The University of Calgary
Bachelor of Health Sciences
Cumming School of Medicine

Academic Year 2025-2026

MDSC 308
Interdisciplinary Approaches to Research

Course Coordinator	Dr. Donna Slater	dmslater@ucalgary.ca
Instructors:		
Health and Society	Dr Rui Fu	rui.fu@ucalgary.ca
Bioinformatics	Dr. Jason de Koning	jason.dekoning@ucalgary.ca
Biomedical Sciences	Dr. Janice Braun	braunj@ucalgary.ca
Research Ethics	Dr. Juliet Guichon	guichon@ucalgary.ca

Office Hours/Policy on Answering Student Emails
Faculty and teaching assistants are available to meet by appointment. Students are strongly encouraged to attend TA Office Hours and questions are welcome. For unresolved questions and substantive issues, students can contact the TA or instructor via email and can expect a response within **48 hours** (excluding weekends and statutory holidays). Substantive issues should be addressed by appointment. **ALL communication must occur through your @ucalgary email address.**

Teaching Assistants:		
Health and Society	Olivia Buth	olivia.buth@ucalgary.ca
	Olivier Lampron	Olivier.lampron@ucalgary.ca
Bioinformatics	Afarinesh (Afi) Panahy	afarinesh.panahy@ucalgary.ca
Biomedical Sciences	Shannon Snelling	Shannon.snelling@ucalgary.ca
Research Ethics	TBD	

Time:
Tuesdays and Thursdays 12:00 pm – 2:45 pm
Class start Tuesday, September 2, 2025 – last class Tuesday, April 14, 2026

Prerequisite/Co-Requisite:
MDSC 205 and admission to the BHSc. Honours program

Course Description:
An introduction to the questions, methods, research techniques uses and ethics arising across the different majors of Biomedical Sciences, Bioinformatics and Health and Society. Sessions will support the development of a broad perspective on health issues. A component of the course will also introduce students to principal cases, history and rules of research ethics.
Overarching Theme

- To provide an understanding of the primary discipline specific topics, approaches and tools for each stream;
- To introduce current health issues and use these as an example of the applications for all three streams; and
- To introduce the basic concepts of scientific integrity and the ethics of research on humans

Course Learning Outcomes

Health and Society:

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

1. Use various definitions of human health and disease to appraise and evaluate health interventions.
2. Use appropriate socioecological models and core principles of population health and inequities to appraise, evaluate and propose health interventions.
3. Evaluate when the quantitative, qualitative, or mixed methods research paradigms are more appropriate for investigating a particular research question or assessing an intervention.
4. Use structured literature search techniques on a health inequity issue of interest and apply the appropriate aforementioned principles to evidence and propose a new research agenda.

Bioinformatics:

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

1. Understand the central role that bioinformatics, computational biology, and emerging artificial intelligence tools play in modern biomedical research.
2. Describe the relationship between personalized medicine, genomics, and computational biology.
3. Understand how computational prediction can guide experimental biology and vice versa.
4. Describe the fundamental evolutionary processes that generate and maintain genetic variation in natural populations.
5. Understand the role of natural selection in the biology of cancer.

Biomedical Sciences

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

1. Understand why you need a business plan.
2. Understand the hurdles past and present in addressing different neurodegenerative disorders.
3. Know the business strategies of select biotechnology and pharmaceutical companies.
4. Indicate the opportunity and competitive differentiators of companies.
5. Evaluate primary literature to assess current research activities.

Research Ethics

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

1. Know the significance of key ethical concepts regarding research ethics;
2. Describe the difference between scientific integrity and clinical research ethics;
3. Apply existing rules to examples concerning scientific integrity; and
4. Make a well-written and convincing argument regarding research ethics in an actual historical research study.

Transferable Skill Development:

Many of the skills and abilities that you are developing in your coursework are transferable to the workforce, graduate and professional studies and other facets of life. Employers seek applicants with transferable skills because such applicants can be an asset in the workplace, regardless of industry or sector. Transferable skills are core skills for your success in building your future career.

The work that you will do in MDSC 308 will help you develop 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, by being curious and 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 to draw a reasonable conclusion.
- **Digital Skills**: Use digital technologies like computers, social media, virtual meeting platforms, and the internet.
- **Information Literacy**: Find, understand, and use information presented through words, symbols, and images
- **Numeracy**: Use mathematical information such as numbers, symbols, words, and graphics to perform tasks.
- **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

A Note regarding readings Course instructors will provide a list of required readings and viewings that will be outlined on D2L, and links and documents, where possible. The instructors have carefully chosen the required readings and viewings to inform students and to 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 the assigned readings completely. Students should be aware that many of the readings might be of an unfamiliar nature and style. Students should allot sufficient time to read the assignment material several times.

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 email messages 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.

A laptop, desktop, tablet or mobile device is required for D2L access. If you need help accessing or using D2L, please visit the Desire2Learn resource page for students: http://elearn.ucalgary.ca/d2l-student/.

Evaluation

The University policy on grading and related matters is described in Section F of the 2025-2026 Calendar. In determining the overall grade in the course, the following weights will be used:

15% Health and Society

- 6.5% **Fall Term Assignment –** October 2, 2025 (by NOON via D2L Dropbox)
  Social determinants and PHAC intervention planning framework
- 6.5% **Winter Term Assignment –** January 27, 2026 (by 11:59pm via D2L)
  Research agenda policy brief
- 2% **Participation** - In-class exercises (ongoing)

15% Bioinformatics

- 3.75 % **Computer lab 1** (Fall term)
  Lab assignments will be due 1 week from the laboratory date
- 3.75 % **Computer lab 2** (Fall term)
  Lab assignments will be due 1 week from the laboratory date
- 3.75 % **Computer lab 3** (Winter term)
  Lab assignments will be due 1 week from the laboratory date
- 3.75 % **Computer lab 4** (Winter term)
  Lab assignments will be due 1 week from the laboratory date

15% Biomedical Sciences

- Pass/Fail **Business Plan Development Certificate [mandatory]**
  Due Oct 21, by NOON via D2L
- 7.5% **Fall Term Assignment** – Due Nov 7, 2025 (by NOON via D2L)
  Podcast transcript (i.e., this assignment is a written question and answer assignment) exploring past and future challenges of the assigned research topic
- 7.5% **Winter Term Assignment** – Due March 13, 2026 (by NOON via D2L)
  Details to be provided in the Winter Term

25% Introduction to Research Ethics

- 12.5% **Scientific Integrity**
  Exam, Thursday, Dec 4, 2025, to begin at 12:15pm
- 12.5% **Clinical Research Ethics**
  In class assignment, Tuesday, April 14 to begin 12:15 pm

10% Interdisciplinary Assignment #1

- Health Promotion Poster with Annotated Bibliography due Wednesday Oct 29, 2025 (by NOON via D2L Dropbox)
- Presentations Oct 30 and Nov 4, 2025
- Peer Evaluations due Nov 5, 2025, by 4:00pm (via D2L Dropbox)

20% Interdisciplinary Assignment #2

- Academic Poster with Annotated Bibliography due March 16, 2026 (by 11:59pm via D2L Dropbox)
- Presentations March 17, 19 and 24, 2026
- Peer Evaluations due March 25, 2026, by 11:59pm (via D2L Dropbox)

Each instructor will provide guidelines for the submission of individual assignments.
**There will be no Registrar-scheduled December or April exams for this course although you might be required to submit papers during these periods.

Students are required to complete individual and group assignments of the course. **Students who do not complete and submit all major individual components, which include the two biomedical papers, the Business Plan Development Certificate, two health and society papers, and the ethics exam and ethics in-class paper, in addition to contributing actively to the group assignments (both written products and presentations) will be considered as not having completed the course**; this outcome will be reflected on the student's official transcript as a failing (F) grade.

Students who do not achieve an average score of 65% on the Fall term BMED and HSOC papers and the ethics paper will be expected to participate in additional writing support initiatives to prepare them for subsequent assignments and future courses.

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 2025-26 Calendar), this course emphasizes writing, 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 details of writing (grammar, spelling, punctuation) and the mechanics of using pen and paper in the examination room. Sources used to complete each assessment must be properly documented, unless otherwise noted by the instructor. 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.

Faculty members who are involved in MDSC 308 are agreed that **extensions will NOT be granted** on any assignment or quizzes. The only exceptions to this policy are those consistent with the University Calendar (debilitating illness, religious conviction, or severe domestic affliction), evidence of which must be received in writing. To qualify for an exception, the student must provide supporting documentation to the instructor.

Course Evaluations and Student Feedback
Student feedback will be sought at the end of the course through the new UCalgary Course Experience Survey 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 Aparicio-Ting, Associate Dean (Undergraduate Health and Science Education) in the Cumming School of Medicine (feaparic@ucalgary.ca).

Attendance
The instructors recommend that students attend class regularly in order to succeed in *MDSC 308*. 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. In-class discussion and all content presented in class, including concepts and examples, can constitute substantial learning and can be considered for assessment.

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://ucalgary.ca/student-services/student-conduct/policy

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. Students may use laptops and mobile devices in a manner appropriate to the course and classroom activities. However, research studies have found that inappropriate and 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

Use of Artificial Intelligence Tools
Generative Artificial Intelligence (AI), and specifically foundational models that can create writing, computer code, and /or images using minimal human prompting includes not only GPT-4 (and its siblings ChatGPT and Bing), but many writing assistants that are built on this or similar AI technologies.

Students may use artificial intelligence tools, including generative AI, in **MDSC 308**. **However, students are ultimately accountable for the work they submit**. Students may choose to use generative artificial intelligence tools as they work through the assignments in this course; this use must be documented in an appendix for each assignment. The documentation should include what tool(s) were used, how they were used, and how the results from the AI were incorporated into the submitted work. **Failure to cite the use of AI generated content in an assignment/assessment will be considered a breach of academic integrity and subject to Academic Misconduct procedures.** Please see this library guide for how to cite the use of AI tools: https://libguides.ucalgary.ca/c.php?g=733971&p=5302331

Declaration of Generative AI and AI-assisted technologies in the writing process
During the preparation of this work I used ..... in order to improve language and readability. After using this tool/service, I reviewed and edited the content as needed and take full responsibility for the content of the assignment.

Students **are not allowed** to upload class slides, assignment instructions, or other course materials to AI tools or platforms. These are the intellectual property of the course instructor (IP); uploading these to and AI platform may breech IP rules since some of these sites may use these as training/output data.

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/legal-services/university-policies-procedures/student-non-academic-misconduct-policy

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).

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. Fabiola Aparicio-Ting (feaparic@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) by students 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://calendar.ucalgary.ca/pages/e31a7115dca740ec83579e946d4a4193

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/university-policies-procedures/sexual-and-gender-based-violence-policy

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 students 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/risk/emergency-management/drills/assembly-points-and-evacuation-maps

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.