for Feb 2	n/a
February 2	Todd Pietri, Activate Ventures Module 1 - Sectors/IP/VC (L2)	Emanuel, Intro + US (Ch 1) Shimasaki, Chapters 1-4, 7-8	Quiz #1 Discussion #1
February 9	Module 1/2 - Comm Gap/Pharma(L3)	Shimasaki Chapters 10-12, 21, 30	Quiz #2 Assignment #1
February 17	Presidents Day on 16th. No Class		n/a
February 23	Module 2 – Funding/Pitching (L4)	Emanuel, UK (Ch 3) Shimasaki Chapter 13-19	Quiz #3 Discussion #2
<i>Friday February 27</i>	<i>Optional Guest Lecture: Dean Pasalis</i>	<i>11am in location TBD</i>	<i>Optional, not required</i>
March 2	Ben Naovret Module 2/3 Bias / Case Studies (L5)	Emanuel, France & Netherlands, (5 & 7) Assignment #2 reading	Quiz #4 Discussion #3 & Elevator Pitch
March 9	Spring Break No Class		n/a
March 16	Laura Kleimann, RebootRx Module 3 Innovative Thinking (L6)	Shimasaki Chapters 9, 20, 22-23	Quiz #5 Assignment #2
March 23	Module 3/4 Global Comparison (L7)	Emanuel, Taiwan, China, Conclusion (Ch 10, 11 & 13) Pitch Decks	Quiz #6 Discussion #3 & Elevator Pitch
March 30	Chris Vitale, Qwerty Health Module 3/4 Tools for Bus Planning (L8)	Case Studies for discussion #4	Discussion #4 Final Group Selection
April 6	Module 4/5 Pitching (L9)	TBD	Discussion #5 Empathy Map
April 13	Lecture Conclusion (L10) Module 6 & Business Planning	Work on final project	Assignment #4: Business Canvas & SWOT Analysis
Wednesday April 22	Business Planning & Module Review	Work on final project	n/a
April 27	Guest Panel Oral Presentations	n/a	Final Project: Presentation (4/27) & Business Plan (4/30)

Note that the Friday guest lecture (shown in pink) is optional. The final business pitch is due April 27, 2026. The final written business plan submission is due April 30, 2026. If you cannot attend/present on April 27, please coordinate with professor.

CLASS MODULES

PART 1 – THEORETICAL FOUNDATIONS

MODULE 1: THE HEALTHCARE AND BIOTECH COMPANY

1. Introduction to healthcare, biotech and biomedical startups
2. What is entrepreneurship? Entrepreneurial skills
3. Types of companies, corporate structure
4. Fundraising and lifecycle of healthcare and biotechnology companies

MODULE 2: CREATION OF HEALTHCARE AND BIOTECH COMPANIES

5. Leadership, business culture and creating successful human networks
6. Business ideas in healthcare, biotech and biomedical engineering. Overview of regulatory framework for healthcare and biotechnology companies
7. Business models & risk management of health it and biotech startup, including intersection with international healthcare delivery models
8. Intellectual property & technology transfer (Patents in US and internationally)
9. Methodologies to create a startup: Business Model Canvas and lean startup

MODULE 3: STRATEGY AND MANAGEMENT OF INNOVATION

10. What is innovation? How does innovation intersect with healthcare delivery systems (international comparisons)?
11. Creativity, human biases and healthcare case studies
12. Strategy, management and marketing of healthcare innovation.
13. Creating a strong pitch deck

PART 2 - PROGRAM OF PRACTICES: GENERATION OF BUSINESS MODELS

MODULE 4: EXERCISE OF DIVERGENCE AND CONVERGENCE AND EMPATHY MAP

DIVERGENCE AND CONVERGENCE

In groups, the students propose different business ideas (divergence) that could be of interest in the biotechnology/ biomedical engineering sector. Between them, they carry out an analysis of the potentialities of the different business ideas generated until they reduce their proposals to a single one (convergence).

EMPATHY MAP

The groups should identify the different segments of potential customers and make a map of empathy with these, which help the business definition and validation of potential customers. This includes exploring the following variables:

- What do the customers see: what is the current environment? What proposals are already offered by the market?
- What do customers say and do? What is their attitude of public and social media, what does it look like?
- What do the customers hear: What do friends, family, medical providers, employers and influential people say?
- What do customers think and feel? What really matters to them and how does your business relate to their concerns, dreams and aspirations.

From these four you get two more:

- What are the efforts they make and what do they fear? Which are the established barriers to block what they want to obtain? What risks will and won't be assumed?
- Results and benefits expected to obtain from new product or business: What are the largest customer needs or desires? How do they measure success and what does it depend on?

MODULE 5: CANVAS. The groups will work with the "canvas" model of Alex Osterwalder for the definition of the business idea. Alex Osterwalder designed the Business Model Canvas; a format that visualizes the business model according to nine fields in only one 'sheet', resulting in a document that directly offers a global vision (the 'helicopter view') of the business idea, clearly showing the interconnections between the different elements.

1. Clients: The groups of people to whom you want to offer the product / service.
2. Value proposal: It deals with the "pain statement" that we solve for the client and how we respond with the products and / or services the initiative. Explain the product / service offered to customers
3. Distribution channels: It focuses on how the value proposal is delivered to customers (to each segment). It is to determine how to communicate, reach and deliver the value proposal to customers.
4. Relations with customers: one of the most critical aspects in the success of the business model and one of the most complex to make tangible. There are different types of relationships that can be established

5. Sources of income: Represent the way in which the company generates revenue for each client. Income can be direct or indirect, in a single payment or recurrent
6. Key resources: The most important resources necessary for the operation of the business are described, as well as type, quantity and intensity
7. Key activities: In order to deliver the value proposal, a series of internal key activities must be developed (production processes, marketing, etc.)
8. Key alliances: The necessary alliances are defined to execute the business model with guarantees that complement the capacities and optimize the value proposition: co-creation is essential in today's business
9. Cost structure: Describes all the costs incurred when operating the business model. It's about knowing and optimizing costs to try to design a sustainable, efficient and scalable business model

MODULE 6: SWOT ANALYSIS

The groups will prepare a “SWOT” analysis of their business model, identifying strengths, weaknesses, opportunities and threats. The exercise serves to perform an analysis of the internal and external factors from which the strategy of differentiation in the market would be designed

FINAL PROJECT: ORAL PRESENTATION & BUSINESS PLAN SUBMISSION

The groups will conduct oral presentations of their business models. They should make an exhibition based on a PowerPoint presentation or Prezi of the business model, including how they would pitch the idea to investors. Each group member will adopt a role of a founder in the proposed startup. Presentations should include at a minimum: Company Purpose and Mission, the Problem Statement, Proposed Technology or Product Solutions, Intellectual Property Plan, Target Market (e.g. major points from Empathy Map), Business Model (based on Business Canvas), and Financing Ask.

In addition, each group should plan to submit a business plan. The length of the business plan will be based on the size of the group, with approximately 3-5 pages per student.

This class utilizes the FirstDay Program for Boston University for the Shimasaki required textbook. If you don't want to be charged, you need to opt-in before the deadline

WELCOME TO FIRST DAY™ DELIVERY FOR YOUR COURSE MET CS / AD 582

To enhance your learning experience and simplify access to the right materials for your class, your course materials have been integrated directly into your course.

BENEFITS OF THIS PROGRAM

- Exclusive preferred pricing
- Guaranteed the right materials
- Single Sign-On
- Ready to go on day one
- Course materials charge will be placed on your student account
- Option to Opt-Out on the first day of class.

ACCESSING YOUR MATERIALS

To access your required materials for your course, Log into Blackboard and follow instructions provided by your instructor.

Boston University will bill you at the discounted price as a First Day course material charge on your student account later in the semester.

Please be advised it is NOT recommended that you Opt-Out, as these materials are required by your professor to complete the course. You can choose to Opt-Out on the first day of class, but you will be responsible for purchasing your course materials at the Opt-Out price.

For more information and FAQs click here. (customercare.bncollege.com)

CLASS POLICIES

1) Attendance & Absences –

Students should plan to attend all classes in-person (see “Class Meetings, Lectures & Assignments”). If an absence is necessary, please plan with course professor in advance. If you are sick, please coordinate with professor as most classes will also be available through Zoom and recorded.

2) Assignment Completion & Late Work

All quizzes, discussion, assignments and the term project have to be submitted by the due dates. Each 24 hours of delay will result in 10% penalty unless rescheduling has been

permitted by course instructor. Class projects need to be completed and presented by the due date.

3) Academic Conduct Code

For the full text of the academic conduct code, please go to
<https://www.bu.edu/academics/policies/academic-conduct-code/>

Boston University's Academic Conduct Code is designed to assist in the development of a supportive and productive learning environment. It is both a description of the University's ethical expectations of students as well as a guarantee of students' rights and responsibilities as members of a learning community. The Code provides clarity related to policy and procedure regarding academic conduct.

For students, the Code establishes an environment of integrity and professionalism that helps to assure each individual receives appropriate recognition for their work. The ethical decisions that students face in an academic environment are similar to those they will encounter routinely in the professional world they will enter upon graduation or where they are currently employed. The Code allows faculty to conduct a fair and accurate evaluation of student performance and to maintain a supportive and just learning environment. Academic integrity is a critical component of such an environment, giving faculty the freedom to extend their role as educators to include serving as mentors and colleagues as well as instructors. For administrative staff, the Code gives them the ability to deal more effectively with students, and to work on a student's behalf both within the University and outside it.

This respect for the University's recognized ethical values affects the University's reputation in both the academic and professional communities of which it is a part. This reputation is essential to the success of not only the current generation of students, but previous and future generations as well.

I. Community of Learning and Academic Integrity

Boston University is a community of learning grounded in shared values, rights, and responsibilities. One critical component of our learning community is academic integrity, that is a commitment, even in the face of adversity, to the fundamental values of honesty, trust, fairness, respect, responsibility, and courage in representing truthfully one's knowledge and ideas as one's own. Our community can only be maintained if all students represent honestly their own knowledge and ideas, believe that their academic competence is being judged fairly on the basis of their knowledge and ideas, and have confidence that they will not be put at a disadvantage because of someone else's dishonesty. Promoting and protecting academic integrity is the responsibility of every member of the campus community because our goals of teaching, learning, and research can only be accomplished in environments in which ethical standards are upheld.

Academic dishonesty undermines the bonds of trust and honesty between members of the community and defrauds those who depend upon our knowledge and integrity. Students, faculty, and staff of Boston University support this Academic Conduct Code for the purposes of providing an atmosphere of mutual trust and respect, fostering ethical behavior, and cultivating lifelong professional conduct.

II. Academic Misconduct

Academic misconduct is conduct by which a student misrepresents their academic accomplishments, or impedes other students' opportunities of being judged fairly for their academic work. Knowingly allowing others to represent your work as their own is as serious an offense as submitting another's work as your own.

All students entering Boston University are expected to maintain high standards of academic honesty and integrity. It is the responsibility of every student to be aware of the Academic Conduct Code's contents and to abide by its provisions. The Academic Conduct Committee of the individual school or college, which is composed of students, faculty, and staff, has jurisdiction over all charges of academic misconduct brought against students in its courses.

In all charges of academic misconduct against a student, the student is entitled to procedural fairness in any disciplinary proceedings. The Academic Conduct Code details the guidelines governing disciplinary proceedings. It also defines violations of the Code and enumerates penalties applicable under the Code.

III. Violations of this Code

Violations of this Code involve attempts to be dishonest or deceptive in the performance of academic work in or out of the classroom, alterations of academic records, alterations of official data on paper or electronic resumes, or unauthorized collaboration with another student or students. Violations include, but are not limited to:

A. Cheating on an examination or assignment. Any attempt by students to alter their performance on an examination or assignment in violation of the stated or commonly understood ground rules.

B. Plagiarism. Representing the work or ideas of another* as one's own and/or using another's work or ideas without appropriately crediting the source. **Plagiarism includes, but is not limited to**, the following: copying the answers of another student on an examination; copying or restating the work or ideas of another person/persons or artificial intelligence software in any oral or written work (printed or electronic) without appropriately citing the source; using visuals, audio, or video footage that comes from another source (including work done by another student) without permission and/or acknowledgement of that source; and collaborating with someone else in an academic endeavor without acknowledging their contribution. Plagiarism can consist of acts of commission (appropriating the words or ideas of another as one's own), or omission (failing to acknowledge/document/credit the source or creator of words or ideas).

*“Another” may refer to anything that can be a source of information or work product, including (but not limited to) individuals, books, online sources, academic journals, and software/programs (e.g., artificial intelligence software/programs).

C. Misrepresentation, falsification, or fabrication of data presented for surveys, experiments, reports, etc., which includes but is not limited to: citing authors who do not exist; citing interviews that never took place; citing field work that was not completed; and falsely claiming attendance at mandatory class events.

D. Theft of an examination. Stealing or otherwise discovering and/or making known to others the contents of an examination that has not yet been administered.

E. Unauthorized communication during examinations. Any unauthorized communication may be considered automatic evidence of cheating.

F. Knowingly allowing another student to represent your work as their own. This includes actions such as: providing a copy of your work to another student, and/or providing (including selling) class materials to third parties that sell or otherwise share such materials—including, but not limited to, homework, exams and exam solutions, submitted papers, or projects. Students with material in an ePortfolio should consider adding a Creative Commons License to their work to remind readers that the work may not be shared without properly attributing it to the creator as the author. For more information on how this policy applies to

materials in a student's ePortfolio and adding a Creative Commons License to your portfolio, see [Guidelines on Privacy and Integrity](#) on the Boston University ePortfolio site.

G. Forgery, alteration, or knowing misuse of graded examinations, quizzes, grade lists, or official records or documents, including but not limited to transcripts from any institution, letters of recommendation, degree certificates, examinations, quizzes, or other work after submission.

H. Misrepresentation of identity in any interaction with a member of the Boston University community or on any academic work.

I. Theft or destruction of examinations or papers after submission.

J. Submitting substantially the same work in more than one course without the consent of instructors.

K. Altering or destroying another student's work or records, altering records of any kind, removing materials from libraries or offices without consent, or in any way interfering with the work of others so as to impede their academic performance.

L. Violation of the rules governing teamwork. Unless the instructor of a course otherwise specifically provides instructions to the contrary, the following rules apply to teamwork: 1. No team member shall intentionally infringe upon the learning of another team member in the course of any team project or other teamwork. 2. No team member shall intentionally restrict or inhibit another team member's access to team meetings, teamwork-in-progress, or other team activities. 3. All team members shall be held responsible for the content of all teamwork submitted for evaluation as if each team member had individually submitted the entire work product of their team as their own work.

M. Failure to sit in a specifically assigned seat during examinations.

N. Unauthorized downloading, uploading, sharing, and/or duplicating course materials including, but not limited to, assignments, exams, quizzes, slides, videos, and any other material created and/or provided by the instructor without the instructor's express permission. This includes, but is not limited to, downloading/uploading/viewing/sharing/selling copyrighted material found on commercial notes-sharing websites such as Course Hero and GitHub.

O. Conduct in a professional field assignment that violates the policies and regulations of the host school or agency.

P. Conduct in violation of public law occurring outside the University that directly affects the academic and professional status of the student, after civil authorities have imposed sanctions.

Q. Attempting improperly to influence the award of any unit, grade, or honor.

R. Intentionally making false statements to the Academic Conduct Committee or intentionally presenting false information to the Committee.

S. Unprofessional treatment of patients and clients including, but not limited to: Treating patients/clients without authorization or supervision by faculty; treating patients/clients in unauthorized clinical settings; Accepting personal monetary payment from patients/clients for services; waiving patient payment responsibilities without authorization, or otherwise acting in disregard of patient-related contracting and

financial policies; failing to comply with policies and procedures related to patient/client care; failing to maintain accepted protocols regarding infection control and OSHA standards; treating a patient/client while under the influence of alcohol or drugs; refusal to properly treat any patient/client for reasons of gender, race, color, religion, national origin, financial status, or disability; patient/client abandonment; violating patient/client rights to confidentiality or improperly disclosing confidential patient information; falsifying patient/client records in any manner, e.g., by changing previous entries, making false entries, or by forging signatures, with or without intent to defraud, injure or deceive; failure to maintain demonstrable and timely progression towards achievement of clinical competencies.

T. Failure to comply with the sanctions imposed under the authority of this Code.

For additional information on procedures, penalties and consequences of academic misconduct, please refer to the full text at <https://www.bu.edu/academics/policies/academic-conduct-code/>

4) Disability Services

In accordance with University policy, every effort will be made to accommodate unique and special needs of students with respect to speech, hearing, vision, or other disabilities. Any student who feels he or she may need an accommodation for a documented disability should contact the Office of Disability Services (<http://www.bu.edu/disability>) at (617) 353-3658 or at access@bu.edu for review and approval of accommodation requests.

5) Etiquette and Netiquette

Before posting to any discussion forum, sending email, or participating in any course or public area, please consider the following:

Ask Yourself...

- How would I say this in a face-to-face classroom or if writing for a newspaper, public blog, or wiki?
- How would I feel if I were the reader?
- How might my comment impact others?
- Am I being respectful?
- Is this the appropriate area or forum to post what I have to say?

When you are speaking or writing, please follow these rules:

- Stay polite and positive in your communications. You can and should disagree and participate in discussions with vigor; however, when able, be constructive with your comments.
- Proofread your comments before you post them. Remember that your comments are permanent.
- Pay attention to your tone. Without the benefit of facial expressions and body language your intended tone or the meaning of the message can be misconstrued.
- Be thoughtful and remember that classmates' experience levels may vary. You may want to include background information that is not obvious to all readers.
- Stay on message. When adding to existing messages, try to maintain the theme of the comments previously posted. If you want to change the topic, simply start another thread rather than disrupt the current conversation.

- When appropriate, cite sources. When referencing the work or opinions of others, make sure to use correct citations.

When you are reading your peers' communication, consider the following:

- Respect people's privacy. Don't assume that information shared with you is public; your peers may not want personal information shared. Please check with them before sharing their information.
- Be forgiving of other students' and instructors mistakes. There are many reasons for typos and misinterpretations. Be gracious and forgive other's mistakes or privately point them out politely.
- If a comment upsets or offends you, reread it and/or take some time before responding.

Important Note

Don't hesitate to let your instructor or student services coordinator know if you feel others are inappropriately commenting in any forum.

6) Usage of Generative Artificial Intelligence (GenAI)

Use of generative artificial intelligence (GenAI) such as large language models (LLMs) is permitted for course assignments and the final project but must be disclosed. For additional guidance on the disclosure of GenAI/LLMs see <https://www.bu.edu/files/2023/02/GAIA-Final-2023.pdf>

For the avoidance of ambiguity, the use of GenAI/LLMs is never permitted for quizzes. Generally, use of GenAI/LLMs is discouraged in course discussions.