

Department of Epidemiology and Biostatistics

Epidemiology 9551A
Foundations of Epidemiology
Fall 2019

Class: Mondays 9:30 to 11:30 am
Fridays 9:30 to 10:30 am

Location: Lectures – Kresge Building, K203
Tutorials – Kresge Building, K7

TA: TBD

Instructor: Dr. Kelly Anderson

Office Hours: After class or by appointment

E-mail: kelly.anderson@schulich.uwo.ca

Phone Extension: 81001

Course Information

Prerequisite Information

Enrollment in the graduate program in Epidemiology & Biostatistics, or permission of the course instructor.

Unless you have the requisites for this course or written special permission from the Undergraduate or Graduate Chair to enrol, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees if you are dropped from a course for failing to have the necessary prerequisites.

Course Syllabus

This course aims to provide a comprehensive introduction to fundamental concepts, principles, and terminology of epidemiologic research and study design. Topics include measures of disease frequency and effect, key study designs, causation, bias, and confounding.

In addition to lectures, students will participate in tutorial sessions (schedule below) where they will apply concepts learned in class to epidemiologic case studies and datasets.

Learning Outcomes:

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

- Use epidemiological concepts to describe the distribution and determinants of disease, with consideration of person, place, and time
- Apply measures of disease frequency to describe the extent of disease in a population;
- Compute estimates of disease effect to examine exposure-disease associations
- Distinguish between and understand the limitations of various research designs
- Address threats to the validity of study design, including bias, misclassification, confounding, and effect modification.

Weekly Topics:

Week	Date	Topic	Chapters*	Assignments
1	Sept 2	Labour Day Holiday - NO CLASS	-	-
	Sept 6	Introduction to Epidemiology & Causal Thinking	1	-
2	Sept 9	Causal Thinking in Epidemiology	8	-
	Sept 13	<i>Tutorial #1: Introduction to Stata**</i>	-	-
3	Sept 16	Populations and Population Health	2 & 7	-
	Sept 20	Overview of Epidemiological Study Designs	5	-
4	Sept 23	Measures of Disease Frequency	3 & 4	-
	Sept 27	<i>Tutorial #2: Measures of Disease Frequency**</i>	-	#1 Due
5	Sept 30	Measures of Effect & Population Impact	9	-
	Oct 4	<i>Tutorial #3: Measures of Effect & Impact**</i>	-	-
6	Oct 7	Bias & Measurement Error I: Selection Bias	OWL	#2 Due
	Oct 11	Bias & Measurement Error II: Information Bias	OWL	-
7	Oct 14	Thanksgiving Monday - NO CLASS	-	-
	Oct 18	<i>Tutorial #4: Selection and Information Bias**</i>	-	#3 Due
8	Oct 21	Confounding I: Definition & Conceptual Issues	11 & 12 (to pg. 236)	-
	Oct 25	Confounding II: Adjustment and Control	11 & 12 (to pg. 236)	-
9	Oct 28	Midterm Exam	-	-
	Nov 1	<i>Tutorial #5: Confounding**</i>	-	#4 Due
-	Nov 4	Fall Reading Week - NO CLASS	-	-
	Nov 8	Fall Reading Week - NO CLASS	-	-
10	Nov 11	Interaction & Effect Measure Modification	18	-
	Nov 15	<i>Tutorial #6: Interaction**</i>	-	-
11	Nov 18	Cohort Studies	14	#5 Due
	Nov 22	Cross-Sectional & Ecological Studies	16	-
12	Nov 25	Case-Control Studies	15	-
	Nov 29	<i>Tutorial #7: Study Designs**</i>	-	-
13	Dec 2	Exam Review	-	#6 Due
	Dec 6	Final Exam Period - NO CLASS	-	-

*Additional readings will be posted to OWL; **Tutorial sessions held in K7

Course Materials

Required:

- Weiss NS & Koepsell TD. (2014) Epidemiologic Methods: Studying the Occurrence of Illness, 2nd Edition. New York, Oxford University Press.
Available Online via UWO Library:
<https://ebookcentral.proquest.com/lib/west/detail.action?docID=1707881#>

Optional:

- Porta M. (2014) A Dictionary of Epidemiology, 6th Edition. New York, Oxford University Press.
Available Online via UWO Library:
<https://ebookcentral.proquest.com/lib/west/detail.action?docID=1679277#>

All books are available in the campus bookstore and online through the campus library (login required). Additional readings and other course materials will be posted to OWL. Students are expected to read all assigned chapters and articles.

Methods of Evaluation

A. Participation (10% of grade)

- Students are expected to actively participate, either during in-class discussions or on the online discussion board and course Wiki on OWL.
- A rubric for evaluating participation is available on the course OWL page.

B. Tutorial Assignments (30% of grade)

- Assignments must be completed **independently** and handed in *at the beginning of class*.
- Assignments will be posted to OWL at least one week before the deadline, and will be due one week after completion of the material in class.
- **Assignment Due Dates:**
 1. September 27th
 2. October 7th
 3. October 18th
 4. November 1st
 5. November 18th
 6. December 2nd

C. Midterm Exam (20% of grade)

- The midterm exam will consist of a combination of multiple choice and short answer questions, and will include material from lectures, readings, and tutorials for the first half of the term (weeks 1 to 7, inclusive).
- **Date: October 28th in class**

D. Final Exam (40% of grade)

- The final exam will consist of a combination of multiple choice and short answer questions, and will include material from all lectures, readings, and tutorials over the course of the semester. Although the exam will be cumulative, there will be a greater emphasis placed on material covered after the midterm.
- **Date: Monday December 9th from 9:30 am to 12:30 pm, Location TBD**

Late Assignment Policy

Please discuss an alternative deadline with the instructor in advance if you foresee difficulties meeting the assigned due dates.

Marking Reassessments

Should you have concerns about a mark you have received on an assignment, you are welcome to request a reassessment from the instructor. To request a reassessment, please write one paragraph explaining why you believe you deserve a different mark from the one that you received. This will be read in conjunction with your original submission. The instructor will reassess your assignment based on this information. Requests for changes in marking made in any other manner will not be considered.

Policy on Accommodation for Medical and Non-Medical Absences

All non-medical absences must be approved in advance. In the case of an unexpected absence on compassionate grounds, documentation may be requested. If documentation is required for either medical or non-medical academic accommodation, then such documentation must be submitted by the student to the instructor.

Statement on Academic Offences

Scholastic offences are taken seriously, and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.pdf

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

Support Services

As part of a successful student experience at Western, we encourage students to make their health and wellness a priority. Western provides several on campus health-related services to help you achieve optimum health and engage in healthy living while pursuing your degree. For example, to support physical activity, all students, as part of their registration, receive membership in Western's Campus Recreation Centre. Numerous cultural events are offered throughout the year. Please check out the Faculty of Music web page <http://www.music.uwo.ca/>, and our own McIntosh Gallery <http://www.mcintoshgallery.ca/>. Information regarding health- and wellness-related services available to students may be found at <http://www.health.uwo.ca/>

Registrarial Services: <http://www.registrar.uwo.ca>

USC Student Support Services: <http://westernusc.ca/services/>

Student Development Centre: <http://www.sdc.uwo.ca/>

SGPS Life & Community web page: https://grad.uwo.ca/life_community/self/index.html

Students seeking help regarding mental health concerns are advised to speak to someone they feel comfortable confiding in, such as their faculty supervisor, their program director (graduate or undergraduate chair), or other relevant administrators in their unit.

Students who are in emotional/mental distress should refer to Mental Health@Western

<http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.

Student Accessibility Services

Western is committed to achieving barrier-free accessibility for all its members, including graduate students. As part of this commitment, Western provides a variety of services devoted to promoting, advocating, and accommodating persons with disabilities in their respective graduate program.

Graduate students with disabilities (for example, chronic illnesses, mental health conditions, mobility impairments) are encouraged to register with Student Accessibility Services, a confidential service

designed to support graduate and undergraduate students through their academic program. With the appropriate documentation, the student will work with both SAS and their graduate programs (normally their Graduate Chair and/or Course instructor) to ensure that appropriate academic accommodations to program requirements are arranged. These accommodations include individual counselling, alternative formatted literature, accessible campus transportation, learning strategy instruction, writing exams and assistive technology instruction.

Department & Faculty Offices

The Epidemiology & Biostatistics main office is located in K201 in the Kresge Building on main campus.

Technology Requirements

You are responsible for all required course materials and announcements posted to the course's OWL website. Please ensure after the first class that when you log in you are able to access the course site. A copy of the course outline will be available on both OWL and the departmental website.

The course OWL site will have an active discussion page that will be moderated by the TAs and course instructor. Aside from issues of a personal nature, **please post all questions and inquiries to OWL** to ensure that others have the opportunity to benefit from responses. Active and meaningful participation in the online discussion will be counted towards your participation grade.

The iClicker virtual response system will be used in class to increase engagement and active learning, and is available to download on your mobile devices. You can find more information about setting up a free account at https://presswestern.uwo.ca/students_and_audience/index.html.

The tutorial sessions and some assignments will involve the use of Stata statistical software, which is available in the K7 computer lab.

Cell Phone and Electronic Device Policy

The Schulich School of Medicine & Dentistry is committed to ensuring that testing and evaluation are undertaken fairly across all our departments and programs. For all tests and exams, it is the policy of the School and the Department of Epidemiology and Biostatistics that any electronic devices, i.e., cell phones, tablets, cameras, or iPod are strictly prohibited. These devices **MUST** be left either at home or with the student's bag/jacket at the front of the room and **MUST NOT** be at the test/exam desk or in the individual's pocket.

Any student found with one of these prohibited devices will receive a grade of zero on the test or exam. Non-programmable calculators are only allowed when indicated by the instructor. The Department of Epidemiology and Biostatistics is not responsible for stolen/lost or broken devices.