







UMASS
AMHERST

PUBHLTH 224

Epidemiology in Public Health

3-Credit, Moodle-Supported Course

SPIRE course ID: <CODE>

Contact Me 	Meet with Me 	Location and Time 	Course Materials 
<PROF_FULL_NAME>, PhD <ul style="list-style-type: none">Pronouns: she, her, hers<PROF_EMAIL>Please allow 24 hours for response, not including weekends	Please drop-in on Tuesdays 2:00-3:00 PM or email me for an appointment at a different time. <ul style="list-style-type: none">In-person: Arnold House, room 427On Zoom: Link posted on Moodle	This course will be taught in-person for Spring 2023: <ul style="list-style-type: none">T/Th 11:30-12:45 PMHerter Hall, room 227 Lectures will be recorded and posted on Moodle after class.	Bovbjerg ML (2019), <i>Foundations of Epidemiology</i> (1 st ed.) Oregon University Press <ul style="list-style-type: none">Link to free download posted on Moodle Additional materials and resources will be posted on Moodle.

Course Description

Epidemiology, the study of the distribution and determinants of disease and health-related states in populations, is the foundational science of public health. To fully understand issues ranging from the etiology of cancer and heart disease to factors influencing public health policy, it is important for you to be familiar with basic concepts of epidemiology. This course is intended to introduce the science of epidemiology and explore how epidemiologic methods are applied to solving public health problems. You will learn basic quantitative methods, study design concepts, and critical thinking skills relating to infectious and chronic disease epidemiology.

Prerequisite SPHHS 150: Great Challenges in Public Health and Health Sciences *OR*
PUBHLTH 200: Introduction to Public Health

Student Hours

Please drop in to see me in my office (427 Arnold House) or via Zoom (link posted on Moodle) Tuesdays from 2:00-3:00 PM ET, or send me an email if you would like to meet at a different time. Graduate TAs will also be available for questions. Their drop-in hours are posted at the top of the Moodle page, along with their office locations and/or Zoom links. We are all happy to answer questions about the course material or assignments, or about epidemiology and public health in general – or just to chat and get to know each other a bit. 😊

Course Format

The format of this course is lecture and discussion, with the class serving as the discussion group. Students in this course will complete assigned readings, participate in class exercises and discussions, work collaboratively with other students in the classroom, and complete a series of written assignments, quizzes, and exams.

Course Learning Objectives

Students in this course will demonstrate the ability to:

Assessment Strategy

1. Apply the basic terminology and definitions of epidemiology, and identify key sources of data for epidemiologic purposes	<ul style="list-style-type: none">• In-class exercises• Quizzes and Exams• Problem Sets
2. Describe public health problems in terms of magnitude, person, place, and time, and calculate common statistics used in epidemiology	<ul style="list-style-type: none">• In-class exercises• Quizzes and Exams• Problem Sets
3. Identify and describe the steps in an infectious disease outbreak investigation, including control strategies	<ul style="list-style-type: none">• In-class exercises• Quizzes• Problem set 1
4. Identify the major epidemiologic study designs and understand the strengths and limitations of these study designs for different applications	<ul style="list-style-type: none">• In-class exercises• Quizzes and Exams
5. Critically evaluate the strengths and limitations of epidemiologic reports, and draw appropriate inferences from epidemiologic data	<ul style="list-style-type: none">• In-class exercises• Problem Sets• Final exam
6. Discuss the importance of epidemiology for informing scientific, ethical, economic, and political discussion of health issues, and in the development of public health recommendations	<ul style="list-style-type: none">• In-class exercises• Problem set 2• Exams

Public Health Domains, Competencies, and Concepts addressed in this course

Domains:

- Overview of Public Health – Public Health History, Core Public Health Concepts
- Role and Importance of Data in Public Health – Basic Concepts of Data Collection, Basic Methods of Data Collection, Basic Tools of Data Collection, Data Usage, Data Analysis, Evidence-based Approaches
- Human Health – Science of Health and Disease
- Determinants of Health – Socioeconomic, Behavioral Factors, Biological Factors, and Environmental Factors Impacts on Human Health and Health Disparities

Competency: Information Literacy – Evaluate and Synthesize Information

Concept: Research Methods

COVID-19-Related Considerations

We will keep things as flexible as possible given the ongoing COVID-19 pandemic. Following are important pandemic-related considerations to be aware of:

- We must all follow university policies regarding masks, quarantine/isolation, testing, etc.
- Class will be held in-person, and the expectation is that you will attend class. However, if you feel ill please do not come to class. Instead, you should watch the recorded lectures through Echo360 and review the class session materials posted on Moodle.
- I will communicate updates and reminders in person during class time, via email, and/or using announcements sent through Moodle. Please check your email and the Moodle announcements tool regularly on weekdays.

- Finally, we may need to make adjustments if the COVID situation changes during the semester. I will do my best to be flexible and accommodate unforeseen needs. Please reach out if you have any concerns or need different arrangements. We are all in this together!

Moodle Course Website

I will post all course materials on Moodle, and you will access and submit all assignments via Moodle. You must have an OIT account and be officially enrolled in the course to access our Moodle page. Because this page is an important class resource, make sure you have access to it early in the term.

Students are expected to access the course Moodle site regularly (i.e., at least 3-4 days a week) throughout the semester to access the following materials:

- ✓ Course syllabus and schedule
- ✓ Course announcements
- ✓ Lecture recordings and notes, class exercises, and handouts
- ✓ Supplemental readings and links to internet-based resources
- ✓ Online quizzes
- ✓ Assignment descriptions and drop boxes
- ✓ Assignment feedback and grades

Attendance Policy

This class moves quickly, and regular attendance is a great way to keep up with the fun. Students who must miss class are expected to watch the Echo360 recording for the class session they missed, and are encouraged to email or make an appointment to review any questions they have about the material. And of course, please do not come to class if you are experiencing any COVID- or flu-like symptoms. Stay home, take care of yourself, and get in touch as soon as you can so we can help you stay on track.

Grading Policies

Final course grades will be calculated as follows:

Participation	20%
Quizzes	20%
Problem sets	30%
Midterm exam	15%
Final exam	15%

Participation: To receive full credit for participation, students are expected to be both present and engaged during class sessions – or to actively watch the Echo360 recording after class – and to submit completed class exercises for each class session. Class exercises may be submitted during class or via Moodle dropbox. In-class exercises are graded based on completeness, clarity, and demonstrated engagement with course material; answers do not have to be correct to receive full credit. The two lowest grades on in-class exercises will be dropped (i.e., if you miss one or two, those will drop).

Quizzes: Quizzes based on assigned readings and material covered in class will be administered via Moodle regularly during the semester. Because quiz answers are available once the quiz closes, late quiz submissions will not be accepted. The lowest quiz grade will be dropped, and bonus quizzes are available to replace lower quiz grades.

Syllabus: PUBHLTH 224 Section 01 - Spring 2023

Problem Sets: There will be two take-home problem set assignments as listed in the course schedule.

These problem sets will involve analyzing and interpreting epidemiologic information and data.

Students may discuss problem set assignments with one another, but collaborators must be named in the assignment submission and each student is expected to turn in their own work.

Exams: The midterm and final exams focus on assessing students' ability to analyze and interpret data and information from epidemiologic research. Exams are cumulative, with the final exam focusing more on the material from the second half of the semester. Students may use a standard calculator on exams, but not a smart phone, tablet, etc.

The following rubric will be used to determine final grades in this course:

A	93-100	B	83-86.99	C	73-76.99	D	63-66.99
A-	90-92.99	B-	80-82.99	C-	70-72.99	D-	60-62.99
B+	87-89.99	C+	77-79.99	D+	67-69.99	F	<60

Academic Honesty Policy

All students are required to read and comply with the University of Massachusetts Academic Honesty Policy. A complete copy of this policy and other helpful resources are available on-line at <https://www.umass.edu/honesty/resources>. Misunderstanding this policy will not be accepted as an excuse for failing to follow the policy guidelines. If you are unsure as to what actions specifically violate the Academic Honesty Policy, please contact me immediately for clarification.

Any assessment, assignment, or project that includes copied or plagiarized material, or material written by someone other than the student, will not be graded, and the student will receive a grade of zero for the assignment. A description of the incident will be forwarded to the University's Academic Honesty Office.

Late Submission Policy

Students who are unable to complete assessments or submit assignments by the dates listed in the course schedule are responsible for contacting Dr. Zagarins in advance to discuss the situation. Extensions or alternative assignments may be permitted for extraordinary circumstances and by prior arrangement, and students may be asked to provide written documentation of that need.

- In the absence of a pre-arranged alternative due date, assignments may be submitted up to two days late without penalty. Following this two-day grace period, a 10% grade penalty will be applied for each day late.
- Students with disability accommodations allowing for extra time for assignments must also request extensions in advance if they are needed.
- Because quiz answers are available once the quiz period closes, late quiz submissions will not be accepted. Bonus quizzes are available to replace missed quizzes.

Additional Course Policies

1. If use of external sources is permitted, such as for the problem set assignments, any material obtained from such sources must be described in the student's own words and properly cited. Students should not include direct quotes from outside sources in their work.
2. Students must bring any questions about a grade earned on an assignment to Dr. Zagarins' attention within one week of the grade being posted.

3. Barring a grading error, grades earned will stand. Students may not re-submit an assignment, quiz, or exam for a higher grade.
4. Extra credit work to improve grades will not be accepted.
5. Grading is based on work submitted by the end of the final exam period. Students are responsible for contacting Dr. Zagarins prior to the final exam period in order to make arrangements for fulfillment of course requirements. An “incomplete” will only be submitted for students who have completed over 75% of course material, and who experience extraordinary circumstances that prevent them from submitting their final assignments before the end of the semester. Incomplete grades must be cleared within a month of the end of the semester.

Copyright Protection

Many of the materials created for this course are the intellectual property of the course instructor. This includes, but is not limited to, the syllabus, lectures, class exercises, homework assignments, exams, and course notes. Except to the extent not protected by copyright law, any use, distribution or sale of such materials requires the permission of the instructor. Please be aware that it is a violation of university policy to reproduce, for distribution or sale, class lectures or class notes, unless the faculty member has explicitly waived copyright. This includes posting course materials, such as answer keys, to online forums and websites such as Course Hero and Chegg.

Disability Accommodation and Inclusive Learning Statement

We all learn differently and bring different strengths and needs to the class. If there are aspects of the course that prevent you from learning or make you feel excluded, please let me know as soon as possible. Together we will work to develop strategies that meet your needs and support you in fulfilling the requirements of the course.

Please let me know as soon as possible if you have a disability and require accommodations. You will need to register with Disability Services, located in room 161 of the Whitmore Administration Building. Information on available services and materials for registering are available on their website, www.umass.edu/disability, and the office can be reached by phone at 413-545-0892.

There are also a range of resources on campus, including:

- Writing Center: www.umass.edu/writingcenter
- Learning Resource Center: www.umass.edu/lrc
- Center for Counseling and Psychological Health: www.umass.edu/counseling
- English as a Second Language Program: www.umass.edu/esl

Valuing, Recognizing, and Encouraging Diversity

Promoting and valuing diversity in the classroom enriches learning and broadens everyone’s perspectives. Inclusion and tolerance can lead to respect for others and their opinions and is critical to maximizing the learning that we expect in this course. Our own closely held ideas and personal comfort zones may be challenged. The results, however, create a sense of community and promote excellence in the learning environment. Diversity includes consideration of (1) the variety of life experiences others have had, and (2) factors related to “diversity of presence,” including age, economic circumstances, ethnic identification, disability, gender, geographic origin, race, religion, sexual orientation, social position. This class will follow principles of inclusion, respect, tolerance, and acceptance that support the values of diversity.

Course Schedule → Subject to change; updates will be posted on Moodle and communicated via email

Date	Class Topics and Assignments Due	Readings Due
Module 1 → Introducing epidemiology – origins and essentials		
Week 1: 2/7 to 2/13	<ul style="list-style-type: none"> Course introduction Getting to know epidemiology 	<ul style="list-style-type: none"> ✓ <i>Foundations of Epi</i>: Chapter 1 ✓ <i>This Podcast Will Kill You</i>, episodes 1&4
Monday, 2/13: Moodle syllabus quiz due		
Week 2: 2/14 to 2/20	<ul style="list-style-type: none"> Morbidity and mortality Overview of infectious disease epidemiology Thurs, 2/16: In-class infectious disease quiz 	<ul style="list-style-type: none"> ✓ <i>Foundations of Epi</i>: Chapters 2 & 3 ✓ ERIC Notebook: Person time
Monday, 2/20: Moodle quiz 1 due		
Week 3: 2/21 to 2/27	<ul style="list-style-type: none"> Outbreak investigations Case study: Typhoid fever 	<ul style="list-style-type: none"> ✓ CDC: Investigating an outbreak ✓ Typhoid fever case study
Monday, 2/27: Moodle quiz 2 due		
Module 2 → Taking it to the next level – basic methods and statistics		
Week 4: 2/28 to 3/6	<ul style="list-style-type: none"> Descriptive study designs Analytic study designs 	<ul style="list-style-type: none"> ✓ Ranganathan & Aggarwal, 2019: Study design series, parts 1 – 3
Monday, 3/6: Problem set 1 due		
Week 5: 3/7 to 3/20	<ul style="list-style-type: none"> Relative risks and odds ratios Attributable risk 	<ul style="list-style-type: none"> ✓ <i>Foundations of Epi</i>: Chapter 4
3/11 to 3/19 → Spring break		
Monday, 3/20: Moodle quiz 3 due		
Week 6: 3/21 to 3/27	<ul style="list-style-type: none"> Chance and significance Power and sample size 	<ul style="list-style-type: none"> ✓ Sullivan and Feinn, 2012 ✓ Hickey et al, 2018
Monday, 3/27: Moodle quiz 4 due (optional bonus review quiz)		
Week 7: 3/28 to 4/3	<ul style="list-style-type: none"> Catch up and review Thursday, 3/30: In-class midterm exam 	
Module 3 → Picking it apart – critiquing epidemiologic research		
Week 8: 4/4 to 4/10	<ul style="list-style-type: none"> Error and bias Confounding 	<ul style="list-style-type: none"> ✓ <i>Foundations of Epi</i>: Chapters 5 – 7
Monday, 4/10: Moodle quiz 5 due		
Week 9: 4/11 to 4/17	<ul style="list-style-type: none"> External validity Experimental and quasi-experimental studies 	<ul style="list-style-type: none"> ✓ ERIC Notebook: Experimental studies ✓ <i>Foundations of Epi</i>: Chapter 9
Wednesday, 4/19: Moodle quiz 6 due		
Week 10: 4/18 to 4/24	<ul style="list-style-type: none"> <i>Tuesday, 4/18: No class, Patriot's Day</i> Critiquing epidemiologic literature 	<ul style="list-style-type: none"> ✓ Sfredo et al, 2016
Monday, 4/24: Problem set 2 due		

Continued →

Course Schedule (continued)

Date	Class Topics and Activities	Readings and Assignments Due
<i>Module 4 → Getting to the fun stuff – special topics in epidemiology</i>		
Week 11: 4/25 to 5/1	<ul style="list-style-type: none">• Screening for disease• Validity in screening	✓ <i>Foundations of Epi</i> : Appendix 1
Monday, 5/1: Moodle quiz 7 due		
Week 12: 5/2 to 5/8	<ul style="list-style-type: none">• Determining causality• Bad science	✓ <i>Foundations of Epi</i> : Chapter 10 ✓ <i>Maintenance Phase</i> podcast: P-hacking
Weeks 13&14: 5/9 to 5/16	<ul style="list-style-type: none">• Epi in the media: Vaccines and autism• Student's choice• Course wrap-up and exam review	✓ Wakefield et al., 1998 (may skim) ✓ Mrožek-Budzyn et al., 2010
Monday, 5/15: Moodle quiz 8 due (optional bonus review quiz)		
Finals week	Monday, 5/22: In-class final exam at 1:00 PM ET	

This course syllabus and schedule are subject to change. Any updated versions will be posted to Moodle and students will be informed of changes via email and a Moodle announcement.