PPHS 501: POPULATION HEALTH AND EPIDEMIOLOGY
Course Outline Fall 2023

Time and Location:
Monday and Wednesday: 8:35am to 9:55pm
2001 McGill College, Room 1140

Course Instructor:
Dr. Ananya Tina Banerjee PhD (AB)
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Office Hours: By appointment only

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Prerequisites:
Not open to students enrolled in Epidemiology or Public Health programs. This course is designed for undergraduate students, but enrollment of graduate students is allowed. Numerical literacy is recommended.

Acknowledgement of Territory
McGill University is situated on the traditional territory of the Kanien'kehà:ka, a place which has long served as a site of meeting and exchange among Indigenous peoples, including the Haudenosaunee and Anishinabeg nations. We recognize and respect the Kanien'kehà:ka as the traditional custodians of the lands and waters on which we meet today. In this course, we will reflect on what ways Indigenous ways of knowing can be combined with western epidemiology, known as the Two-Eyed Seeing approach.

Course Description

This course presents concepts and methods of epidemiology at the introductory undergraduate level. The use of epidemiologic methods for public health research will be illustrated. A review of public health issues, such as the COVID-19 pandemic, opioid crisis, cardiovascular disease epidemic, mental health, disparities, health equity, food insecurity and other topics will be presented.

The course is broadly divided in three modules: 1) population health, 2) epidemiologic methods, and 3) special topics (social epidemiology, infectious disease epidemiology, mental health, etc.). At the end of this course, students will have acquired a basic understanding of population health sciences and general epidemiologic methods. They will be aware of the principal sources of bias in epidemiologic research. They will understand the interplay between epidemiology and public health. They will also be able to describe selected public health problems affecting populations in different parts of the world.

Learning Outcomes
1. Conceptualize and explain how determinants of health (social/cultural, biological and physical) can influence health and well-being.
2. Integrate ethics into human health research.
3. Calculate and interpret absolute and relative measures of disease frequency and risk, and contrast these across populations.
4. Identify the main types of epidemiologic studies, appraise their relative strengths and limitations, and justify study design choices.
5. Demonstrate critical thinking in identifying potential sources of bias, confounding and chance in human research evidence, and evaluate their impact while considering potential resource constraints.
6. Assess epidemiologic evidence for causal inference and contribution to policies and actions.

Class Format and Classroom Environment

Our goal is to create a vibrant, safe, and positive environment that supports all learners. There will be an array of guest lecturers representing the diversity of the field to learn about an explicit topic, give new perspectives and provide network opportunities. Instruction will occur through readings, seminars, and case study discussions. Class time will involve both seminars (lectures) and case studies. Seminars will introduce an important aspect of population health and epidemiology and case study discussions will allow students to expand on this knowledge and use it as applied to specific scenarios.

We aim to create an inclusive environment that fosters respectful discussion, examination and challenging of taken for granted truths. In our course, we will explore the relationships between social relations and health, including examination of issues related to social differences/identities (e.g., gender, class, sexuality, race etc.) within an anti-oppression framework. Your classmates come from many different backgrounds, have varied life experiences and you all share a goal of broadening your understanding of population health and epidemiology. Some ideas may be new to you or new to your classmates. We welcome questions, comments and challenges raised in respectful manner aimed towards improving your understanding and that of your classmates.

Movement Breaks
This course will implement Movement Break(s) during lectures to reduce sedentary behaviour in class and improve student wellbeing and engagement. The Movement Breaks will consist of one or two 3-minute videos featuring licensed instructors leading you through simple stretches, aerobics, dance, or mindfulness activities. All activities are safe and appropriate for all levels of fitness and abilities and suitable for regular clothing.

Participation is encouraged to help increase your well-being in the classroom but not mandatory. Please feel free to remain in seated during the Movement Breaks if you wish not to participate. We also invite you to communicate any feedback you have regarding these breaks to the instructor at any time throughout the semester.

You can access all the videos outside the classroom as well to help you keep active throughout your day at https://ocw.utoronto.ca/movement-breaks/

Course Readings
There is no textbook for this course. However, the following texts books are recommended:

1. Carr S, Unwin N, Pless-Mulloli, T. 2007. Introduction to public health and epidemiology.McGraw-Hill Education.
2. Friis R, Sellers T. 2009. Epidemiology for public health. 4th Ed. Jones and BartlettPublishers.
3. Gordis L. 2014. Epidemiology. Elsevier/Saunders. (Available as an ebook from McGill Library.)
4. Rothman K. 2012. Epidemiology – An Introduction. 2nd Ed. Oxford University Press.

There will be book chapters, readings from web sites or journal articles. The preparation material list will be made available on-line and digital copies of most readings will be uploaded to the course website in advance of teaching sessions. In general, students should expect to read all material before each class to help engage in discussions during class.

Accessibility and Accommodation
The University provides academic accommodations for students with disabilities in accordance with the terms of the Ontario Human Rights Code. This occurs through a collaborative process that acknowledges a collective obligation to develop an accessible learning environment that both meets the needs of students and preserves the essential academic requirements of the University's courses and programs. For more information, or to register with the Office for Students with Disabilities (OSD), please visit: https://www.mcgill.ca/osd/.

Mental Health Support
In 2019, the National College Health Assessment found that almost 70% of university students said they had felt "overwhelming anxiety" in the previous twelve months, and more than half said they were living with debilitating depression. In other words, depression is basically as common as the flu in the student population, yet one can sometimes be socially stigmatized, and the other is not. If you are having mental health issues which are interfering with your ability to function (in my course or otherwise) that's a completely valid medical reason to ask for short term extensions or accommodations, just as you might for a physical illness or injury. If your situation is hard or you feel hopeless, don't ever hesitate to reach out to the teaching team. We will work with you to minimize the impact of mental health difficulties on your performance in the course. Remember, you never alone in your mental health struggles. We know the feeling. In addition to your program director and us, I strongly encourage you to contact the many other support services on campus and Montreal area that stand ready to assist you such as the:

Tele-Aide Montreal - http://telaidemontreal.org/en/
Suicide Action Montreal - https://suicideactionmontreal.org/en/ or 1-866-277-3553
Peer Support Centre at McGill - https://psc.ssmu.ca/resources/

Religious Observance
McGill's policy is to make every effort to accommodate students who observe religious Holy Days (https://www.mcgill.ca/importantdates/holy-days-0). The University encourages members of the teaching staff to accommodate students who celebrate Holy Days other than those formally recognized by the University through regular scheduling or statutory holidays. This means the teaching team will make every effort to avoid scheduling tests, examinations, or other compulsory activities at these times, or, if that is not possible, to give students the opportunity to make up work that they miss. Students must provide instructors with a request in writing for religious accommodation. This should be done preferably at the beginning of the semester or at a minimum 3 weeks before the tentative date in question.

Assignments and Grading Criteria

Items	Description
Short assignments (55%)	Short exercises will be assigned approximately once a week worth 5% each. These assignments must be completed before a specified date (usually the next lecture by 11:59PM) and be submitted on myCourses. The maximum mark for assignments received late will be 50%. All assignments must be completed to pass the course.
	Students may work on these assignments individually or in groups: group work is encouraged. Students working in groups, however, must prepare the final formulation of their answers individually, not as a group. It is not permitted for a team of students to submit identical copies of the same answers.
	In general, you may use internet or any other material as extensively as you want. However, when the text is not yours, you must indicate your sources and provide appropriate quotes.
End-of-term Group Research Proposal and Presentation on a Health Equity Topic (35%)	A key goal for epidemiology is the development of a research proposal answering a question to better understand health equity. Through this assignment you will propose a future research study. The assignment is designed to build on and integrate your learning throughout the course in relation to the content we have discussed in this course. Students should work in groups of 3-4. **Each group is required to submit <u>one</u> collective written assignment on myCourses (30%). The 3 min presentation is worth 5% in class.**
In-class reflection activities (10%)	Four lectures will include group reflection activities as identified on the class schedule to be completed during the lecture itself. Each activity is worth 2.5% and must be completed as part of the course requirements. **Each group is required to submit <u>one</u> collective assignment on myCourses by the end of the class.** If you as an individual miss an activity, you may submit a 300-word reflection on the assigned reading.

*****Further details regarding assignments are posted on myCourses. The passing grade for the course is 65%.**

<u>Other Instructions</u>

- Please ensure there is a title page for each assignment with the student name(s), ID number(s), course name, assignment number and total word count (not including references or appendices).
- All written materials for this assignment must follow the latest edition of APA or Vancouver Formatting and Style Guide when writing and formatting papers
- Students will be required to upload assignments to myCourses by 9AM on the day they are due. If there are problems with uploading the assignments to myCourses on the due date, students may send a copy directly to the instructors to ensure it is submitted on time.
- Late assignments will be penalized 2% of the grade weight per day.
- <u>Extensions will only be granted for reasons related to health and emergencies. Requests must be to instructor – at least 24 hours in advance.</u>
- For disability-related accommodations, please register with OSD https://www.mcgill.ca/osd/ before the assignments are due.
- Every student has the right to submit in English or in French written work that is to be graded (https://www.mcgill.ca/students/srr/academicrights/course/french). Please consult with your course instructor if you are submitting your assignment in French.

Academic integrity

McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the *Code of Student Conduct and Disciplinary Procedures* (see here for more details).

Course Schedule

Date and Session	Instructor	Topics, Exercises and Readings	Assignment Due
Session 1 Wed, Aug 30, 2023	AB	Introduction to the course A brief history of epidemiology and public health Reading: Dean, Lorraine T. "After 121 years, it's time to recognize WEB Du Bois as a founding father of social epidemiology." *Journal of Negro Education* 87.3 (2018): 230-24	
Session 2 Wed, Sept 6, 2023	AB	Anti-oppressive practice in epidemiology and public health Reading: Banerjee, A.T. How the Pandemic has shown social justice needs to be central to public health education in Canada? *University Affairs*. April 1, 2021.	
Session 3 Mon, Sept 11, 2023	AB	Anti-oppressive practice in epidemiology and public health Podcast: Lancet's Advancing racial and ethnic equity in science, medicine, and global health	
Session 4 Wed, Sept 13, 2023	AB	Population health: Descriptive epidemiology Reading: Kindig DA. Understanding population health terminology. The Milbank Quarterly. 2007 Mar;85(1):139-61.	Assignment 1 (Descriptive Epidemiology) ***Due Sept 15th**
Session 5 Mon, Sept 18 2023	AB	Population health: Life expectancy Reading: Gupta A, Sudharsanan N. Large and Persistent Life Expectancy Disparities between India's Social Groups. Population and Development Review. 2022 Apr 5.	

Session 6 Wed, Sept 20, 2023	AB	Population health: Incidence and prevalence Reading: Edwards F, Lee H, Esposito M. Risk of being killed by police use of force in the United States by age, race–ethnicity, and sex. Proceedings of the National Academy of Sciences. 2019 Aug 20;116(34):16793-8. CBC article on above study from a Canadian Lens: https://www.cbc.ca/news/canada/montreal/spvm-racial-profiling-report-recommendations-and-findings-1.5311589 ***REFLECTION ACTIVITY 1**	Assignment 2 (Life Expectancy) Due ***Due Sept 22nd**
Session 7 Mon, Sept 25, 2023	AB	Population health: Burden of disease Reading: Murray CJ, Lopez AD. Measuring the global burden of disease. New England Journal of Medicine. 2013 Aug 1;369(5):448-57.	
Session 8 Wed, Sept 27, 2023	AB	Population health: Indigenous Led Epidemiology Schnarch B. Ownership, control, access, and possession (OCAP) or self-determination applied to research: A critical analysis of contemporary First Nations research and some options for First Nations communities. International Journal of Indigenous Health. 2004;1(1):80-95. ***REFLECTION ACTIVITY 2**	Assignment 3 (Incidence/ Prevalence) **Due Sept 29th**
Session 9 Mon, Oct 2, 2023	JA	Epidemiologic method: Basics of casual inference Reading: Khan S, Hatton N, Tough D, Rintoul RC, Pepper C, Calman L, McDonald F, Harris C, Randle A, Turner MC, Haley RA. Lung cancer in never smokers (LCINS): development of a UK national research strategy. BJC Reports. 2023 Jul 20;2(1):1.	

Session 10 Wed, Oct 4th, 2023	AB	Epidemiologic method: Measures of association Reading: Banerjee AT, Lau A, Bender JL. Poor health disparities among racialized students in a Canadian university. Journal of American College Health. 2022 Feb 27:1-5. Toronto Star Article for study above: https://www.thestar.com/news/gta/2022/03/12/racialized-students-twice-as-likely-to-report-poor-health-than-white-students-new-u-of-t-survey-finds.html	Assignment 4 (Causal inference) **Due Oct 6th**
Mon, Oct 9 and Wed, Oct 11, 2023		**FALL READING WEEK – NO CLASSES** 😊	
Session 11 Mon, Oct 16, 2023	AB	Epidemiologic method: cohort studies (Part 1) Reading: Grimes DA, Schulz KF. Cohort studies: marching towards outcomes. The Lancet. 2002 Jan 26;359(9303):341-5.	
Session 12 Wed, Oct 18, 2023	AB	Epidemiologic method: cohort studies (Part 2) Reading: Crouse DL, Pinault L, Balram A, Hystad P, Peters PA, Chen H, van Donkelaar A, Martin RV, Ménard R, Robichaud A, Villeneuve PJ. Urban greenness and mortality in Canada's largest cities: a national cohort study. The Lancet Planetary Health. 2017 Oct 1;1(7):e289-97. *REFLECTION ACTIVITY 3	Assignment 5 (Effect Sizes) **Due Oct 20th**
Session 13 Mon, Oct 23, 2023	AB	Epidemiologic method: Case control studies Reading: Schulz KF, Grimes DA. Case-control studies: research in reverse. The lancet. 2002 Feb 2;359(9304):431-4.	Assignment 6 (Cohort Studies) **Due Oct 27th**

Session 14 Wed, Oct 25, 2023	TK	Epidemiologic method: Confounding Reading: Greenland S, Pearl J, Robins JM. Causal diagrams for epidemiologic research. Epidemiology. 1999 Jan 1:37-48.	
Session 15 Mon Oct 30, 2023	AB	Epidemiologic method: Effect Modification Reading: Nair R, Luzzi L, Jamieson L, Spencer AJ, Hanna KM, Do LG. Private dental care benefits non-indigenous children more than indigenous children. JDR Clinical & Translational Research. 2020 Jul;5(3):244-53.	Assignment 7 (Case-Control Studies) **Due Nov 3rd**
Session 16 Wed, Nov 1, 2023	AB	Epidemiologic method: Randomized Controlled Trials Reading: Jull J, Whitehead M, Petticrew M, Kristjansson E, Gough D, Petkovic J, Volmink J, Weijer C, Taljaard M, Edwards S, Mbuagbaw L. When is a randomised controlled trial health equity relevant? Development and validation of a conceptual framework. BMJ open. 2017 Sep 1;7(9):e015815.	Assignment 8 (Confounding) **Due Nov 8th**
Session 17 Mon, Nov 6, 2023	AB	Epidemiologic methods: Meta Analysis Reading: Gøtzsche PC. Why we need a broad perspective on meta-analysis: it may be crucially important for patients. Bmj. 2000 Sep 9;321(7261):585-6.	Assignment 9 (RCT) **Due Nov 10th**
Session 18 Wed, Nov 8, 2023	AB	Special topic: Population health risk factors Reading: Rose G. Sick individuals and sick populations. International journal of epidemiology. 2001 Jun 1;30(3):427-32.	
Session 19 Mon, Nov 13, 2023	AB	Special topic: Screening Reading: Grimes DA, Schulz KF. Uses and abuses of screening tests. The Lancet. 2002 Mar 9;359(9309):881-4	Assignment 10 (Meta Analysis) **Due Nov 15th**

Session 20 Wed, Nov 15, 2023	AB	Special Topics Part 1: Mixed Methods Reading: Padgett DK. Qualitative and mixed methods in public health. Sage publications; 2011 Sep 2.	
Session 21 Mon, Nov 20, 2023	AB	Special Topics Part 2: Mixed Methods Reading: Padgett DK. Qualitative and mixed methods in public health. Sage publications; 2011 Sep 2. *REFLECTION ACTIVITY 4	Assignment 11 **Due Nov 22nd**
Session 22 Wed, Nov 22, 2023	All	Final Group Assignment Work Session and Consult with Teaching Team	
Session 23 Mon, Nov 27, 2023	All	Group Student presentations on Final Project	
Session 24 Wed, Nov 29, 2023	All	Group Student presentations on Final Project	
Fri, Dec 8, 2023		**FINAL GROUP PROJECT DUE**	

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NOTES: