MDSC 308
Interdisciplinary Approaches to Research

Course Coordinator:

Dr. Ebba Kurz, PhD

Instructors:

Biomedical Sciences

Dr. Ebba Kurz, PhD
Associate Dean (Undergraduate Health and Science Education)
Director, Bachelor of Health Sciences Program
Associate Professor, Physiology and Pharmacology
kurz@ucalgary.ca

Teaching Assistant:
Ms. Rachel Kratofil   rachel.kratofil@ucalgary.ca

Bioinformatics

Dr. Jason de Koning, PhD
Graduate Program Director, Biochemistry and Molecular Biology (Bioinformatics)
Assistant Professor, Biochemistry and Molecular Biology
jason.dekoning@ucalgary.ca

Teaching Assistant:
TBA

Health and Society

Dr. Reed Beall, PhD
Assistant Professor, Community Health Sciences
reed.beall@ucalgary.ca

Teaching Assistant:
Fall term: Sara Orenstien (sara.orenstein@ucalgary.ca)
Winter term: TBD

Research Ethics

Dr. Juliet Guichon, SJD
Assistant Professor, Community Health Sciences
guichon@ucalgary.ca

Teaching Assistant:
TBD

Office Hours/Policy on Answering Student Emails
Faculty and teaching assistants are available to meet over Zoom by appointment.

Students contacting the instructors or teaching assistants via email 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.

Time and Location
Tuesdays and Thursdays 12:00pm – 2:50pm

Fall term: via Zoom; classes held synchronously; may or may not be recorded
Winter term: format to be determined

Please consult the schedule or D2L for current information.

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 theories and methods in bioethics.

In the context of significant current health issues and to gain a deeper appreciation of the breadth of research perspectives, students will be introduced to the scientific disciplines represented by the three major streams of the Bachelor of Health Sciences program and will explore each stream's approach to generating research questions and the methodologies used to address them. They will also be introduced to the norms related to the ethical conduct of research.

Global Objectives
- 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 a context example of the applications for all three streams
- To introduce basic concepts in scientific integrity and the ethics of research on humans

Learning Objectives:

Biomedical Sciences
By the end of this course, students will be able to:
1. Understand the role vaccines play in public health.
2. Understand how vaccines are made, how they confer immunity and hurdles in their development.
3. Identify preventable causes of cancer.
4. Know the principles underlying cancer causation.
5. Evaluate primary literature to assess the evidence supporting classification of carcinogens.

Bioinformatics

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

1. Understand the central role that bioinformatics and computational biology plays 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.

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, including for COVID-19
2. Use appropriate socioecological models and core principles of population health and inequities to appraise, evaluate and propose health interventions, including for COVID-19.
3. Discuss positionality, intersectionality, interdisciplinarity and these concepts' relevance in a scientific research enterprise context, including public health.
4. Evaluate when the quantitative, qualitative, or mixed methods research paradigms are more appropriate for investigating a particular research question or assessing an intervention
5. Use systematic literature search techniques on a health inequity issue of interest and apply the appropriate aforementioned principles to evidence and propose a new research agenda.

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 case examples concerning scientific integrity; and
4. Make a well-written and convincing argument regarding research ethics in an actual historical research study.

Readings

A list of required readings and viewings will be outlined on D2L and links and documents will be made available, where possible. Required readings and viewings have been chosen carefully to inform you and enhance the lecture material. **Students are REQUIRED to complete assigned readings BEFORE each lecture. The instructor will stipulate whether the viewing is to take place before or during the class.** 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 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 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.

In order to engage in learning experiences successfully at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:
- A computer with a supported operating system, as well as the latest security and malware updates;
- A current and updated web browser;
- Webcam (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled; and
- Broadband internet connection.

Most current laptops will have a built-in webcam, speaker and microphone.
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/.

Brightspace by Desire2Learn (D2L)
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Evaluation
The University policy on grading and related matters is described in section F of the 2020-2021 Calendar.

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

       15%   Biomedical Sciences
- 7.5%   Fall Term Assignment
paper exploring challenges in vaccine development
Due Tuesday, October 6, 2020

- 7.5%   Winter Term Assignment
  - details to be provided in the Winter term
  - **Due: February 25, 2021**

       15%   Bioinformatics

- 3.75 %   Computer lab 1
Lab assignments will be due 1 week from the laboratory date
Due: **October 6 or 8**
- 3.75 %   Computer lab 2
Lab assignments will be due 1 week from the laboratory date
Due: October 13 or 15
- 3.75 %   Computer lab 3
Lab assignments will be due 1 week from the laboratory date
Due: March 30 or April 1

- 3.75 %   Computer lab 4
  Lab assignments will be due 1 week from the laboratory date
  Due: April 6 or 8

Group assignments and laboratory submission instructions will be provided at the beginning of the fall unit on September 24.

15%   Health and Society
- 7 %   Fall Term Assignment
  Paper exploring social determinants of health and health promotion strategies
  Due Thursday, November 19, 2020 (by NOON via D2L Dropbox)

- 6 %   Winter Term Assignment
  Research agenda policy brief
  Due: Tuesday, March 25, 2021

- 2 %   Participation
  Based on participation on in-class discussions and small group work

10%   Interdisciplinary Assignment #1
   Health Promotion Poster
   Due November 2, 2020 (by NOON via D2L Dropbox)
   Presentations November 3 & 5, 2020

20%   Interdisciplinary Assignment #2
   Presentations April 8, 13 & 15, 2021
   Group Paper Due April 16, 2021 (by NOON via D2L Dropbox)

25%   Introduction to Research Ethics

   12.5% Scientific Integrity
      Exam, December 8, 2020, 12:15pm

   12.5% Clinical Research Ethics
      Paper due February 1, 2021 (by NOON 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 may be required to submit papers during these periods.

Students who do not complete all major components of the course will be considered as not having completed the course; this outcome will be reflected on the student's official transcript as 'Incomplete'.

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 2020-21 Calendar), writing is emphasized, as is 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 regarding the mechanics of writing (grammar, spelling, punctuation). The University of Calgary offers a number of instructional services through the Students' Success Centre's Writing Support Services (http://www.ucalgary.ca/writingsupport/) for students who seek comments on assignments or 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
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	Did 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 <u>NOT</u> 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 Universal Student Rating of Instruction (USRI) and a qualitative student evaluation for each instructor. Students are welcome to discuss the process and content of the course at any time with the instructor or course coordinator.

Guidelines for Zoom Sessions

Zoom is a video conferencing program that will allow us to meet at specific times for a 'live' video conference, so that we can have the opportunity to meet each other virtually and discuss relevant course topics as a learning community.

To help ensure Zoom sessions are private, do not share the Zoom link or password with others, or on any social media platforms. Zoom links and passwords are intended only for students registered in the course. Zoom recordings and materials presented in Zoom, including any teaching materials, must not be shared, distributed or published without the instructor's permission.

The use of video conferencing programs relies on participants to act ethically, honestly and with integrity; and in accordance with the principles of fairness, good faith, and respect (as the Code of Conduct). When entering Zoom or other video conferencing sessions, you play a role in helping create an effective, safe and respectful learning environment. Please be mindful of how your behaviour in these sessions might affect others. Participants are required to use names officially associated with their UCID (legal or preferred names listed in the Student Centre) when engaging in these activities. Instructors/moderators may remove those whose names do not appear on class rosters. Non-compliance may be investigated under relevant University of Calgary conduct policies. If participants have difficulties complying with this requirement, then they should email the instructor of the class explaining why, so the instructor might consider whether to grant an exception, and on what terms. For more information on how to gain the most from your zoom sessions, please visit: https://elearn.ucalgary.ca/guidelines-for-zoom/.

If you are unable to attend a Zoom session, please contact your instructor to arrange an alternative activity (where available). Please be prepared, as best as you are able, to join class in a quiet space that will allow you to be fully present and engaged in Zoom sessions. Students will be advised by their instructor when they are expected to turn on their webcam (such as for group work, presentations, etc).

The instructor may record online Zoom class sessions for the purposes of supporting student learning in this class – such as making the recording available for review of the session or for students who miss a session. Students will be advised before the instructor initiates a recording of a Zoom session. These recordings will be used to support student learning only.

Policies Governing the Course:

Attendance
Given that part of your grade includes in-class participation, it is important that you make every effort to attend all sessions. We request that you notify the instructor responsible for a given session directly via email for any extended absences.

Conduct During Lectures
This course might include the involvement of a number of guest lecturers to cover adequately the depth and breadth of the material with some expertise. Students are expected to conduct themselves in a mature and courteous manner during ALL lectures. Students are expected to frame their comments and questions to lecturers in respectful and appropriate language, always maintaining sensitivity towards the topic.

Students are expected to take notes during each session and should not rely solely on material supplied by the instructors.

Electronic Devices
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 both the user and those sitting nearby.

Students are responsible for being aware of the University's Internet and email use policy, which can be found at https://www.ucalgary.ca/policies/files/policies/electronic-communications-policy.pdf

UNIVERSITY OF CALGARY POLICIES AND SUPPORTS

Copyright
All students are required to reach the University of Calgary policy on Acceptable Use of Material Protected by Copyright (https://www.ucalgary.ca/policies/files/policies/acceptable-use-of-material-protected-by-copyright-policy.pdf) 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/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities.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 their instructor.

SAS will process the request and issue letters of accommodations to instructors. For additional information on support services and accommodations for students with disabilities, please visit www.ucalgary.ca/access/ .

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.

For information of the Student Academic Misconduct Policy and Procedures, please visit;
https://ucalgary.ca/policies/files/policies/student-academic-misconduct-policy.pdf
https://ucalgary.ca/policies/files/policies/student-academic-misconduct-procedure.pdf

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 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

MEDIA RECORDING
Please refer to the following statement on media recording of students: https://elearn.ucalgary.ca/wp-content/uploads/2020/05/Media-Recording-in-Learning-Environments-OSP_FINAL.pdf

Media recording for lesson capture

The instructor may use media recordings to capture the delivery of a lecture. These recordings are intended to be used for lecture capture only and will not be used for any other purpose. Although the recording device will be fixed on the Instructor, in the event that incidental student participation is recorded, the instructor will ensure that any identifiable content (video or audio) is masked, or will seek consent to include the identifiable student content to making the content available on University approved platforms.

Media recording for the assessment of student learning
The instructor may use media recordings as part of the assessment of students. This may include but is not limited to classroom discussions, presentations, clinical practice, or skills testing that occur during the course. These recordings will be used for student assessment purposes only and will not be shared or used for any other purpose.

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/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 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/policies/files/policies/sexual-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/
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/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 help ensure your personal safety by taking advantage of this service.