

B733 C01: BDC
Biomedical Entrepreneurship
Fall 2023 Course Outline
DeGroot School of Business
McMaster University

Prerequisite: Enrolment in the Biomedical Discovery and Commercialization program

COURSE OBJECTIVE

This course is designed to develop the skills entrepreneurs need in creating successful new ventures. From a collaborative and multidisciplinary perspective, this course empowers the students to identify strengths and weaknesses of traditional business planning and know how to evaluate opportunities and external threats in developing a new business. The course is aimed to help students better understand the unique model and challenges of biomedical start-ups. Course provides strategic insight in the business development and marketing of biomedical products and technologies, as well as guidance on identifying, developing and evaluating business opportunities in the field of pharmaceutical, biotechnology and related industries.

Throughout the course students will be exposed to the fundamental practices of entrepreneurship, and the high-level skills needed to create something that's all their own. You will develop the ability to integrate diverse aspects of creating a business such as managing intellectual property, marketing, strategic human resources, raising capital, risk assessment, and starting and growing a business. You will learn from real world cases and will work with an organization on a biomedical project to hone your application skills.

By the end of this course, you will have developed more confidence in identifying biomedical business opportunities and have learned how to think and act from an entrepreneurial perspective.

INSTRUCTOR AND CONTACT INFORMATION

Instructor: Dr. Jingyuan Zhao

E-mail: zhaoj245@mcmaster.ca

Class Times: Monday 8:30-11:20am

Class Location: see Mosaic

Office Hours: By appointment

Student TA: TBA

COURSE ELEMENTS

Credit Value: 3	Leadership: Yes	IT skills: No	Global view: Yes
Avenue: Yes	Ethics: Yes	Numeracy: No	Written skills: Yes
Participation: Yes	Innovation: Yes	Group work: Yes	Oral skills: Yes

Evidence-based: Yes

Experiential: Yes

Final Exam: No

Guest speaker(s): No

COURSE DESCRIPTION

This course examines issues associated with mounting entrepreneurial ventures from a Bio-Technology base and addresses such concerns as intellectual property, marketing, strategic human resources, raising capital, and starting and growing a business in that context. The course is designed primarily for McMaster students in the Bio-Med (BDC) commercialization program. The course provides an opportunity for science students to develop networks for accessing entrepreneurial ventures in their field of study.

LEARNING OUTCOMES

Upon completion of this course, students will be able to complete the following key tasks:

- **Develop entrepreneurial skills:** The course can help students develop skills such as identifying market needs, developing and testing products, and launching a business. These skills are essential for individuals who want to start their own biomedical business.
- **Recognize a business opportunity:** The course can help students see new and emerging trends in biotechnology and evaluate them for their potential impact and commercial opportunities.
- **Understand a business side:** The course can help students understand the legal, financial, and ethical considerations that come with starting and running a biomedical company. This knowledge can help students make better decisions when launching their own ventures or working for a biomedical company.
- **Produce a business plan:** The course can help students develop an adequate marketing strategy, a competitive landscape report, or a capital acquisition report along with business development plans and exit routes with clear reasoning for each.
- **Collaborate with peers:** The course typically involves working in teams to develop a project and launch a business. This collaboration can help students develop teamwork and communication skills that are essential in entrepreneurial adventure.

REQUIRED COURSE MATERIALS AND READINGS

1. Shimasaki, C. (2020). *Biotechnology Entrepreneurship: Leading, Managing and Commercializing Innovative Technologies*. Second Edition. London: Academic Press, Elsevier.

It is the best academic and practical resource in biomedical entrepreneurship, edited by Dr. Craig Shimasaki, a scientist, serial entrepreneur, and CEO of Moleculera Labs and BioSource Consulting.

Book chapters are available for free from our library

E-Location: <https://www.sciencedirect.com/science/book/9780128155851>
DOI: <https://doi.org/10.1016/C2017-0-02971-3>

2. Cases required for the class discussion and assignments as follows:

- (1) CV Ingenuity (A) How to Evaluate the Commercial Viability of New Health Care Technologies. HBS 315045; Ivey 315045
- (2) Proteolix: A Me Too Success. HBS B5719
- (3) Covid-19 Testing at Everlywell. HBS 821001; Ivey 821001
- (4) Napo Pharmaceuticals: Triple Bottom Line of People, Planet, and Profits. HBS B5784
- (5) Medimmune Ventures. HBS 814023
- (6) GenapSys: Business models for the Genome. HBS 814050; Ivey 814050
- (7) Aquadvantage Salmon: Communicating to Build Consumer Confidence. HBS W18872; Ivey 9B18M050

Approx. \$4 per case; relevant journal articles are available for free from our library or the Internet

Here is the link for the case pack through HBS and Ivey:

<https://hbsp.harvard.edu/import/841744>; <https://www.iveypublishing.ca/s/>

3. Wharton School's Entrepreneurship Simulation: The Startup Game. HBS WH0001.

Startup Game is one of The Wharton School's most popular simulations. How to register for the simulation will be posted on the course site and a briefing will be provided during class.

Here is the link for the simulation through HBS:

<https://hbsp.harvard.edu/import/841744>

\$15 per student

4. Additional materials, requirements, guidelines, references related to the course tasks for each class will be posted via the weekly announcements.

Avenue to Learn

OPTIONAL COURSE MATERIALS AND READINGS

1. Navigate through the following brief overview of drug development from the US Food and Drug Administration and the drugs and health products from the Health Canada:

- (1) <https://www.fda.gov/drugs/development-approval-process-drugs>
- (2) <https://www.canada.ca/en/health-canada/services/drugs-health-products.html>

2. Familiarize yourself with some of Canada's biomedical startup hubs and sites to support those looking for careers in the field:

- (1) www.biotech.ca; (2) www.biotalent.ca ; (3) www.marsdd.com; (4) <https://tracxn.com>

3. Alex Iskold blog - Startup Hacks by Alex Iskold, the author of Startup Hacks, founder and managing partner of 2048 Ventures:

<https://www.startuphacks.vc/>

4. Further resources for the entrepreneurship simulation, by Ethan Mollick, the Entrepreneurship Group at the Wharton School:

<http://www.startupinnovation.org/readings-and-resources/>

5. Optional course contents (e.g., readings, videos, and cases) are on our course site, Avenue to Learn.

EVALUATION

All work will be evaluated on an individual basis or group basis, or both. Your final grade will be calculated as follows:

Components and Weights

Attendance and Participation	Individual/Group Contribution	10%
Entrepreneurship Self-Assessment Paper	Individual Assignment	15%
Entrepreneur Interview	Individual Assignment	10%
Case Studies and In-class Discussion	Group Assignment	25%
Entrepreneurship Simulation	Individual Assignment	15%
Biomedical Project and Presentation	Group Assignment	25%
Total		100%

NOTE: The use of a McMaster standard calculator is allowed during examinations in this course. See McMaster calculator policy at the following URL:

www.mcmaster.ca/policy/Students-AcademicStudies/UndergraduateExaminationsPolicy.pdf

Grade Conversion

At the end of the course your overall percentage grade will be converted to your letter grade in accordance with the following conversion scheme:

LETTER GRADE	PERCENT	POINTS
A+	90-100	12
A	85-89	11
A-	80-84	10
B+	75-79	9
B	70-74	8

B-	60-69	7
F	00-59	0

Course Deliverables

Group Assignments

Case Studies and In-class Discussion: There are 7 biomedical startup case studies. Each team will prepare a case summary. The case should be analyzed from the viewpoint of the questions asked in the outline below. Every team will hand in a write-up and participate in class discussion on each of the cases.

Team Project: The purpose of the team project is to familiarize students with important knowledge regarding how complementary experiences enhance entrepreneurial ventures, providing expanded networks, ideas, and capabilities. Students will be placed into teams of ~4 in conjunction with BDC 701. Students will need to develop or analyse a concept, product, service, or niche that can be assessed through appropriate research during the course.

The Team Project Report and Presentation will consist of one of the following options:

Option # 1: In your pre-formed teams from BiomedDC 701 to systematically analyze and assist in developing an adequate marketing strategy for your partner company. You will meet with the relevant parties, examine internal (and perhaps proprietary) documentation, perform a marketing analysis, and write a complete marketing plan for that venture.

Option # 2: In your pre-formed teams from BiomedDC 701 to systematically analyze and assist in developing a competitive landscape report for your partner company. You will meet with the relevant parties, examine internal (and perhaps proprietary) documentation, perform a competitive analysis, and write a report for that venture.

Option # 3: In your pre-formed teams from BiomedDC 701 to systematically analyze and assist in developing a capital acquisition report for your partner company. You will meet with the relevant parties, examine internal (and perhaps proprietary) documentation, perform a financial analysis, and write a report for that venture.

The team project will provide student groups of approximately four persons a chance to put into practice what they have learned in other courses to develop a plan for one aspects of a start-up venture. Groups will also provide a 15-minute presentation during our last class.

Individual Assignments

Entrepreneurship Simulation: Students will compete in Wharton School's Entrepreneurship Simulation: The Startup Game. It provides a learning by doing experience that replicates real-world startup conditions and factors. That will take place during the late stage of this course, so that students can apply all theoretical models and frameworks to this simulation. The simulation will be graded associated with two parts: (1) performance in the simulation; (2) a response write-up after the simulation,

commenting on how well their strategy actually worked, what they would do differently, and what they learned as a result.

Entrepreneur Interview: Each student will interview an entrepreneur of their choice. Please address both personal and business aspects in your interview, using the characteristics of successful entrepreneurs to guide your questions. The write-up should focus on the 2-3 characteristics that were most relevant for the entrepreneur – either because they possessed the characteristic or did not and needed to compensate.

Entrepreneurship Self-Assessment: On an individual basis, each participant in the course will also develop and prepare a self-assessment paper on their own strengths, abilities and shortcomings as a potential biomedical entrepreneur, based on the characteristics of the entrepreneurial mindset.

Participation and Contribution

Individual: Each student is expected to attend every class and be prepared to make a worthwhile contribution regarding the assignments or related questions/issues. Your own contribution to the class discussion based on your own knowledge and your experiences is a critical part of the success of the course for everyone. This is often enough to make a difference in final grades.

Group: It is expected that every member of a group will participate fully and equally in the discussion, presentation and completion of group assignments including case studies, biomedical projects. Participation in group projects will be evaluated by means of a peer rating. Please note that we do not view these peer evaluations as punitive but, rather, a way to ensure that everyone is fully contributing to the group projects.

*Requirements of all assignments will be posted on Avenue to Learn. Instructions and a briefing on each of assignments will be provided during class. All assignments must be submitted through Avenue to Learn on each due date.

ACTIVITY	DELIVERY	DESCRIPTION	TOOL(S)
Live Lectures	Synch	Lecture on theoretical models and frameworks in biomedical entrepreneurship, guide and prepare students for project, teamwork and case analysis, etc.	On campus; At class times
Self-Study and Readings	Asynch	Library and other sources tied to weekly task prompts in assigned book, coursepack, posts on A2L, linked webpages.	At your own time during the week
Projects	Synch and Asynch	Case assignments, project report and presentations, simulation activity	Synch: On campus; At class times Asynch: At your own time and discretion during the week

COMMUNICATION AND FEEDBACK

Students that are uncomfortable in directly approaching an instructor regarding a course concern may send a confidential and anonymous email to the respective Area Chair or Associate Dean:

<http://mbastudent.degrootemcmaster.ca/contact/anonymous/>

Students who wish to correspond with instructors or TAs directly via email must send messages that originate from their official McMaster University email account. This protects the confidentiality and sensitivity of information as well as confirms the identity of the student. Emails regarding course issues should NOT be sent to the Administrative Assistant.

Instructors are encouraged to conduct an informal course review with students by Week #4 to allow time for modifications in curriculum delivery. Instructors should provide evaluation feedback for at least 10% of the final grade to students prior to Week #8 in the term.

ACADEMIC INTEGRITY

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at:

www.mcmaster.ca/academicintegrity

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations

AUTHENTICITY/PLAGIARISM DETECTION

Some courses may use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. A2L, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software.

All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, other software, etc.). For more details about McMaster's use of Turnitin.com please go to www.mcmaster.ca/academicintegrity.

COURSES WITH AN ON-LINE ELEMENT

Some courses may use on-line elements (e.g. e-mail, Avenue to Learn (A2L), LearnLink, web pages, capa, Moodle, ThinkingCap, etc.). Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course.

The available information is dependent on the technology used. Continuation in a course that uses on-line elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure, please discuss this with the course instructor.

ON-LINE PROCTORING

Some courses may use online proctoring software for tests and exams. This software may require students to turn on their video camera, present identification, monitor and record their computer activities, and/or lock/restrict their browser or other applications/software during tests or exams. This software may be required to be installed before the test/exam begins.

CONDUCT EXPECTATIONS

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These

expectations are described in the [Code of Student Rights & Responsibilities](#) (the “Code”). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, **whether in person or online**.

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students’ access to these platforms.

MISSED ACADEMIC WORK

Missed Mid-Term Examinations / Tests / Class Participation

Please do not use the online [McMaster Student Absence Form \(MSAF\)](#) as this is for Undergraduate students only. The MBA program will not accept an MSAF.

When students miss regularly scheduled term work which contributes 10% or more to the final grade, for legitimate reasons as determined by the Student Experience – Academic Office (SEAO), the activity necessary to compensate for the missed work will be determined by the course instructor. The compensatory activities assigned will vary with the nature of the course and the missed requirement. They include, but are not restricted to, an alternative assignment, a rescheduled midterm exam, or re-weighting the marks for the missed component to other mark components. Documentation explaining such missed work must be provided to the SEAO within five (5) working days of the scheduled date for completion of the work.

Acceptable reasons for missed work, along with the [Petition for Missed Term Work](#) and the [MBA Student McMaster University Student Health Certificate](#), can be found on the DeGroot MBA Student website (mbastudent.degroot.mcmaster.ca). Please direct any questions about acceptable documentation to the MBA Academic Advisors (askmba@mcmaster.ca).

University policy states that a student may submit a maximum of three (3) [Petition for Missed Term Work](#) per academic year, after which the student must meet with the Director of the program.

If term work is missed without an approved reason, students will receive a grade of zero (0) for that component.

Missed Final Examinations

Students must be available for the duration of the posted exam period regardless of their personal exam schedule. This is to ensure student availability throughout the entire exam period in the event that an exam must be rescheduled due to unforeseen circumstances (university closure, power outage, storm policy, etc.). A student who misses a final examination without valid reason will receive a mark of 0 on the examination.

Students who have missed a final exam for a valid reason can apply to the SEAO to write a deferred examination by submitting an [Application for Deferring a Final Exam](#) with supporting documentation. The application must be made within five days of the scheduled exam.

The [Application for Deferring a Final Exam](#) and the [MBA Student McMaster University Student Health Certificate](#) can be found on the DeGroot MBA Current Student website (mbastudent.degroot.mcmaster.ca)

Deferred examination privileges, if granted, are normally satisfied during the examination period at the end of the following semester. In select cases, the deferred examination may be written at a time facilitated by the SEAO and agreed to by the course instructor.

Requests for a second deferral or rescheduling of a deferred examination will not be considered.

ACADEMIC ACCOMMODATION FOR STUDENTS WITH DISABILITIES

Student Accessibility Services (SAS) offers various support services for students with disabilities. Students are required to inform SAS of accommodation needs for course work at the outset of term. Students must forward a copy of such SAS accommodation to the instructor normally, within the first three (3) weeks of classes by setting up an appointment with the instructor. If a student with a disability chooses NOT to take advantage of an SAS accommodation and chooses to sit for a regular exam, a petition for relief may not be filed after the examination is complete. The SAS website is:

<http://sas.mcmaster.ca>

Students who are leveraging accommodation for tests and exams are supported by the SEAO. These exams are written at the Ron Joyce Centre and do not take place in the Tim Nolan Testing Centre. Correspondence for accommodations is managed via the DSBSAS@mcmaster.ca email address. Students must communicate their intent to leverage accommodations on a test or exam a minimum of 10 business days prior to the assessment.

ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the [RISO](#) policy. Students should submit their request to the SEAO **normally within 10 working days** of the beginning of term in which they anticipate a need for accommodation. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

COPYRIGHT AND RECORDING

Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, **including lectures** by University instructors.

The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

POTENTIAL MODIFICATION TO THE COURSE

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

RESEARCH USING HUMAN SUBJECTS

ONLY IF APPLICABLE

Research involving human participants is premised on a fundamental moral commitment to advancing human welfare, knowledge, and understanding. As a research intensive institution, McMaster University shares this commitment in its promotion of responsible research. The fundamental imperative of research involving human participation is respect for human dignity and well-being. To this end, the University endorses the ethical principles cited in the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans:

<http://www.pre.ethics.gc.ca>

McMaster University has mandated its Research Ethics Boards to ensure that all research investigations involving human participants are in compliance with the Tri-Council Policy Statement. The University is committed, through its Research Ethics Boards, to assisting the research community in identifying and addressing ethical issues inherent in research, recognizing that all members of the University share a commitment to maintaining the highest possible standards in research involving humans.

If you are conducting original research, it is vital that you behave in an ethical manner. For example, everyone you speak to must be made aware of your reasons for eliciting their responses and consent to providing information. Furthermore, you must ensure everyone understands that participation is

entirely voluntary. Please refer to the following website for more information about McMaster University's research ethics guidelines:

<http://reo.mcmaster.ca/>

Organizations that you are working with are likely to prefer that some information be treated as confidential. Ensure that you clarify the status of all information that you receive from your client. You **MUST** respect this request and cannot present this information in class or communicate it in any form, nor can you discuss it outside your group. Furthermore, you must continue to respect this confidentiality even after the course is over.

ACKNOWLEDGEMENT OF COURSE POLICIES

Your registration and continuous participation (e.g. on A2L, in the classroom, etc.) to the various learning activities of MBA XXXX will be considered to be an implicit acknowledgement of the course policies outlined above, or of any other that may be announced during lecture and/or on A2L. **It is your responsibility to read this course outline, to familiarize yourself with the course policies and to act accordingly.**

Lack of awareness of the course policies **cannot be invoked** at any point during this course for failure to meet them. It is your responsibility to ask for clarification on any policies that you do not understand.

COURSE SCHEDULE

B733 C01: BDC Biomedical Entrepreneurship Fall 2023 Course Schedule

DATE	TITLE	CLASS CONTENTS AND REQUIRED READING
WEEK 1 Sept. 11	Understanding Biomedical Entrepreneurship	<p>Lecture</p> <ol style="list-style-type: none"> 1. Introductions and course overview 2. Biotechnology entrepreneurship and seven characteristics of successful biotechnology leaders <p>Lab/seminar</p> <ol style="list-style-type: none"> 1. Team planning 2. Case Studies: Case study methods and toolbox 3. In-Class Activity: A new business idea <p>Required reading:</p>

		<p>(1) A Biotechnology Entrepreneur's Legacy - Henri A. Termeer's Story and his Advice to Entrepreneurs (Henri A. Termeer Pages 17-27) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000024</p> <p>(2) A Biotechnology Entrepreneur's Story: From Start-Up to International Contract Development and Manufacturing Organization (Magda Marquet and François Ferré Pages 29-35) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000036</p>
<p>WEEK 2 Sept. 18</p>	<p>The Human Capital Component</p>	<p>Lecture Building, managing and motivating great teams, and building human relationship networks</p> <p>Lab/seminar Case Study #1: Napo Pharmaceuticals: Triple Bottom Line of People, Planet, and Profits. Questions: (1) Why are so few biotech firms working on neglected diseases? What is the difference between Napo's model and the typical biotech? (2) Why do you think Napo had so many challenges with its commercial partners? (3) What do you think Conte should do next?</p> <p>Required reading: (1) Building, Managing, and Motivating Great Teams (Arthur A. Boni, Gergana Todorova and Laurie R. Weingart Pages 85-98) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000073 (2) Building Human Relationship Networks (Tom D. Walker Pages 99-111) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000085 (3) Mentorship: Why You Need a Team of Mentors to be Successful (Craig Shimasaki Pages 113-120) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000097</p>

<p>WEEK 3 Sept. 25</p>	<p>The Innovative Technology Component Part 1</p>	<p>Lecture Understanding biotechnology product sectors and evaluating technology opportunities</p> <p>Lab/seminar 1. Entrepreneur Interview: A briefing 2. Case Study #2: Proteolix: A “me too” success. Questions: (1) Identify the key challenges to “me too” drugs. (2) What were the drivers of Proteolix’s success? (3) What were some of the key decisions that the Proteolix management team made?</p> <p>Required Reading: 1. Understanding Biotechnology Product Sectors(Craig Shimasaki Pages 123-149) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000103 2. Technology Opportunities: Evaluating the Idea(Craig Shimasaki Pages 151-161) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000115</p>
<p>WEEK 4 Oct. 2</p>	<p>The Innovative Technology Component Part 2</p>	<p>Lecture Understanding biotechnology business models and directing your technology toward a market problem</p> <p>Lab/seminar Biomedical Project: Project orientation; group discussion on the project; topic selection</p> <p>Required Reading 1. Understanding Biotechnology Business Models and Managing Risk (Craig Shimasaki Pages 163-176) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000127 2. Directing Your Technology Toward a Market Problem: What You Need to Know Before Using the Business Model Canvas? (Steven M. Ferguson and Uma S. Kaundinya Pages 199-222) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000139 3. Business Model Innovation https://www.youtube.com/watch?v=B4ZSGQW0UMI</p>
<p>Oct. 9</p>	<p>Thanksgiving</p>	<p>No Class</p>

<p>WEEK 5 Oct. 16</p>	<p>The Commercialization Component 1 — Company Formation</p>	<p>Lecture Company formation, ownership structure, and biotechnology commercialization strategies</p> <p>Lab/seminar Case Study #3: Covid-19 Testing at Everlywell. Questions: (1) From a shareholder perspective, did Cheek do the right thing by pursuing the coronavirus testing? (2) Given the FDA news, what should Cheek do now?</p> <p>Required Reading: 1. Company Formation, Ownership Structure, and Securities Issues (Craig C. Bradley Pages 189-197) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000140 2. Licensing the Technology: Biotechnology Commercialization Strategies Using University and Federal Labs (Steven M. Ferguson and Uma S. Kaundinya Pages 199-222) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000152</p>
<p>WEEK 6 Oct. 23</p>	<p>The Commercialization Component 2 — Intellectual Property protection</p>	<p>Lecture Intellectual property protection strategies for biotechnology innovations</p> <p>Lab/seminar Case Study #4: CV Ingenuity (A) How to Evaluate the Commercial Viability of New Health Care Technologies Questions: (1) Conduct a Six Factors analysis of CVI. What are its strongest and weakest alignments with the Factors of Public Policy, Accountability, Structure, Financing, Technology, and Consumers? (2) Use the checklist in “evaluating the commercial viability of New Health Care Technologies,” to evaluate Duke’s business model, including his fast follower strategy and his decisions to assign two jobs to each employee, involve Covidien as an investor and key supplier, and to conduct his own PMA, and recommend improvements, if needed. *See Regina E. Herzlinger’s “Innovating in Health Care-Framework,” HBS 314-017 contained a description of these six factors; Regina E. Herzlinger’s “Evaluating the Commercial Viability of New Health Care Technologies,” HBS 313-070.</p>

		<p>*Entrepreneur Interview: Interview reports to be handed in on A2L</p> <p>Required Reading: (1) Intellectual Property Protection Strategies for Biotechnology Innovations (Gerry J. Elman and Jay Z. Zhang Pages 223-244) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000164 (2) Interview with Professor Regina Herzlinger on Balancing Entrepreneurship and Corporate Governance with a Prominent Academic Career, August 6, 2020, Mayo Clinic Innovation Exchange. https://www.hbs.edu/faculty/Pages/item.aspx?num=58978</p>
<p>WEEK 7 Oct. 30</p>	<p>The Financial Capital Component</p>	<p>Lecture Raising money and securing venture capital: An entrepreneur's perspective</p> <p>Lab/seminar 1. Entrepreneurship Self-Assessment: A briefing 2. Case Study #5: MedImmune Ventures. Questions: (1) What function should CVC perform for its parent company? (2) What is your assessment of MedImmune Ventures? (3) Should MedImmune Ventures enter Australia? (4) What should MedImmune do with regards to NeuProtect?</p> <p>Required reading: 1. Sources of Capital and Investor Motivations (Craig Shimasaki Pages 247-265) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000176 2. Understanding and Securing Venture Capital: An Entrepreneur's Perspective (Craig Shimasaki Pages 287-298) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000206 3. Your Business Plan and Presentation: Articulating Your Journey to Commercialization (Lowell W. Busenitz Pages 313-324) https://www.sciencedirect.com/science/article/abs/pii/B978012815585100022X</p>
<p>WEEK 8 Nov. 6</p>	<p>Biotechnology Product and Market Development</p>	<p>Lecture Biotechnology products and their customers: developing a successful market strategy</p> <p>Lab/seminar</p>

		<p>1. Entrepreneurship Simulation: A briefing 2. Case Study #6: GenapSys: Business models for the Genome Questions: (1) What do we know about the market for gene sequencers? How do you expect the market to develop? (2) What are the major uncertainties that must be taken into consideration in the market for gene sequencers? (3) Evaluate the three strategic options Esfandyarpour and Rastegar are considering. What has to be true about the market, competitors, and the company’s operating performance for each to be successful? What are the major risks of each? (4) Using the associated exercise, calculate the cumulative cash flow curves for each strategy using the assumptions in the exercise. Which strategy maximizes the value realized by the founders? Which model would you prefer as an investor?</p> <p>Required Reading: 1. Biotechnology Products and Their Customers: Developing a Successful Market Strategy (Craig Shimasaki Pages 481-495) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000322 2. Artificial Intelligence: Emerging Applications in Biotechnology and Pharma (David Sahner and David C. Spellmeyer Pages 399-417) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000292 3 Getting the Word Out: Public Relations Strategies to Support Biotechnology Business Goals (Joan E. Kureczka Pages 513-524) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000346</p>
<p>WEEK 9 Nov. 13</p>	<p>The Latter-Stage Biotechnology Company 1 — Collaboration</p>	<p>Lecture Biotech-Pharma collaboration — A strategic tool</p> <p>Lab/seminar Case Study #7: AquaAdvantage Salmon: Communicating to Build Consumer Confidence Questions: (1) Describe AquaBounty’s current reputation (at the time of the case). (2) Who are the key stakeholders Conley needs to consider when preparing his communications strategy? How can AquaBounty work to build trust with these key stakeholders? Which key stakeholder groups should Conley focus his attention on?</p>

		<p>(3) Consider Conley’s background. What skills or experiences does he bring to his current role that will be valuable during the Canadian launch of AquaAdvantage salmon? What existing relationships with important stakeholders might he be able to leverage?</p> <p>(4) AquaBounty received both negative and positive comments from consumers and public figures after the FDA approval announcement in 2015. Assuming the Health Canada approval leads to similar responses, what strategy should Conley adopt to manage these reactions? When and how should AquaBounty engage in public conversations?</p> <p>Required Reading:</p> <p>1. Biotech-Pharma Collaboration-A Strategic Tool: Case Study of Centocor (Lara V. Marks Pages 553-565) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000371</p> <p>2. Brief overview of drug development from the US Food and Drug Administration and the drugs and health products from the Health Canada: (1) https://www.fda.gov/drugs/development-approval-process-drugs (2) https://www.canada.ca/en/health-canada/services/drugs-health-products.html</p>
<p>WEEK 10 Nov. 20</p>	<p>The Latter-Stage Biotechnology Company 2 — Regulation</p>	<p>Lecture Common biotechnology entrepreneur mistakes and how to avoid them</p> <p>Lab/seminar Entrepreneurship Simulation: Participate in the simulation activity. <i>This week is designed to complete the simulation. There will be mentoring during this class where you meet with the instructor and TA to guide your simulation.</i></p> <p>Required Reading: Common Biotechnology Entrepreneur Mistakes and How to Avoid Them (Craig Shimasaki Pages 605-615) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000413</p>
<p>WEEK 11 Nov. 27</p>	<p>The Latter-Stage Biotechnology Company 3</p>	<p>Lecture Value of corporate culture and ethical considerations for biotechnology leaders</p> <p>Lab/seminar</p>

	<p>— Cultural and Ethical Considerations</p>	<p>Biomedical Project: Meetings for the project <i>This week is designed for teams to finalize their preparations for the final project. There will be formal team meetings during this class where you meet with the instructor to develop your consulting report and presentation.</i></p> <p>* Entrepreneurship Simulation: Simulation reports to be handed in on A2L</p> <p>Required Reading:</p> <p>1. Ethical Considerations for Biotechnology Leaders (Gladys B. White Pages 583-590) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000395</p> <p>2. Company Growth Stages and the Value of Corporate Culture (Craig Shimasaki Pages 527-540) https://www.sciencedirect.com/science/article/abs/pii/B9780128155851000358</p>
<p>WEEK 12 Dec. 4</p>	<p>Final Presentations</p>	<p>Biomedical Project Presentations</p> <p>1. Each group will present their biomedical project results. All group members must participate in the presentation.</p> <p>2. Groups will provide a 15-minute presentation according to final presentation requirements.</p> <p>* Biomedical Project: Project reports to be handed in on A2L</p> <p>* Entrepreneurship Self-Assessment: Self-Assessment papers to be handed in on A2L</p>