Fall 9-1-2022

CHTH 491.01: Principles of Epidemiology

Erin O'Brien Semmens
University of Montana, Missoula, erin.semmens@umontana.edu

UNIVERSITY OF MONTANA
SCHOOL OF PUBLIC AND COMMUNITY HEALTH SCIENCES

CHTH 491: Principles of Epidemiology

Fall 2022
M/W 9-10:20 am
Forestry 301

Instructor: Erin O. Semmens, PhD, MPH
erin.semmens@umontana.edu

Teaching Assistant: Ali Manuel
ali.manuel@umconnect.umt.edu

Office Hours: Beginning on 9/6, Tuesdays from 9 -10:30 by Zoom or by appointment. Please email the instructor to schedule.

COURSE SYLLABUS

Course Description

Epidemiology is the basic science of public health. Specifically, epidemiology is the study of the distribution and determinants of disease and of health in human populations as well as the application of epidemiologic methods to promote health. This course is designed to introduce undergraduate students to the foundational principles and methods of epidemiology. Topics covered in this course include: basic principles of epidemiology; causality; ethics in epidemiologic research; measures of disease frequency and excess risk; and epidemiologic study designs. Students will develop skills to interpret and critically evaluate epidemiologic information from both media sources and published public health reports.

Course Objectives

1. Explain what epidemiology is and its role in public health.
2. Identify the key factors in assessing causal relationships in epidemiological studies.
3. Identify key features of ethical epidemiologic research.
4. Explain key terms in the areas of disease transmission, natural history of disease, outbreak investigations, and descriptive and analytical epidemiology.
5. Calculate measures of disease frequency.
6. Calculate measures of excess risk.
7. Differentiate between the major designs utilized in epidemiologic research.
8. Compare the strengths and limitations of different study designs.

Class Expectations

- Arrive to class on time and prepared to participate
- Always be respectful
- Bring your book
- You can bring a laptop, but it is not necessary
- Please silence your cell phone

Prerequisites

There are no prerequisites for this course.

Domains & Assessment Activities

BS in Public Health Foundational Domains	Assessment activities
The history and philosophy of public health as well as its core values, concepts and functions across the globe and in society	Media Reflection #1, Midterm Exam
The basic concepts, methods and tools of public health data collection, use and analysis and why evidence-based approaches are an essential part of public health practice	All Media Reflections & Problem Sets, Midterm Exam, Final Exam
The concepts of population health, and the basic processes, approaches and interventions that identify and address the major health-related needs and concerns of populations	All Media Reflections & Problem Sets, Midterm Exam, Final Exam
The underlying science of human health and disease, including opportunities for promoting and protecting health across the life course	Morbidity and Mortality Weekly Reports (MMWR) Discussions, Midterm Exam, Final Exam
The socioeconomic, behavioral, biological, environmental and other factors that impact human health and contribute to health disparities	Media Reflection #3, Midterm Review Assignment

Required Textbook

Poms, LW & Dawson, RS (2022). **Understanding Epidemiology: Concepts, Skills, and Applications**. 3rd edition. Cognella.

Course Format

This course is an on-campus, in-person class. Students are expected to come to class on-time and prepared to participate. Lectures typically will not be recorded except in rare circumstances and, in those cases, the recordings will not be immediately available. Students can access course materials online using the course site on Moodle. UMOnline has made available an interactive tutorial for using Moodle as a student.

Grades

This course will use the traditional letter grades with the use of pluses or minuses. The weights of all assignments in final course grading are:

1. Quizzes on reading, 10%
2. Assignments (Media Reflections, Problem Sets, and Exam Review Assignments), 20%
3. Participation, 10%
4. Midterm, 20%
5. Study Design Presentation & Written Summary, 20%
6. Final Exam, 20%

Grades will be calculated based on the percentage of total points available using the formula:

93 to 100 percent = A; 90 to 92 percent = A-minus; 87 to 89 percent = B-plus; 83 to 86 percent = B; 80 to 82 percent = B-minus; 77 to 79 percent = C-plus; 73 to 76 percent = C; 70 to 72 percent = C-minus; 67 to 69 percent = D-plus; 63 to 66 percent = D; 60 to 62 percent = D-minus; below 60 percent = F.

Assignments & Assessments

Reading quizzes: Starting in week 2, students can expect short quizzes at the beginning of the class period in which a reading assignment is due. The lowest reading quiz grade will be dropped.

Assignments: All assignments should be submitted in Moodle. Assignments will be due before the start of class on their due date unless otherwise specified in the schedule below. No late assignments will be accepted. Assignments not turned in by the due date and time in Moodle will be given a grade of 0. Exceptions will only be considered under unusual circumstances, and students should contact the course instructor as early as possible to discuss such circumstances. The lowest assignment grade will be dropped. Assignments will include Media Reflections, Problem Sets, and Exam Review Assignments.

- *Media Reflections.* Students will submit a 100-150 word reflection on a media item related to course concepts from the prior week. The student will select the media item. One or two responses will be selected for class discussion.
- *Problem Sets*. Problem sets will require students to apply their knowledge to real world epidemiologic questions. When applicable, such as when asked to perform calculations, students must show their work. Students may work together on Problem Sets, but students must submit their own responses written in their own words.

Participation: Students can earn full-credit for participation by coming to class on-time (unless there is a good reason not to be in class) and by contributing to discussion. Weekly in-class reading and dialogue on the main points in selected Morbidity and Mortality Weekly Reports (https://www.cdc.gov/mmwr/index.html) will provide a key opportunity for discussion. Note that contributing to small group discussions, submitting a question before/during/after class, and the more traditional hand-raising all are examples of participation.

Take-Home Midterm: A take-home midterm is scheduled (see schedule for dates). The Midterm will be open book and open note. Students must work independently.

Study Design Presentation & Written Summary: Students will provide a brief oral presentation and submit a concise written summary of the design of an epidemiologic study on a topic of their choice.

Final Exam: The Final Exam is optional for students with a grade of A- or better at the end of the semester. The Final Exam will be administered at the day/time indicated on the schedule below.

Additional Notes

1. Changes: This syllabus is subject to change by the instructor. Any changes will be announced in class and in the announcement section of Moodle.

2. Student conduct code: The University of Montana Student Code of Conduct (https://bit.ly/3SMNkft) embodies and promotes honesty, integrity, accountability, and duties associated with citizenship as a student in our community at the University of Montana. This Code exists to protect the interests of the community and dignity of its members, and to challenge those behaviors which are not in accordance with our policies. This Code describes expected standards of behavior for all students, including academic conduct and general conduct, and it outlines students' rights, responsibilities, and the campus processes for adjudicating alleged violations.

Weekly schedule

Week: Class Date	**Topic(s)**	**Readings & Other Materials** *To be read before arriving to class on the specified date*	**Assignments** *To be submitted in Moodle before 9 am on the specified date unless otherwise specified*
1: 8/29	Introductions		
1: 8/31	What is epidemiology?	Understanding Epi, Ch. 1	Intro Assignment (due 8/30 by 4pm)
2: 9/5	NO CLASS (Labor Day)		
2: 9/7	Associations and Causality	Understanding Epi, Ch. 2	
3: 9/12	Ethics in Epidemiologic Research	Understanding Epi, Ch. 3	Media Reflection #1
3: 9/14	Ethics: A Case Study		
4: 9/19	Infectious Disease Epi	Understanding Epi, Ch. 4	
4: 9/21	Outbreak Investigations: Case Studies		
5: 9/26	Noncommunicable Disease Epi	Understanding Epi, Ch. 5	Media Reflection #2
5: 9/28	Noncommunicable Disease Epi: Social & Environmental Determinants of Health		
6: 10/3	Measures of Disease Frequency	Understanding Epi, Ch. 6	Media Reflection #3
6: 10/5	Applied Measures of Disease Frequency		Course Feedback
7: 10/10	Measures of Excess Risk		Midterm Review Assignment
7: 10/12	Applied Measures of Excess Risk		
8: 10/17	NO CLASS (asynchronous midterm)		Midterm Due by 11:59 pm on 10/18
8: 10/19	Guest Speaker		

9: 10/24	Descriptive Studies	Understanding Epi, Ch. 8	
9: 10/26	Descriptive Studies		
10: 10/31	Case-Control Studies	Understanding Epi, Ch. 9	Problem Set #1
10: 11/2	Case-Control Studies		
11: 11/7	Cohort Studies	Understanding Epi, Ch. 10	Problem Set #2
11: 11/9	Cohort Studies		
12: 11/14	Experimental Studies	Understanding Epi, Ch. 11	Problem Set #3
12: 11/16	Randomized Controlled Trials in Practice		
13: 11/21	NO CLASS (Asynchronous Activity: Summary of Study Designs / Catch Up)		Media Reflection #4
13: 11/23	NO CLASS (Travel Day)		
14: 11/28	Study Design: Student Presentations		
14: 11/30	Study Design: Student Presentations		
15: 12/5	Final Exam Review		Final Exam Review Assignment
15: 12/7	End of Semester Epi-Themed Celebration		
Thursday, Dec 15	**Final Exam, 8-10 am**	OPTIONAL if grade is A- or better	

Academic Support

- Office for Disability Equity**: Office of Disability Equity / Accessibility.** The Office for Disability Equity (ODE) is the campus resource for disability-related information. They provide consultation, training, and academic services to advance accessibility and inclusion by taking an intersectional approach to disability. For more information, please visit their website: https://www.umt.edu/disability/.
- Advising Center and Tutoring Resources: Schedule advising or tutoring appointments, available online or by phone. Tutoring available for math, writing, public speaking, Study Jam groups, and TRiO services.
- Writing and Public Speaking Center: Provides help at any point with writing, presentation, and research projects. Online and in-person appointments available.
- Office for Student Success (OSS)**:** Helps students to meet three goals: transition smoothly to college, remain enrolled and progress in a program of study, and graduate in a timely manner.
    - OSS COVID-19 Website
    - Download the OSS Online Student Success Guide or condensed Student Success Checklist

- Tools and Spaces:
    - **Computer labs**: Check availability of computer stations and labs across campus.

- **Mansfield Library**: Library Hours , Request learning technology: laptops, webcams, and WiFi hotspots

- Technical Support: The UM IT Help Desk is available to provide technical support from 8AM-5PM, M-F.
  - For help with email, UMBox, Zoom, or other technical issues:
    - Call 406-243-HELP
    - Submit a ticket by emailing ithelpdesk@umontana.edu or by filling out the General Help/Questions request form.
  - For help with Moodle:
    - Call 406-243-HELP
    - Submit a ticket by emailing umonline-help@umontana.edu or by filling out the Moodle Help request form.

Personal Wellness Supports

- Curry Health Center: Provides quality, affordable, accessible health care for students.
  - Call (406) 243-2122 to schedule a tele-health appointment with medical or counseling
  - Be Well at Home
  - What to do if I think I have been exposed to COVID-19? (scroll down the page)
- Campus Rec: Keep up with your fitness workouts! Check out the Campus Rec website for modified hours and classes available.
- University of Montana Emergency Student Support Fund: Established to help enrolled students with unexpected crisis or hardship created by COVID-19.
- UM Food Pantry: Currently providing free meal kits and hygiene products for students, staff, faculty, and community members.

COVID Information

- The University encourages COVID-19 vaccines and boosters, which are offered for both students and employees at the Health Services Pharmacy inside Curry Health Center.
- Masks are only required inside Curry Health Center and in some medical/research laboratories on campus. This requirement will be clearly posted. Required or not, we respect those choosing to wear a mask to reduce spread of respiratory viruses.
- Students who test positive for COVID-19 need to isolate for at least five days, which includes not attending in-person classes. During isolation, students should stay home or follow UM Housing guidance for isolation in place, and, if they must leave for food, medicines or other essentials, wear a high-quality mask. Instructors will work to support and accommodate students who miss class due to illness.
- After five days students can leave isolation if they are symptom-free. If symptoms persist, isolation should continue until students are symptom-free for 24 hours (without use of medications to alleviate the symptoms).
- COVID-19 testing for students is available at Curry Health Center. For employees, contact your primary care provider or visit a walk-in clinic. Free at-home tests can be ordered online, or there may be tests available through the Health Services Pharmacy by calling 243-5171.