

**MDSC 415**  
**Introduction to Epidemiology**

**Instructor:**

Fabiola Aparicio-Ting, MPH PhD  
Community Health Sciences  
Cumming School of Medicine  
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**Office Hours/Policy on Answering Student Emails**

Please book appointments by email. Email communications with the instructor and the TA are welcome. All efforts will be made to respond to emails within 48 hours. Substantive issues are to be addressed in person, either in class or during an appointment.

**Teaching Assistant:**

Kaylee Ramage  
PhD Candidate, Epidemiology  
Community Health Sciences, Cumming School of Medicine  
[kaylee.ramage@ucalgary.ca](mailto:kaylee.ramage@ucalgary.ca)

**Time and Location:**

Tuesdays & Thursdays 3:30pm – 4:45pm  
1405B, Health Science Centre  
Foothill Campus

Please consult course schedule to confirm location of individual sessions.

**Prerequisites:**

Enrolment in the Bachelor of Health Science program and MDSC 308 or consent from the course instructor.

**Course Description:**

This course will introduce students to the basic concepts of epidemiology needed to understand and critically analyze research pertaining to health and disease in populations and to develop health research literacy. Methods used in descriptive and analytic epidemiological studies, including the design, analysis and interpretation of results for observational studies and clinical trials will be discussed. Case studies and contemporary events will be used to illustrate epidemiology in action and to highlight the social aspects of applying epidemiology in public health.

**Overarching Theme**

Students will be introduced to sub-disciplines within Epidemiology, which may include Social Epidemiology, Infectious Disease Epidemiology, Cancer Epidemiology and Genetic Epidemiology. This course has been designed to provide students with opportunities to practice and refine skill sets, including: written responses and critical analysis of published research.

## Global Objectives

To foster excitement and interest in epidemiology in an interactive classroom environment that is positive, engaging and intellectually challenging.

## Learning Objectives

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

1. Illustrate the interplay between epidemiology and population and public health using examples.
2. Define and correctly use epidemiological terms and vocabulary.
3. Discuss disease causation, statistical associations and causal inference.
4. Calculate and interpret measures of disease frequency and cite their strengths and limitations.
5. Identify sources of bias and confounding in epidemiological research.
6. Discuss the design and methodology of each of the observational study designs and identify the strengths and limitations of each.
7. Identify, estimate and interpret the appropriate measures of association for each of the observational study types.
8. Critically analyze health research, particularly observational research on human populations.

## Required Textbooks

*Gordis, L. Epidemiology, 6th Edition. (2018). Philadelphia: Elsevier Saunders.*

*This book is available for purchase from the University of Calgary Medical Bookstore.*

## Recommended Textbooks/Readings

*A Dictionary of Epidemiology, 4th Edition. (2001). Last JM (editor). New York, NY; Oxford University Press.*

## 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.

## Evaluation

The University policy on grading and related matters is described in section F of the 2019-2020 Calendar.

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

Evaluation Activity	Percentage of Grade	Due Date	Learning Objectives Addressed
Critical analysis assignment #1	15%	February 13, 2020	#1, #2, #4
Critical analysis assignment #2	20%	March 26, 2020	#2, #5, #6, #7, #9
Critical analysis assignment #3	20%	April 9, 2020	#2, #3, #5, #7, #8, #9
Class participation	10%	Ongoing	all
Final exam	35%	Scheduled by the Registrar	all

**Registrar-Scheduled Final Examination:**

The final examination will be cumulative and closed-book and will contain both multiple choice and short answer questions. Only a non-programmable calculator will be allowed. Consult Section G of the University of Calgary Calendar for rules governing final examinations.

A student's final grade for the course is the sum of the separate assignments. It is not necessary to pass each assignment separately in order to pass the course.

**Grading Scheme:**

Letter Grade	Description	Percentage
A+	Outstanding performance	97-100
A	Excellent performance	90-96
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:**

**At each instructor's discretion, late assignments will not be accepted and will automatically receive a mark of zero. There will be NO exceptions to this policy.**

**Extensions will NOT be granted** on any assignment or quizzes. 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. Traffic jams and late or full buses are common events in Calgary and are NOT acceptable reasons for late arrivals to class, meetings and examinations. Please note that while absences are permitted for religious reasons, students are responsible for providing advance notice and adhering to other guidelines on this matter, as outlined in the University Calendar (<https://www.ucalgary.ca/pubs/calendar/current/e-4.html>).

**Brightspace by Desire2Learn (D2L)**

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.

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/>.

## **Policies Governing the Course:**

### **Attendance**

It is important that you make every effort to attend all sessions since much of the learning in this course will be gained through in-class discussions. Marks for participation cannot be gained unless you are in attendance. Please notify the instructor directly via email for any extended absences.

### **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 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 class 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 to refrain from accessing websites that may be distracting for fellow learners (i.e. personal email, Facebook, YouTube).

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>

Cell phones (or similar devices) should **be turned off** (not merely silent) upon entering the classroom. Sending/receiving text messages or leaving the class to take calls is disruptive to the entire class and will not be tolerated unless absolutely necessary. Students who disregard this rule during lectures or tutorials will be asked to leave. These items are not permitted under any circumstance during exams/quizzes, etc.

### **Copyright**

It is the responsibility of students and professors to ensure that materials they post or distribute to others comply with the Copyright Act and the University's Fair Dealing Guidance for Students ([library.ucalgary.ca/files/library/guidance\\_for\\_students.pdf](http://library.ucalgary.ca/files/library/guidance_for_students.pdf)). Further information for students is available on the Copyright Office web page (<http://library.ucalgary.ca/copyright>)

### **A Note Regarding Instructor Intellectual Property**

Generally speaking, course materials created by professor(s) (including course outlines, presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the professor(s). 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 Based on Disability or Medical Condition**

Students seeking an accommodation based on disability or medical concerns should contact Student Accessibility Services; SAS will process the request and issue letters of accommodation to instructors.

For additional information on support services and accommodations for students with disabilities, visit [www.ucalgary.ca/access/](http://www.ucalgary.ca/access/).

### **Accommodations on Protected Grounds other than Disability**

Students who require an accommodation in relation to their coursework based on a protected ground other than disability, should communicate this need, preferably in writing, to their instructor or to the designated BHSc program contact, Mrs. Jennifer Logan ([jljlogan@ucalgary.ca](mailto:jljlogan@ucalgary.ca)), or to Dr. Ebba Kurz, Associate Dean, Undergraduate Health and Science Education, Cumming School of Medicine. The full policy on Student Accommodations is available at <http://www.ucalgary.ca/policies/files/policies/student-accommodation-policy.pdf>.

### **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. For information on academic misconduct and its consequences, please see the University of Calgary Calendar at <http://www.ucalgary.ca/pubs/calendar/current/k.html> Students are expected to be familiar with these standards and to uphold the policies of the University in this respect. Please know that the University and the Cumming School of Medicine take these rules seriously. **All incidences of academic dishonesty in this course, such as cheating and plagiarism, will be reported to the Associate Dean for investigation;** infractions will be noted on the record of a student found to be guilty.

### **Recording of Lectures**

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

### **Other Important Information**

#### **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/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>

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

Student Success Centre	<a href="http://www.ucalgary.ca/ssc/">http://www.ucalgary.ca/ssc/</a>
Student Wellness Centre	<a href="http://www.ucalgary.ca/wellnesscentre/">http://www.ucalgary.ca/wellnesscentre/</a>
Distress Centre	<a href="http://www.distresscentre.com/">http://www.distresscentre.com/</a>
Library Resources	<a href="http://library.ucalgary.ca">http://library.ucalgary.ca</a>

### **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 (Room 370 MacEwan Student 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/](http://www.ucalgary.ca/ombuds/) or email [ombuds@ucalgary.ca](mailto: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](mailto:suvpaca@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:**

The weekly schedule of topics and required readings is posted on D2L. The course schedule provided is provisional, with the exception of assignment due dates. Circumstances could give rise to scheduling changes. Please check D2L for updates.

## MDSC 415: Introduction to Epidemiology Course Schedule with Required Readings

The following schedule is provisional. Circumstances could give rise to scheduling changes. You will be notified at least one week in advance if the required reading for a particular session has changed.

<b>Date &amp; Room</b>	<b>Topic</b>	<b>Required Readings*/Assignments</b>
January 14, 2020 <i>1405B, HSC</i>	Course Overview	Course Outline <b>Posted on D2L</b>
January 16, 2020 <i>1405B, HSC</i>	Historical Overview & Basic Definitions	
January 21, 2020 <i>1405B, HSC</i>	Infectious Disease Epidemiology Disease outbreaks I	Reingold, A. (2000). Outbreak Investigation - A perspective. <i>Epidemiological Bulletin</i> , 21(2), 1-7. <a href="http://www1.paho.org/english/sha/be_v21n2-outbreak.htm">http://www1.paho.org/english/sha/be_v21n2-outbreak.htm</a> <b>Posted on D2L</b>  Chapter 2 -The Dynamics of Disease Transmission
January 23, 2020 <i>1405B, HSC</i>	Infectious Disease Epidemiology Disease outbreaks II	Chapter 2 -The Dynamics of Disease Transmission
January 28 2020 <i>1405B, HSC</i>	Infectious Disease Epidemiology Disease outbreaks III	Chapter 2 -The Dynamics of Disease Transmission
January 30, 2020 <i>1405B, HSC</i>	Measures of disease frequency: Prevalence and incidence	Chapter 3 –Occurrence of Disease: I. Disease Surveillance and Measures of Morbidity
February 4, 2020 <i>1405B, HSC</i>	Indices of Mortality & Disease and Population Health Surveillance	Chapter 4 - Occurrence of Disease: II. Mortality and Other Measures of Disease Impact
February 6, 2020 <i>1405B, HSC</i>	Causal Thinking: Causal inference; causation versus association; weighing the evidence	Chapter 14 – From Association to Causation: Deriving Inferences from Epidemiologic Studies

Date & Room	Topic	Required Readings*/Assignments
February 11, 2020 1405B, HSC	Frameworks for reading/analyzing published research	Blettner, M., Heuer, C., & Razum, O. (2001). Critical reading of epidemiological papers: A guide. <i>Eur J Public Health</i> , 11(1), 978-101. <b>Posted on D2L</b>  Messerli, F.H. (2012). Chocolate consumption, cognitive function, and Nobel Laureates. <i>N Engl J Med</i> , 367(16), 1562-1564. <b>Posted on D2L</b>
February 13, 2020 1405B, HSC	Introduction to study design - Experimental studies: Clinical trials & intervention studies	Chapter 7 – Assessing the Efficacy of Preventive and Therapeutic Measures: Randomized Trials  <b>Assignment 1 due</b>
February 18, 2020 1405B, HSC	<b>No Lecture – Reading Week</b>	
February 20, 2020	<b>No Lecture – Reading Week</b>	
February 25, 2020 1405B, HSC	Observational study designs: Cohort studies - Part 1 Study design and Relative Risks	Chapter 8 – Cohort Studies
February 27, 2020	Observational study designs: Cohort studies - Part 2 Bias in cohort studies	Chapter 12: Estimating Risk: Is There An Association? Pages 215-220 (end of Relative Risk section)
March 3, 2020 1405B, HSC	Observational study designs: Case-control studies –Part 1 Study design and Odds Ratios	Chapter 9 – Comparing Cohort and Case-control Studies Pages 189-192 (to the end of Design of a Case Control Study section)  Chapter 12: Estimating Risk: Is There An Association? Pages 220-228
March 5, 2020 1405B, HSC	Observational study designs: Case-control studies –Part 2 Bias in case-control studies	Chapter 9 – Comparing Cohort and Case-control Studies Pages 192-206
March 10, 2020 1405B, HSC	Pause for Review:	Chapter 13: A Pause for Review: Comparing Cohort and Case-Control Studies.

Date & Room	Topic	Required Readings*/Assignments
	Bias in cohort and case-control studies	Boccia S., La Torre, G., Persiani, R., D'Ugo, D., van Duijn, C.M., & Ricciardi, G. (2007). A critical appraisal of epidemiological studies comes from basic knowledge: A reader's guide to assess potential for biases. <i>World Journal of Emergency Surgery</i> , 2(7), doi:10.1186/1749-7922-2-7. <b>Posted on D2L</b>
March 12, 2020 1405B, HSC	Cross sectional & Ecological studies	Chapter 10 – Case-control Studies and Other Study Designs Pages 208 -214 (start at Ecological Studies)
March 17, 2020 1405B, HSC	Confounding & Effect Modification	Chapter 15 – More on Causal Inferences: Bias, Confounding, and Interaction
March 19, 2020 1405B, HSC	<b>No Lecture</b>	
March 24, 2020 1405B, HSC	Pause for Review: Comparing study designs  Confounding and Effect modification	
March 26, 2020 1405B, HSC	Focus on prevention: Measuring attributable risk	Chapter 13: More on Risk: Estimating the Potential for Prevention  <b>Assignment 2 due</b>
March 31, 2020 1405B, HSC	Summarizing the evidence: Systematic reviews & meta-analysis  <b>Paul Ronksley MSc, PhD</b> Assistant Professor Community Health Sciences, Cumming School of Medicine	Ronksley, P. E., Brien, S. E., Turner, B. J., Mukamal, K. J., & Ghali, W. A. (2011). Association of alcohol consumption with selected cardiovascular disease outcomes: a systematic review and meta-analysis. <i>BMJ</i> , 342, d671. <b>Posted on D2L</b>

Date & Room	Topic	Required Readings*/Assignments
April 2, 2020 1405B, HSC	<b>Epidemiology in Injury Research</b>  Brent Hagel, PhD Professor Departments of Paediatrics and Community Health Sciences Cumming School of Medicine	
April 7, 2020 1405B, HSC	<b>Psychiatric Epidemiology</b>  Scott B. Patten, MD PhD Professor Departments of Psychiatry and Community Health Sciences Cumming School of Medicine	
April 9, 2020 1405B, HSC	<b>Molecular Epidemiology &amp; Genetic Epidemiology</b>  Darren R. Brenner, Ph.D. Assistant Professor Departments of Oncology and Community Health Sciences, Cumming School of Medicine, Armstrong Investigator in Molecular Epidemiology Alberta Health Services	<b>Assignment 3 due</b>
April 14, 2020 1405B, HSC	USRI evaluations Wrap-up	

\*Chapter readings refer to the course textbook: Gordis, L. *Epidemiology, 6th Edition*. (2018). Philadelphia: Elsevier Saunders.  
 Available for purchase from the University of Calgary Medical Bookstore.

**Registrar-Scheduled Final Exam:  
 TBA**