

MDSC 517
Biotechnology Business and Profession

Instructor:

Derrick E. Rancourt
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Office Hours/Policy on Answering Student Emails

Please note that all course communications must occur through your @ucalgary email, and I will respond to emails sent via student's @ucalgary emails within 48 hours.

Teaching Assistants:

Alexa Krala (alexa.krala1@ucalgary.ca)

Time and Location:

Lectures: Mondays, Fridays 1:00-2:20 – see D2L for location

Tutorials: Wednesdays 1:00-2:00 – see D2L for location

Learning will occur in both synchronous (i.e., in class or via Zoom, if required) and asynchronous (i.e., students complete on their own time such as chapter reading, watching videos, etc.).

Prerequisite/Co-Requisite:

Registered in BHSC program or permission from instructor.

Course Description:

Are you interested in pursuing a career in biotechnology but don't know where to start? This course is for you. It will introduce students to how the biotechnology sector works and how you can fit into it. Not only will it overview the biotechnology sector from several perspectives (product development, regulatory, intellectual property, market analysis, business, and management), it will also review different career paths in biotech and various career entree strategies. and career perspectives.

Overarching Theme

This course will use a blended learning approach. The Monday class will comprise a flipped classroom approach where students will discuss biotechnology business topics based upon an assigned chapter reading. The Wednesday tutorial will comprise case study/paper review discussions. The Friday class will involve lectures delivered by instructors and peers related to career paths in biotechnology.

Global Objectives

- Understand the biotechnology sector from a business and profession perspective.

Course Learning Objectives

By the end of this course, students will be able to:

- Appreciate the product development process
- Recognize the meaning of markets
- Interpret patents

- Evaluate the investment worthiness of a mid-cap biotech company
- Be familiar of different career paths in the biotechnology sector

Transferable Skill Development:

The work that you will do in MDSC 517 will help you build the following transferable skills:

- **Collaboration:** Work respectfully with others from different backgrounds, cultures, and countries.
- **Verbal Communication:** Learn and share information by presenting, listening, and interacting with others.
- **Creativity and Innovation:** Find different and better ways to do things, being curious, thinking imaginatively.
- **Critical Thinking:** Actively and skillfully conceptualize, apply, analyze, synthesize, and/or evaluate information (data, facts, observable phenomena, and research findings) to make a reasoned judgement or draw a reasonable conclusion.
- **Problem solving:** Identify an issue, find and implement a solution, and assess whether the situation has improved.
- **Project Management:** Conceptualize, initiate, plan and execute a plan to achieve a predetermined goal (project) by effectively prioritizing activities and meeting deadlines.
- **Written Communication:** Share ideas and information by using words, images, and symbols.

Learning Resources

In addition to the required textbook, a link to required readings will be provided in the course D2L site.

Required Textbook

Friedman Y. Building Biotechnology: Business, Regulations, Patents, Law, Politics, Science. Logos Press. 4th Edition (3rd Edition is also acceptable (and cheaper!))

A Note regarding readings

*A list of required readings will be outlined on D2L and links and documents will be made available, where possible. Required readings have been chosen carefully to inform you and enhance the lecture material. **Students are REQUIRED to complete assigned readings BEFORE each lecture.** Instructors will proceed in class on the assumption that students have read completely the assigned readings. Students should be aware that many of the readings they will be assigned may be of an unfamiliar nature and style. Students should allot sufficient time to allow for several reads of the assigned material.*

Learning Technology Requirements

Brightspace (by D2L) is located on the University of Calgary server and will be used extensively for communication with students. **It is the student's responsibility to ensure that they receive all posted communications and documents and that they receive emails sent by instructors or fellow students through D2L.** Only your @ucalgary.ca email address may be linked to D2L. Please ensure that you are regularly checking your @ucalgary.ca account.

Evaluation

The University policy on grading and related matters is described in section F of the 2023-2024 Calendar.

In determining the overall grade in the course, the following weights will be used:

Assignments	Due Date	Grade
Development Plan	Oct 20	20%
Wayfinding Presentation	Varies	20%
Business Plan	Nov 27	20%
Company Evaluation	Dec 8	20%
Discussion	Varies	20%

A Note regarding Writing Assignments:

Writing skills are important to academic study in all disciplines. In keeping with the University of Calgary's emphasis on the importance of academic writing in student assignments (section E.2 of 2023-24 Calendar), writing is emphasized, and the grading thereof in determining a student's mark in this course. The Bachelor of Health Sciences values excellence in writing. Competence in writing entails skills in crafting logical, clear, coherent, non-redundant sentences, paragraphs and broader arguments, as well as skills with the mechanics of writing (grammar, spelling, punctuation). Sources used in research papers must be properly documented. The University of Calgary offers instructional services through the Students' Success Centre's Writing Support Services (<http://www.ucalgary.ca/writingsupport/>) for students seeking feedback on assignments or seeking to improve their general writing skills. Students are **strongly encouraged** to take advantage of these programs.

Grading Scheme:

Letter Grade	Description	Percentage
A+	Outstanding performance	96-100
A	Excellent performance	90-95.99
A-	Approaching excellent performance	85-89
B+	Exceeding good performance	80-84
B	Good performance	75-79
B-	Approaching good performance	70-74
C+	Exceeding satisfactory performance	65-69
C	Satisfactory performance	60-64
C-	Approaching satisfactory performance	57-59
D+	Marginal pass	54-56
D	Minimal pass	50-53
F	Does not meet course requirements	0-49

Missed Components of Term Work:

Late assignments will not be accepted and will automatically receive a mark of zero. There will be NO exceptions to this policy.

It is the agreement of all Faculty and Staff involved in MDSC517 that **extensions will NOT be granted** on any assignment. The only exceptions to this are those in keeping with the University Calendar (debilitating illness, religious conviction, or severe domestic affliction) that are received in writing and with supporting documentation. Please be advised that students should notify the instructor before the assignment deadline to discuss.

<https://www.ucalgary.ca/pubs/calendar/current/e-4.html>

Course Evaluations and Student Feedback

Student feedback will be sought at the end of the course through the Universal Student Rating of Instruction (USRI) and a qualitative student evaluation. Students are welcome to discuss the process and content of the course at any time with the instructor. Students may also address any concerns they may have with Dr. Fabiola Elena Aparicio-Ting, Associate Dean (Undergraduate Health and Science Education) in the Cumming School of Medicine (feapartic@ucalgary.ca).

Attendance

Attendance is recommended as 20% of the final grade is based upon participation in class discussions.

Conduct During Lectures

The classroom should be respected as a safe place to share ideas without judgement - a community in which we can all learn from one another. Students are expected to frame their comments and questions to lecturers in respectful and appropriate language, always maintaining sensitivity towards the topic. Students, employees, and academic staff are also expected to demonstrate behaviour in class that promotes and maintains a positive and productive learning environment.

As members of the University community, students, employees and academic staff are expected to demonstrate conduct that is consistent with the University of Calgary Calendar, the Code of Conduct and Non-Academic Misconduct policy and procedures, which can be found at <https://www.ucalgary.ca/student-services/student-conduct/policy> .

Students are expected to take notes during class and should not rely solely on material supplied by the instructors. Instructors may or may not post lectures notes to D2L, at their individual discretion. Instructors may cover concepts or examples in class that may not be posted to D2L but may be assessed.

Use of Internet and Electronic Communication Devices in Class

The Bachelor of Health Sciences program aims to create a supportive and respectful learning environment for all students. The use of laptop and mobile devices is acceptable when used in a manner appropriate to the course and classroom activities. However, research studies have found that inappropriate/off-topic use of electronic devices in the classroom negatively affects the learning of others during class time.

Students are responsible for being aware of the University's Internet and email use policy, which can be found at <https://www.ucalgary.ca/legal-services/university-policies-procedures/acceptable-use-electronic-resources-and-information-policy>.

UNIVERSITY OF CALGARY POLICIES AND SUPPORTS

Copyright

All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright (<https://www.ucalgary.ca/legal-services/university-policies-procedures/acceptable-use-material-protected-copyright-policy>) and requirements of the Copyright Act (<https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>) to ensure they are aware of the consequences of unauthorized sharing of course materials (including instructor notes, electronic versions of textbooks, etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy <https://www.ucalgary.ca/pubs/calendar/current/k.html>.

Instructor Intellectual Property

Course materials created by instructors (including course outlines, presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the instructor. These materials may **NOT** be reproduced, redistributed or copied without the explicit consent of the professor. **The posting of course materials to third party websites such as note-sharing sites without permission is prohibited.** Sharing of extracts of these course materials with other students enrolled in the course **at the same time** may be allowed under fair dealing.

Academic Accommodations

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The Student Accommodations policy is available at <https://ucalgary.ca/student-services/access/prospective-students/academic-accommodations>. Students needing an accommodation based on disability or medical concerns should contact Student Accessibility Services (SAS) in accordance with the Procedure for Accommodations for Students with Disabilities (<https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf>). SAS will process the request and issue letters of accommodations to instructors. For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/ .

Students who require an accommodation in relation to their coursework based on a protected ground other than disability should communicate this need in writing to Dr. Dr. Fabiola Elena Aparicio-Ting (feapartic@ucalgary.ca) Associate Dean (Undergraduate Health and Science Education).

Academic Misconduct

The University of Calgary is committed to the highest standards of academic integrity and honesty. The University of Calgary has created rules to govern all its members regarding the creation of knowledge and the demonstration of knowledge having been learned.

Academic Misconduct refers to student behaviour that compromises proper assessment of a student's academic activities and includes (but is not limited to): cheating, fabrication, falsification, plagiarism, unauthorized assistance, failure to comply with an instructor's expectations regarding conduct required of students completing academic assessments in their courses, and failure to comply with exam regulations applied by the Registrar. **It also includes using of third party websites/services to access past/current course material, essay/assignment writing services, or real-time assistance in completing assessments, seeking answers to assessment questions and similar, whether paid, bartered or unpaid.**

For information of the Student Academic Misconduct Policy and Procedures, please visit; <https://www.ucalgary.ca/legal-services/university-policies-procedures/student-academic-misconduct-policy>.

Additional information is available on the Academic Integrity website at: <https://ucalgary.ca/student-services/student-success/learning/academic-integrity>.

Recording of Lectures

Audio or video recording of lectures (or similar) is prohibited except where explicit permission has been received from the instructor.

Freedom of Information and Protection of Privacy Act

Student information will be collected in accordance with typical (or usual) classroom practice. Students' assignments will be accessible only by the authorized course faculty. Private information related to the individual student is treated with the utmost regard by the faculty at the University of Calgary

Appeals

If there is a concern with the course, academic matter or a grade, first communicate with the instructor. If these concerns cannot be resolved, students can proceed with an academic appeal, as per Section I of the University Calendar. Students must follow the official reappraisal/appeal process and may contact the Student Ombuds' Office (<http://www.ucalgary.ca/student-services/ombuds>) for assistance with this and with any other academic concerns, including academic and non-academic misconduct. Students should be aware that concerns about graded term work may only be initiated **within 10 business days** of first being notified of the grade. <https://www.ucalgary.ca/pubs/calendar/current/i-2.html>

Sexual and Gender-Based Violence Policy

The University recognizes that all members of the University Community should be able to learn, work, teach and live in an environment where they are free from harassment, discrimination, and violence. The University of Calgary's sexual violence policy guides us in how we respond to incidents of sexual violence, including supports available to those who have experienced or witnessed sexual violence, or those who are alleged to have committed sexual violence. It provides clear response procedures and timelines, defines complex concepts, and addresses incidents that occur off-campus in certain circumstances. Please see the policy available at <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Sexual-and-Gender-Based-Violence-Policy.pdf>.

Resources for Support of Student Learning, Success, Safety and Wellness

Student Success Centre <http://www.ucalgary.ca/ssc/>
Student Wellness Centre <http://www.ucalgary.ca/wellnesscentre/>
Student Advocacy and Wellness Hub (CSM)
<https://cumming.ucalgary.ca/mdprogram/current-students/student-advising-wellness>
Distress Centre <http://www.distresscentre.com/>
Library Resources <http://library.ucalgary.ca>

Wellness and Mental Health Resources

The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the excellent mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (<https://www.ucalgary.ca/wellnesscentre/services/mental-health-services>) and the Campus Mental Health Strategy (<http://www.ucalgary.ca/mentalhealth/>).

Student Ombuds' Office

The Student Ombuds' Office supports and provides a safe, neutral space for students. For more information, please visit www.ucalgary.ca/student-services/ombuds/ or email ombuds@ucalgary.ca

BHSc Student Faculty Liaison Committee (SFLC)

The BHSc SFLC, with elected representatives from all majors, serves to raise issues of interest to BHSc students to the program administration, including items pertaining to curriculum, scheduling and events. A list of current representatives can be found on the BHSc website.

Student Union (SU) Information

The SU Vice-President Academic can be reached at (403) 220-3911 or suvpaca@ucalgary.ca; the SU representatives for the Cumming School of Medicine can be reached at medrep1@su.ucalgary.ca or medrep2@su.ucalgary.ca.

Student Success Centre

The Student Success Centre provides services and programs to ensure students can make the most of their time at the University of Calgary. Our advisors, learning support staff, and writing support staff assist students in enhancing their skills and achieving their academic goals. They provide tailored learning support and advising programs, as well as one-on-one services, free of charge to all undergraduate and graduate students. For more information visit: <https://www.ucalgary.ca/student-services/student-success>

Emergency Evacuation/Assembly Points

As part of the University of Calgary Emergency Evacuation plan, students, faculty, and staff should locate the closest Assembly Point in case of Fire Alarm. Safety signage is posted throughout the campus showing the locations and the possible route to these locations. All students, faculty, and staff are expected to promptly make their way to the nearest Assembly Point if the Fire Alarm is activated. No one is to return into campus facilities until an all clear is given to the warden in charge of the Assembly Area. For more information, see <https://www.ucalgary.ca/emergencyplan/building-evacuation/assembly-points>

Safewalk

Campus security will escort individuals, day or night, anywhere on campus (including McMahon Stadium, Health Sciences Centre, Student Family Housing, the Alberta Children's Hospital and the University LRT station). Call 403-220-5333 or visit <http://www.ucalgary.ca/security/safewalk>. Use any campus phone, emergency phone or the yellow phone located at most parking lot pay booths. Please ensure your personal safety by taking advantage of this service.

Class Schedule

Date	Module / Topics	Readings	Assignments & Due Dates
Sept 8	First Day of Class		
Sept 11	Icebreaker	Chapters 8 Regulatory	
Sept 13	Regulatory Paper	doi: 10.5912/jcb675	Discussion Lead 1
Sept 15	Teamwork		Team Charter
Sept 18	Tech Brainstorming	Chapter 4 Drug Development	
Sept 20	Drug Development Paper	http://doi.org/10.7880/abas.0160224a	Discussion Lead 2
Sept 22	Biotech Careers	Career Compendium	
Sept 25	Business Model Template	Chapter 10 Fundamentals	Company Choice
Sept 27	Business Model Paper	https://doi.org/10.5912/jcb840	Discussion Lead 3
Sept 29	Know Yourself	Know Yourself Chapters	Workbook
Oct 2	Patents	Chapter 7 Patents	
Oct 4	Patent Paper	doi: 10.5912/jcb721	Discussion Lead 4
Oct 6	LinkedIn	Explore Options Chapter	Career Choice
Oct 9	Thanksgiving		
Oct 11	Company Creation Paper	doi: 10.5912/jcb753	Discussion Lead 5
Oct 13	IDP	Get Focused Chapter	
Oct 16	Licensing	Chapter 14 Licensing, Alliances, Mergers	
Oct 18	Licensing Paper	doi: 10.5912/jcb736	Discussion Lead 6
Oct 20	R&D Discussions		IDP
Oct 23	Marketing	Chapter 13 Marketing	
Oct 25	Marketing Paper	doi: 10.5912/jcb748	Discussion Lead 7
Oct 27	Market Discussions		
Oct 30	Valuation	Chapter 11 Finance	
Nov 1	Venture Capital	doi: 10.5912/jcb704	Discussion Lead 8
Nov 3	IP Discussions		
Nov 6	Finance Discussions	Chapter 12 Research & Development	
Nov 8	Management Paper	doi: 10.1057/jcb.2008.48	Discussion Lead 9
Nov 10	Informational Interviews	Take Action Chapter	
Nov 13	Reading Week		
Nov 15	Reading Week		
Nov 17	Reading Week		
Nov 20	Strategic Planning	Chapter 15 Managing Biotech	
Nov 22	Building Biotech Paper	doi: 10.5912/jcb70	Discussion Lead 10
Nov 24	Wayfinding Presentations		
Nov 27	Wayfinding Presentations	Chapter 17 Building Biotech	Team Business Plan
Nov 29	Investment Paper	doi: 10.5912/jcb717	Discussion Lead 11
Dec 1	Wayfinding Presentations		
Dec 4	Wayfinding Presentations		
Dec 6	TA debriefing	Last Day of Class	
Dec 8			Company Evaluation