## Term Information

| | |
|---|---|
| **Effective Term** | Autumn 2022 |
| ***Previous Value*** | *Autumn 2020* |

## Course Change Information

**What change is being proposed? (If more than one, what changes are being proposed?)**

Course title change and more in-depth course description

Course submission for new GE approval

**What is the rationale for the proposed change(s)?**

The proposed title and course description better describe the course.

The course is being proposed as a GE Theme Course

**What are the programmatic implications of the proposed change(s)?**

**(e.g. program requirements to be added or removed, changes to be made in available resources, effect on other programs that use the course)?**

None

**Is approval of the requrest contingent upon the approval of other course or curricular program request?** No

**Is this a request to withdraw the course?** No

## General Information

| | |
|---|---|
| **Course Bulletin Listing/Subject Area** | Pub Hlth: Epidemiology |
| **Fiscal Unit/Academic Org** | College of Public Health - D2505 |
| **College/Academic Group** | Public Health |
| **Level/Career** | Undergraduate |
| **Course Number/Catalog** | 2410 |
| **Course Title** | Epidemiology in Public Health |
| ***Previous Value*** | *Introduction to Epidemiology* |
| **Transcript Abbreviation** | Epi in Pub Hlth |
| ***Previous Value*** | *Intro Epi* |
| **Course Description** | The course will cover the principles and procedures in the field of epidemiology, with a focus on the application of the principles of epidemiology. |
| ***Previous Value*** | *Introduction to the study of public health; history, methods, applications, and issues in epidemiology.* |
| **Semester Credit Hours/Units** | Fixed: 3 |

## Offering Information

| | |
|---|---|
| **Length Of Course** | 14 Week, 12 Week, 8 Week, 7 Week, 6 Week |
| **Flexibly Scheduled Course** | Never |
| **Does any section of this course have a distance education component?** | Yes |
| **Is any section of the course offered** | 100% at a distance |
| **Grading Basis** | Letter Grade |
| **Repeatable** | No |
| **Course Components** | Lecture |
| **Grade Roster Component** | Lecture |
| **Credit Available by Exam** | No |

| | |
|---|---|
| **Admission Condition Course** | No |
| **Off Campus** | Never |
| **Campus of Offering** | Columbus, Lima, Mansfield, Marion, Newark, Wooster |
| ***Previous Value*** | *Columbus, Lima, Marion* |

## Prerequisites and Exclusions

| | |
|---|---|
| **Prerequisites/Corequisites** | |
| **Exclusions** | |
| **Electronically Enforced** | No |

## Cross-Listings

**Cross-Listings**

## Subject/CIP Code

| | |
|---|---|
| **Subject/CIP Code** | 26.1309 |
| **Subsidy Level** | Baccalaureate Course |
| **Intended Rank** | Freshman, Sophomore, Junior, Senior |

## Requirement/Elective Designation

Required for this unit's degrees, majors, and/or minors

Health and Well-being

The course is an elective (for this or other units) or is a service course for other units

***Previous Value***

*Required for this unit's degrees, majors, and/or minors*

*The course is an elective (for this or other units) or is a service course for other units*

## Course Details

**Course goals or learning objectives/outcomes**

- Summarize historical events in the field of epidemiology
- Explain the concept of the natural history of infectious and chronic diseases
- Describe the basis of cause and effect
- Summarize major causes of mortality and morbidity for developed and developing nations
- Summarize basic concepts in infectious disease epidemiology including the incubation period of microbes, attack rate, ring vaccination, acquired and innate herd immunity, and portals of entry and exit into the human system
- Summarize basic concepts in chronic disease epidemiology including the empiric induction period, screening for antecedent conditions, risk factors and preventive factors, and selected concepts regarding diagnosis and treatment
- Summarize basic concepts of primary, secondary, and tertiary prevention
- Perform calculations of sensitivity, specificity, predictive value positive, and negative predictive value for a diagnostic test
- Differentiate between incidence and prevalence epidemiologic measures
- Use and apply basic methods of rate calculations for diseases and the importance of rate adjustments for age and other potential confounders
- Assimilate basic information on the types of epidemiologic investigations: case studies, surveillance studies, case control studies, cohort studies, and intervention studies (field studies and randomized clinical trials)
- Identify sources of random and systematic error in scientific studies
- Summarize the basis of hypothesis testing and confidence intervals of epidemiologic estimates
- Define and interpret relative risk and the odds ratio
- Set up a life table and plot survival curves
- Summarize the concept of goodness of fit tests in epidemiologic studies
- Summarize fundamentals of conducting an epidemiologic investigation of an outbreak of disease in the population
- Apply the criteria of judgment for determination of cause and effect disease associations

**Content Topic List**

- Historical events in the field of epidemiology
- Major causes of mortality and morbidity for developed and developing nations and the Epidemiologic Transition
- Basic concepts in infectious and chronic disease epidemiology including primary, secondary and tertiary prevention
- Calculation and interpretation of sensitivity, specificity, predictive value positive and predictive value negative for a diagnostic test
- Basic methods of rate calculations for diseases and the importance of rate adjustments for age and other potential confounders
- Basic information on the types of epidemiologic investigations (case studies, surveillance studies, case control studies, cohort studies, intervention studies (field studies and randomized clinical trials)
- Sources of random and systematic error in scientific studies, hypothesis testing and confidence intervals of epidemiologic estimates
- Meaning and interpretation of the relative risk and the odds ratio in cohort and case control studies
- Life tables, survival curves and goodness of fit tests in epidemiologic studies
- Criteria of judgment for determination of cause and effect disease associations

**Sought Concurrence**

No

## Attachments

- PUBHEPI 2410 DL Epidemiology in Public Health- SYLLABUS.pdf: Distance Learning syllabus

  *(Syllabus. Owner: Droesch,Kynthia Ellen)*

- PUBHEPI 2410 Epidemology in Public Health -SYLLABUS.pdf

  *(Syllabus. Owner: Droesch,Kynthia Ellen)*

- asc-distance-approval-PUBHEPI 2410 DL.pdf: ASC approval for DL delivery

  *(Other Supporting Documentation. Owner: Droesch,Kynthia Ellen)*

- PUBHEPI 2410 submission-health-well-being.pdf: GE Theme submission - Health and Well Being

  *(Other Supporting Documentation. Owner: Droesch,Kynthia Ellen)*

## Comments

## Workflow Information

| Status | User(s) | Date/Time | Step |
|---|---|---|---|
| Submitted | Droesch,Kynthia Ellen | 12/08/2021 12:28 PM | Submitted for Approval |
| Approved | Anderson,Sarah Elizabeth | 12/08/2021 01:14 PM | Unit Approval |
| Approved | Bisesi,Michael Salvatore | 12/20/2021 12:31 PM | College Approval |
| Pending Approval | Cody,Emily Kathryn<br>Jenkins,Mary Ellen Bigler<br>Hanlin,Deborah Kay<br>Hilty,Michael<br>Vankeerbergen,Bernadette Chantal<br>Steele,Rachel Lea | 12/20/2021 12:31 PM | ASCCAO Approval |

THE OHIO STATE UNIVERSITY
COLLEGE OF PUBLIC HEALTH

**PUBHEPI 2410 – Epidemiology in Public Health**
**3 credit hours – X TERM, 202x**

**Course Director:**
**Office location:**
**E-mail:**

**TA:**
**E-mail:**

**Office Hours:**

**Course time and location:**

**Course Description**: This is a foundational course in epidemiology designed for undergraduate students. We will cover the principles and procedures in the field of epidemiology, with a focus on the application of the principles of epidemiology. These principles will be illustrated through real-world examples and applied exercises. There are no prerequisites for this course.

**How this Online course works:**

**Mode of delivery:** This course is 100% online. You will find a sequence of materials and activities each week in Carmen.

**Pace of online activities:** The course is structured into 15 weeks. Materials for each week will be available at 12:00 AM on the listed start date of each week. All assignments (quizzes, problem sets, reflection papers, etc) are due by 11:59 PM on the listed end date of each week. Students will also be expected to view the recorded lectures, complete weekly quizzes and periodic problem sets, view vignettes focusing on breakthroughs in the field of epidemiology, and work with their peers to complete several group assignments.

**Credit hours and work expectations:** University rules stipulate that a student can expect to spend a minimum of 3 hours per week on a course for each credit hour; thus for this 3-credit hour course you should expect to devote roughly 9 hours per week. Workload will vary from week to week.

**Course technology**
*Technology support*
For help with your password, university email, Carmen, or any other technology issues, questions,or requests, contact the Ohio State IT Service Desk. Standard support hours are available at ocio.osu.edu/help/hours, and support for urgent issues is available 24/7.

- **Self-Service and Chat support:** ocio.osu.edu/help
- **Phone:** 614-688-4357(HELP)
- **Email:** servicedesk@osu.edu
- **TDD:** 614-688-8743

*Technology skills needed for this course*

- Basic computer and web-browsing skills
- Navigating Carmen (go.osu.edu/canvasstudent)

*Required equipment*

- Computer: current Mac (MacOs) or PC (Windows 10) with high-speed internet connection
- Other: a mobile device (smartphone or tablet) to use for BuckeyePass authentication

*Carmen access*

You will need to use BuckeyePass (buckeyepass.osu.edu) multi-factor authentication to access yourcourses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit theBuckeyePass - Adding a Device help article for step-by-step instructions (go.osu.edu/adddevice).
- Request passcodes to keep as a backup authentication option. When you see the Duo loginscreen on your computer, click **Enter a Passcode** and then click the **Text me new codes** button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the Duo Mobile application (go.osu.edu/install-duo) to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at614-688-4357(HELP) and IT support staff will work out a solution with you.

**Learning Objectives:** The overall objective of the course is to give the student an understanding of the principles and procedures of epidemiology. Upon successful completion of this course, a student will be able to:

1. Summarize the core principles of epidemiology including: a) Summarize historical events in the field of epidemiology. b) Explain the concept of the natural history of infectious and chronic diseases. c) Summarize major causes of mortality and morbidity for developed and developing nations. (1, 2, 3)
2. Summarize basic concepts of primary, secondary and tertiary prevention. For infectious disease epidemiology summarize the incubation period, attack rate, acquired and innate herd immunity and portals of entry and exit into the human system. For chronic disease epidemiology summarize the empiric induction period, screening for antecedent conditions, risk factors and preventive factors and selected concepts regarding diagnosis and treatment. (6, 4, 5)
3. Assess use of core epidemiologic study designs and measures, including: a) Describe the basic features of epidemiologic investigations (case studies, surveillance studies, case control studies, cohort studies) and intervention studies (field studies and randomized clinical trials). b) Differentiate between incidence and prevalence epidemiologic measures. (10, 8)
4. Apply and interpret appropriate epidemiologic analysis, including: a) Perform calculations of sensitivity, specificity, predictive value positive and predictive value negative for a diagnostic test. b) Use and apply basic methods of rate calculations for diseases and state the importance of rate adjustments for age and other potential confounders. c) Define and interpret relative risk and the odds ratio. (9, 11, 7)

**Bachelor of Science in Public Health Competencies Addressed**

For more details, see http://cph.osu.edu/students/undergraduate

**BSPH Foundational (Core) Competencies**

1. Summarize the historic milestones in public health which have influenced current roles and responsibilities of current public health agencies, organizations and systems.
2. Compare and contrast types of major domestic and international public health issues, including sources/causes of infectious/chronic diseases, transmission, risk factors, morbidity and mortality.
3. Discuss various approaches/strategies for identification, response and intervention to address and attempt to resolve common public health issues.
4. Identify genetic, social, political, cultural, behavioral, socioeconomic, demographic and ethical factors and relationships to domestic and international public health issues and determinants of health.
5. Apply the fundamental principles of the five core disciplines of public health (biostatistics; environmental health; epidemiology; health administration/policy; health behavior/promotion) to domestic and international population health issues.
6. Communicate public health information, in both oral and written forms, through a variety of media and to diverse audiences.
7. Locate, use, evaluate and synthesize public health information.

**BSPH – Environmental Public Health Specialization Competencies**

1. Apply principles of math, chemistry, biology to applied science of environmental public health.
2. Use the Environmental Science Health model to explain environmentally-related exposures and human diseases and summarize management, technical measures and approaches to reduce and prevent the disease

**BSPH – Public Health Sociology Specialization Competencies**

1. Employ specific sociological theories, both classical and contemporary, to explain the unequal distribution of health among different subpopulations in the United States and throughout the world. Identify how these theories can extend our knowledge of disease processes and prevention and intervention opportunities beyond typical public health perspectives.
2. Interpret population health patterns using rigorous methods of sociological inquiry that stem from both qualitative and quantitative reasoning, augmenting what public health researchers and practitioners typically use.

**<u>Bachelor of Science in Public Health CEPH Foundational Domains and Cross Cutting Concepts Addressed</u>**

**CEPH Foundational Domains**

1. The history and philosophy of public health as well as its core values, concepts and functions across the globe and in society
2. 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
3. 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
4. The underlying science of human health and disease, including opportunities for promoting and protecting health across the life course
5. The socioeconomic, behavioral, biological, environmental and other factors that impact human health and contribute to health disparities
6. The fundamental concepts and features of project implementation, including planning, assessment and evaluation
7. The fundamental characteristics and organizational structures of the US health system as well as the differences between systems in other countries
8. Basic concepts of legal, ethical, economic and regulatory dimensions of health care and public health policy and the roles, influences and responsibilities of the different agencies and branches of government

9. Basic concepts of public health-specific communication, including technical and professional writing and the use of mass media and electronic technology

**CEPH Cross Cutting Concepts**

1. Advocacy for protection and promotion of the public's health at all levels of society
2. Community dynamics
3. Critical thinking and creativity
4. Cultural contexts in which public health professionals work
5. Ethical decision making as related to self and society
6. Independent work and a personal work ethic
7. Networking
9. Professionalism
10. Research methods
12. Teamwork and leadership

**GE Health and Wellbeing Theme**

***Goal 1: Successful students will analyze an important topic or idea at a more advanced and in-depth level than the foundations.***

1.1 Engage in critical and logical thinking about the topic or idea of health and wellbeing.
1.2 Engage in an advanced, in-depth, scholarly exploration of the topic or idea of health and wellbeing.

Activities to achieve goal: Students engage in critical thinking throughout the course via the reflection papers, the problem sets, the case study, and epidemiology in the news assignments. In writing (and responding to others' writing) multiple times in the Epidemiology in the News assignments, students interpret real-work examples of epidemiologic information. The problem sets allow students to practice the concepts illustrated in the course and are key to the learning necessary to complete the case study assignment. Students use critical thinking to complete the case study assignment, which is presented as an investigation into the risk factors for a real-world disease condition.

***Goal 2: Successful students will integrate approaches to the theme by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in future.***

2.1 Identify, describe, and synthesize approaches or experiences as they apply to health and wellbeing.
2.2 Demonstrate a developing sense of self as a learner through reflection, self-assessment, and creative work, building on prior experiences to respond to new and challenging contexts.

Activities to achieve goal: Much of the work in the field of public health is collaborative. The explicit objective of the case study is to introduce students to real-world problems in the field of public health and apply epidemiology to the case study problem. Students' self-evaluation and peer-evaluation, an important part of the case study assignment, is meaningful in this course, and will be valuable in their development of themselves as learners. Students will connect to out-of-classroom thinking about health and wellness through the Epidemiology in the News assignments and the Rx for Survival reflection writing. These two activities require students to identify, describe and synthesize epidemiologic approaches to a public health issue. The reflection assignments stimulate students to reflect on new and challenging information.

***Goal 3: Students will explore and analyze health and wellbeing through attention to at least two dimensions of wellbeing. (Ex: physical, mental, emotional, career, environmental, spiritual, intellectual, creative, financial, etc.).***

3.1 Explore and analyze health and wellbeing from theoretical, socio-economic, scientific, historical, cultural, technological, policy, and/or personal perspectives.
3.2 Identify, reflect on, and apply the skills needed for resiliency and wellbeing.

Activities to achieve goal: This course emphases several historical aspects of epidemiology and cultural aspects of public health epidemiology, with every module using examples from the world around us. The course has a focus on the physical, mental, and environmental aspects of wellbeing. Much of what we do in public health is at the societal level and students learn about policy approaches to addressing public health issues in nearly every module. Through readings, recorded lectures, documentaries, assignments, reflections, Epidemiology in the News posts, and the case study, students will explore a variety of epidemiologic public health topics from many perspectives. These various assignments require them to apply epidemiologic thinking to the issues and reflect on their learning. Working through applied problems and reflections will deepen students' ability to engage with complexity, enhancing personal resilience to think about and manage the complexities of the world around them. They will deepen engagement with complexity particularly through writing reflection papers and completing the case study assignment with a group of fellow students.

**Text/Readings:**
Required: University of North Carolina Department of Epidemiology. *ERIC Notebook.* All required readings are available in the Carmen course website within the specific week. For example, the **Issues in Epidemiology and Health Services Research** notebook is available in Week 1.

Supplemental text: Friis R. & Sellers T. *Epidemiology for Public Health Practice. Fifth Edition.* Burlington: Jones and Bartlett Learning, 2014. The Friis textbook will be on closed reserve at the Thompson Library.

**Grading:** Evaluation will be based on the following:

| | |
|---|---|
| Midterm Exam | 15% |
| Reflection papers | 6% |
| Quizzes | 13% |
| Problem sets | 15% |
| Epidemiology in the News Discussion Posts | 10% |
| Case Study | 15% |
| Case Study self and peer evaluation | 5% |
| Final exam | 21% |

The following is an approximate guide showing the correspondence of final percentages to final letter grades.

| Percentage | Letter Grade |
|---|---|
| 93-100 | A |
| 90-92.9 | A- |
| 87-89.9 | B+ |
| 83-86.9 | B |
| 80-82.9 | B- |
| 77-79.9 | C+ |
| 73-76.9 | C |
| 70-72.9 | C- |
| 66-69.9 | D+ |
| 60-65.9 | D |
| <60 | E |

**Individual assessments**

**Exams:** There will be two exams in this course. Preparing for the exams, which test material from the ERIC Notebook readings, from the recorded lectures, and from homework assignments, is intended to help students synthesize the core concepts of the principles of epidemiology, the tools of measurement in public health, and real-world applications of epidemiologic practices. Exams will consist of multiple choice, true/false, and write-in calculations. Students will have a window of time to complete the exams. Once you start an exam, it must be completed in one sitting. Students who miss an exam will not be allowed to take a make-up exam unless there is a valid excuse. The first exam is worth 15% of your final grade and it covers material from **Weeks 1-5**. The final exam is worth 21% of your final grade. The final exam is NOT cumulative and will cover material from **Weeks 7-14**. **Both exams must be completed without the help of other individuals.**

**Reflection papers:** Students will view segments from the PBS program "Rx for Survival: A Global Health Challenge." Videos are available for streaming through the OSU library with links to each video posted in Carmen. After each assigned viewing, students will submit a **one-page** reflection (double-spaced, 12-point font) on the segment. In this paper, students should reflect on one or two topics/vignettes from the video that were new or interesting to them in some way. Writing reflection papers will provide students with an opportunity to apply epidemiologic knowledge to examples in the world, to consider socio-economic, historic, and cultural aspects of epidemiology, to reflect on their experiences with epidemiology in their lives, and to reflect on their learning. A sample reflection is available on Carmen. There are six reflections due; each is worth 1% of your final grade.

**Quizzes:** Upon completion of content for each week, students will need to take a short quiz on Carmen (~10 questions). Preparing for the quizzes, which test material from the ERIC Notebook readings, from the recorded lectures, and from homework assignments, is intended to help students synthesize the core concepts of the principles of epidemiology, the tools of measurement in public health, and real-world applications of epidemiologic practices. Quizzes will consist of multiple choice, true/false questions, and occasionally performing calculations. You can take the quiz at any time during the week. The quiz will be active up until 11:59 P.M. on the last day of the week. There are 13 quizzes; each is worth 1% of your final grade. **Quizzes must be completed without the help of other individuals.**

**Problem sets:** Problem sets will be assigned to further illustrate concepts introduced in this course. Through completing problem sets, students will demonstrate critical thinking in health and wellness, examining how epidemiology is practiced in the dynamic and challenging real-world context. These problem sets will help you prepare to complete the case study assignment, as the types of questions will be similar. The assignment due dates are posted in the course schedule below. There are **three** problem sets due; each is worth 5% of your final grade. **You may work with your fellow classmates on the problem sets; however, each student should turn in their own assignment.** You can complete the problem set anytime during the assigned Week; however, please note, once you start the problem set you must finish in one sitting and you have 2 hours to enter your responses. I have included the paper copy of the questions and I encourage you to work through the problems on paper **before** entering your answers in Carmen.

**Case study peer and self-evaluation:** Each student will complete a peer and self-evaluation of the case study project. This evaluation will count for 5% of your final grade. If two or more of your peers indicate your participation was a 3 or lower (see rubric guidance on Carmen) then your grade for the case study assignment will be reduced. Peer- and self-evaluation provides students an opportunity to reflect on learning and working in a collaborative project.

**Group assessments**

We will be using Carmen Groups in this class. You have been assigned to a group of 6-7 students. This is the group of students with whom you will complete the Epidemiology in the News Discussion Posts **AND** the Case Study assignment. In addition, there will be graded problem sets. I encourage you to work on your problem sets with your group members so that you can talk through the questions and get feedback from your classmates. **However, each student should turn in their own problem set.**

**Epidemiology in the News Discussion Posts:** Each group will have a discussion board for this group assessment. The Epidemiology in the News assignment challenges students to apply epidemiological thinking to current events and phenomena, with opportunities to connect what they learning in the recorded lectures, documentaries, and public health literature to examples from the news. Students will be better able to interpret real-world examples of epidemiologic information, and be better consumers of public health current news. There will be four graded discussions over the course of this semester (see course schedule for due dates). The TA will post a link to a short health-related article in the news to each group's respective discussion board. Each student will reply with a post to the discussion board answering the following questions: 1) What did you **know** about the topic before you read the article? 2) What do you **wonder,** now that you have read the article? 3) What did you **learn?** Students will make connections to the topics discussed in class and what is happening in the world around them.

After posting, students will respond to a know-wonder-learn post from **at least one** other student in your group that includes one of the following elements: 1.) Complement – I like that….; 2.) Comment – I agree/disagree because…; 3.) Connection – I also thought…; 4.) Question – I wonder why…

Full credit will be given for assignments that are complete and thoughtful (that is, one short sentence answers will not receive full credit). An example is provided on the course website so that students can have some guidance as to what is "complete and thoughtful". There are four discussions; each is worth 2.5% of your final grade.

**Case Study:** Much of the work in the field of public health is collaborative. The objective of the case study is to introduce students to real-world problems in the field of public health and apply epidemiology to the case study problem. Students will use critical thinking to complete the case study assignment, an investigation into the risk factors for a real-world disease condition by considering which epidemiological measures are being proposed, and what are the strengths and weaknesses of those methods. The case study provides students with an opportunity to use skills and critical thinking developed through the course. The case study will be due at the end of the semester, as indicated in the course schedule. Questions will be given about the case for students to answer. Assignments must be submitted through Carmen by 11:59 PM of the due date. Emailed assignments will not be accepted. Late assignments will result in a **2% reduction of the final course grade** for each day past the deadline. The case study is worth 15% of your final grade.

We will consider the following rubric when grading the case study:

- Excellent – Responses to questions are thorough, complete and correct; beyond expectation. All parts of the response are logical and very well-organized; no unneeded information is included.
- Very good – Responses are thorough complete and correct with only very minor errors, omissions, or extraneous information.

- Good – Responses adequately cover all the major facets of the questions but lack rigor and completeness with respect to details. Or responses are thorough, complete and correct but are not well organized or contain a lot of extraneous information.
- Fair – Responses adequately cover many facets of the questions but lack rigor and completeness with respect to details. Or responses adequately cover all the major facets of the questions but are not organized well and/or they include excessive irrelevant detail.
- Poor – Responses are incomplete, incorrect, and generally inadequate; responses are carelessly prepared or demonstrate misunderstanding of important concepts.

**Carmen:** There will be a Carmen site for the course. It will contain the syllabus, the readings, links to the lectures, videos, and quizzes. All assignments must be submitted through Carmen; I will not grade emailed assignments.

**Questions to Instructor***:* In most cases, you should use the **Communicate and Connect** module to ask me questions about the course. In particular, you should access the page named **Questions, Clarifications, Confusions, & Epidemiology.** Likely, if you have a question about the content, others do as well. However, if you want to schedule an appointment or if you have a question about a grade, you may email me.

**Office of Student Life: Disability Services**
Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Office of Student Life: Disability Services at 614-292-3307 in Room 098 Baker Hall 113 W. 12th Ave. to coordinate reasonable accommodations for students with documented disabilities (http://slds.osu.edu/).

**Mental Health Services**
As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting https://ccs.osu.edu/ or calling 614-292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273-TALK or at suicidepreventionlifeline.org.

**Academic Integrity:**
Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University, the College of Public Health, and the Committee on Academic Misconduct (COAM) expect that all students have read and understood the University's *Code of Student Conduct* and the School's *Student Handbook,* and that all students will complete all academic and scholarly assignments with fairness and honesty. The *Code of Student Conduct* and other information on academic integrity and academic misconduct can be found at the COAM web pages (http://oaa.osu.edu/coam.html). Students must recognize that failure to follow the rules and guidelines established in the University's *Code of Student Conduct,* the *Student Handbook,* and in the syllabi for their courses may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Please note that use of material from the Internet without appropriate acknowledgement and complete citation is plagiarism just as it would be if the source were printed material. Further examples are found in the *Student Handbook*. Ignorance of the *Code of Student Conduct* and the *Student Handbook* is never considered an "excuse" for academic misconduct.

If I suspect a student of academic misconduct in a course, I am obligated by University Rules to report these suspicions to the University's Committee on Academic Misconduct. If COAM determines that the student has violated the University's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in the course and suspension or dismissal from the University. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

| Week | Due Dates | Content/assignments |
|---|---|---|
| **Week 1** | **Topic: History and scope of epidemiology** | |
| | •Recorded lecture available<br>•Weekly readings: ERIC Notebook (Issues in Epidemiology and Health Services Research)<br>•Supplemental readings: Friis & Sellers (Chapter 1)<br>•Video Rx for Survival: Disease Warriors | |
| | | Reflection paper |
| | | Carmen Quiz #1 |
| **Week 2** | **Topic: Practical applications of epidemiology** | |
| | •Recorded lecture available<br>•Supplemental readings: Friis & Sellers (Chapter 2) | |
| | | Carmen Quiz #2 |
| **Week 3** | **Topic: Measures of morbidity and mortality** | |
| | •Recorded lecture available<br>•Weekly readings: ERIC Notebook (Incidence and Prevalence)<br>•Supplemental readings: Friis &Sellers (Chapter 3)<br>•Video Rx for Survival: Deadly Messengers | |
| | | Reflection paper |
| | | Carmen Quiz #3 |
| **Week 4** | **Topic: Descriptive epidemiology** | |
| | •Recorded lecture available<br>•Weekly readings: ERIC Notebooks (Calculating Person Time; Common Measures & Statistics in Epidemiological Literature)<br>•Supplemental readings: Friis &Sellers (Chapter 4) | |
| | | Carmen Quiz #4 |
| | | Epidemiology in the News Discussion #1 |
| **Week 5** | **Topic: Sources of data** | |
| | •Recorded lecture available<br>•Supplemental readings: Friis &Sellers (243-244, 248-250)<br>•Video Rx for Survival: Delivering the Goods | |
| | | Reflection paper |
| | | Carmen Quiz #5 |
| **Week 6** | **Topic: Midterm examination 1** | |
| | **Must complete the exam by X** | |
| **Week 7** | **Topic: Introduction to epidemiological study designs** | |
| | •Recorded lecture available | |
| | | Carmen Quiz #6 |
| | | Epidemiology in the News Discussion #2 |
| **Week 8** | **Topic: Cohort Studies** | |
| | •Recorded lecture available<br>•Weekly readings: ERIC Notebooks (Cohort studies; Risk and Rate Measures in Cohort Studies) | |
| | | Carmen Quiz #7 |
| **Week 9** | **Topic: Case-control Studies** | |
| | •Recorded lecture available<br>•Weekly readings: ERIC Notebooks (Case-control studies)<br>•Video Rx for Survival: How Safe Are We? | |
| | | Reflection paper |
| | | Carmen Quiz #8 |
| **Week 10** | **Topic: Cross-sectional Studies** | |

| | | |
|---|---|---|
| | •Recorded lecture available<br>•Weekly readings: ERIC Notebooks (Ecologic studies; Cross-sectional studies) | |
| | | Carmen Quiz #9 |
| | | Problem set #1 |
| | | Epidemiology in the News Discussion #3 |
| **Week 11** | **Topic: Experimental Studies** | |
| | •Recorded lecture available<br>•Weekly readings: ERIC Notebook (Experimental studies)<br>•Video Rx for Survival: Back to Basics | |
| | | Reflection paper |
| | | Carmen Quiz #10 |
| | | Problem set #2 |
| **Week 12** | **Topic: Disease screening** | |
| | •Recorded lecture available<br>•Weekly readings: ERIC Notebook (Assessment of Diagnostic and Screening Tests)<br>•Supplemental readings: Friis &Sellers (465-478) | |
| | | Carmen Quiz #11 |
| | | Problem set #3 |
| **Week 13** | **Topic: Epidemiology of Infectious Diseases/Outbreak investigations** | |
| | •Recorded lecture available<br>•Supplemental readings: Friis &Sellers (492-539)<br>•Video Rx for Survival: Rise of the Superbugs | |
| | | Reflection paper |
| | | Carmen Quiz #12 |
| **Week 14** | **Topic: Epidemiology of Chronic Diseases** | |
| | •Recorded lecture available | |
| | | Carmen Quiz #13 |
| | | Epidemiology in the News Discussion #4 |
| **Week 15** | **Topic: Complete Case Study** | |
| | | Case Study Assignment |
| | | Peer and self-evaluation |
| **During finals week** | **Topic: Final Exam** | |
| | | **Complete the final exam by December XX at 11:59 PM** |

**Alignment of Course Topics**

The following chart demonstrates how course topics are aligned with 1) course learning objectives, 2) BSPH program competencies (foundational and specialization), 3) CEPH foundational domains and cross cutting concepts; and 4) evaluation activities conducted to assess course learning objectives (and aligned competencies, domains & cross cutting concepts).

| Week | Topic | Aligned Course Learning Objectives | Aligned Foundational (Core) Competencies | Aligned Specialization Competencies | Aligned CEPH Domains | Aligned CEPH Cross-cutting Concepts | Readings/viewings | Student Evaluation Activity for Assessment |
|---|---|---|---|---|---|---|---|---|
| 1 | History and scope of Epidemiology | 1 | 1, 5 | EPH: 1, 2<br>PHS: 1,2 | 1 | 1, 3 | Recorded lecture; Rx for survival; ERIC Notebook (Issues in Epidemiology and Health Services Research); | Quiz, Case study, Midterm exam, Final exam, Reflection papers, Homework assignments |
| 2 | Practical Applications of Epidemiology | 2 | 2 | EPH: 1<br>PHS: 1,2 | 2, 5 | 1, 2, 3, 10,12 | Recorded lecture | Quiz, Case study, Midterm exam, Final exam, Reflection papers, Homework assignments |
| 3 | Measures of morbidity and mortality | 1,3,4 | 2, 3, 4 | EPH: 1<br>PHS: 1, 2 | 3, 4, 5, 7 | 1, 3, 10 | Recorded lecture; Rx for Survival,<br>ERIC Notebook (Incidence and Prevalence) | Quiz, Case study, Midterm exam, Final exam, Reflection papers, Homework assignments |
| 4 | Descriptive epidemiology | 1,3 | 2, 3, 4 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5 | 2, 3, 4, 10 | Recorded lecture; ERIC Notebooks (Calculating Person Time; Common Measures & Statistics in Epidemiological Literature | Quiz, Case study, Midterm exam, Final exam, Reflection papers, Homework assignments |
| 5 | Sources of data | 3 | 3, 6, 7 | EPH: 1<br>PHS: 1, 2 | 2, 3, 7 | 2, 3, 7, 10,<br>12 | Recorded lecture; Rx for survival | Quiz, Case study, Midterm exam, Final exam, Reflection papers, Homework assignments |
| 7 | Introduction to epi study designs | 3 | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9,<br>10, 12 | Recorded lecture | Quiz, Case study, Final exam, Reflection papers, Homework assignments |
| 8 | Cohort studies | 3 | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9, 10, 12 | Recorded lecture; ERIC Notebooks (Cohort studies; Risk and Rate Measures in Cohort Studies) | Quiz, Case study, Final exam, Reflection papers, Homework assignments |
| **9** | Case-control studies | 3 | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9,<br>10, 12 | Recorded lecture; ERIC Notebook (Case-control studies) | Quiz, Case study, Final exam, Reflection papers, Homework assignments |
| **10** | Cross-sectional studies | 3 | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9,<br>10, 12 | Recorded lecture; ERIC Notebooks (Cross-sectional studies; Ecological studies) | Quiz, Case study, Final exam, Reflection papers, Homework assignments |
| **11** | Experimental studies | 3 | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9,<br>10, 12 | Recorded lecture; ERIC Notebook (Experimental studies) | Quiz, Case study, Final exam, Reflection papers, Homework assignments |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **12** | Disease screening | 2,4 | 2, 3, 4 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 8, 9 | 1, 2, 3, 4, 7,<br>9, 10 | Recorded lecture; ERIC Notebook (Assessment of Diagnostic and Screening Tests) | Quiz, Case study, Final exam, Reflection papers, Homework assignments |
| **13** | Infectious disease epidemiology | 1, 2, 3, 4 | 1-7 | EPH: 1, 2<br>PHS: 1, 2 | 1, 2, 3, 4, 5, 6,<br>8, 9 | 1, 2, 3, 4, 5,<br>10 | Recorded lecture; Rx for survival | Quiz, Case study, Final exam, Reflection papers, Homework assignments |
| **14** | Chronic disease epidemiology | 1, 2, 3, 4 | 1-7 | EPH: 1, 2<br>PHS: 1, 2 | 1, 2, 3, 4, 5, 6,<br>8, 9 | 1, 2, 3, 4, 5, 10 | Recorded lecture; Rx for survival | Quiz, Case study, Final exam, Reflection papers, Homework assignments |

THE OHIO STATE UNIVERSITY
COLLEGE OF PUBLIC HEALTH

**PUBHEPI 2410 –Epidemiology in Public Health**
**3 credit hours – X TERM, 202x**

**Course Director:**
**Office location:**
**E-mail:**

**TA:**
**E-mail:**

**Office Hours:**

**Course time and location: T Th Assigned Lecture Hall**

**Course Description**: This is a foundational course in epidemiology designed for undergraduate students. We will cover the principles and procedures in the field of epidemiology, with a focus on the application of the principles of epidemiology. These principles will be illustrated through real-world examples and applied exercises. There are no prerequisites for this course.

**Mode of delivery:** This course is taught in person. You will find a sequence of materials and activities each week in Carmen.

**Pace of activities:** The course is structured into 15 weeks. Materials for each week will be available at 12:00 AM on the listed start date of each week. All assignments (exams, quizzes, epidemiology in the news posts, reflection papers, problem sets, case study) are due by 11:59 PM on the listed end date of each week. Students will also be expected to attend class for the in person lectures, complete weekly quizzes and periodic assignments, view vignettes focusing on breakthroughs in the field of epidemiology, and work with their peers to complete several group assignments.

**Credit hours and work expectations:** University rules stipulate that a student can expect to spend a minimum of 3 hours per week on a course for each credit hour; thus for this 3-credit hour course you should expect to devote roughly 9 hours per week. Workload will vary from week to week.

**Course technology**
*Technology support*
For help with your password, university email, Carmen, or any other technology issues, questions,or requests, contact the Ohio State IT Service Desk. Standard support hours are available at ocio.osu.edu/help/hours, and support for urgent issues is available 24/7.

- **Self-Service and Chat support:** ocio.osu.edu/help
- **Phone:** 614-688-4357(HELP)
- **Email:** servicedesk@osu.edu
- **TDD:** 614-688-8743

*Technology skills needed for this course*

- Basic computer and web-browsing skills
- Navigating Carmen (go.osu.edu/canvasstudent)

*Required equipment*

- Computer: current Mac (MacOs) or PC (Windows 10) with high-speed internet connection

- Other: a mobile device (smartphone or tablet) to use for BuckeyePass authentication

*Carmen access*
You will need to use BuckeyePass (buckeyepass.osu.edu) multi-factor authentication to access yourcourses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the BuckeyePass - Adding a Device help article for step-by-step instructions (go.osu.edu/adddevice).
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click **Enter a Passcode** and then click the **Text me new codes** button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the Duo Mobile application (go.osu.edu/install-duo) to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357(HELP) and IT support staff will work out a solution with you.

**Learning Objectives:** The overall objective of the course is to give the student an understanding of the principles and procedures of epidemiology. Upon successful completion of this course, a student will be able to:

1. Summarize the core principles of epidemiology including: a) Summarize historical events in the field of epidemiology. b) Explain the concept of the natural history of infectious and chronic diseases. c) Summarize major causes of mortality and morbidity for developed and developing nations. (1, 2, 3)
2. Summarize basic concepts of primary, secondary and tertiary prevention. For infectious disease epidemiology summarize the incubation period, attack rate, acquired and innate herd immunity and portals of entry and exit into the human system. For chronic disease epidemiology summarize the empiric induction period, screening for antecedent conditions, risk factors and preventive factors and selected concepts regarding diagnosis and treatment. (6, 4, 5)
3. Assess use of core epidemiologic study designs and measures, including: a) Describe the basic features of epidemiologic investigations (case studies, surveillance studies, case control studies, cohort studies) and intervention studies (field studies and randomized clinical trials). b) Differentiate between incidence and prevalence epidemiologic measures. (10, 8)
4. Apply and interpret appropriate epidemiologic analysis, including: a) Perform calculations of sensitivity, specificity, predictive value positive and predictive value negative for a diagnostic test. b) Use and apply basic methods of rate calculations for diseases and state the importance of rate adjustments for age and other potential confounders. c) Define and interpret relative risk and the odds ratio. (9, 11, 7)

**Bachelor of Science in Public Health Competencies Addressed**
For more details, see http://cph.osu.edu/students/undergraduate

**BSPH Foundational (Core) Competencies**

1. Summarize the historic milestones in public health which have influenced current roles and responsibilities of current public health agencies, organizations and systems.
2. Compare and contrast types of major domestic and international public health issues, including sources/causes of infectious/chronic diseases, transmission, risk factors, morbidity and mortality.
3. Discuss various approaches/strategies for identification, response and intervention to address and attempt to resolve common public health issues.
4. Identify genetic, social, political, cultural, behavioral, socioeconomic, demographic and ethical factors and relationships to domestic and international public health issues and determinants of health.

5. Apply the fundamental principles of the five core disciplines of public health (biostatistics; environmental health; epidemiology; health administration/policy; health behavior/promotion) to domestic and international population health issues.
6. Communicate public health information, in both oral and written forms, through a variety of media and to diverse audiences.
7. Locate, use, evaluate and synthesize public health information.

**BSPH – Environmental Public Health Specialization Competencies**

1. Apply principles of math, chemistry, biology to applied science of environmental public health.
2. Use the Environmental Science Health model to explain environmentally-related exposures and human diseases and summarize management, technical measures and approaches to reduce and prevent the disease

**BSPH – Public Health Sociology Specialization Competencies**

1. Employ specific sociological theories, both classical and contemporary, to explain the unequal distribution of health among different subpopulations in the United States and throughout the world. Identify how these theories can extend our knowledge of disease processes and prevention and intervention opportunities beyond typical public health perspectives.
2. Interpret population health patterns using rigorous methods of sociological inquiry that stem from both qualitative and quantitative reasoning, augmenting what public health researchers and practitioners typically use.

**Bachelor of Science in Public Health CEPH Foundational Domains and Cross Cutting Concepts Addressed**

**CEPH Foundational Domains**

1. The history and philosophy of public health as well as its core values, concepts and functions across the globe and in society
2. 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
3. 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
4. The underlying science of human health and disease, including opportunities for promoting and protecting health across the life course
5. The socioeconomic, behavioral, biological, environmental and other factors that impact human health and contribute to health disparities
6. The fundamental concepts and features of project implementation, including planning, assessment and evaluation
7. The fundamental characteristics and organizational structures of the US health system as well as the differences between systems in other countries
8. Basic concepts of legal, ethical, economic and regulatory dimensions of health care and public health policy and the roles, influences and responsibilities of the different agencies and branches of government
9. Basic concepts of public health-specific communication, including technical and professional writing and the use of mass media and electronic technology

**CEPH Cross Cutting Concepts**

1. Advocacy for protection and promotion of the public's health at all levels of society
2. Community dynamics
3. Critical thinking and creativity
4. Cultural contexts in which public health professionals work
5. Ethical decision making as related to self and society
6. Independent work and a personal work ethic
7. Networking
9. Professionalism

10. Research methods
12. Teamwork and leadership

**GE Health and Wellbeing Theme**

***Goal 1: Successful students will analyze an important topic or idea at a more advanced and in-depth level than the foundations.***

1.1 Engage in critical and logical thinking about the topic or idea of health and wellbeing.
1.2 Engage in an advanced, in-depth, scholarly exploration of the topic or idea of health and wellbeing.

Activities to achieve goal: Students engage in critical thinking throughout the course via the reflection papers, the problem sets, the case study, and epidemiology in the news assignments. In writing (and responding to others' writing) multiple times in the Epidemiology in the News assignments, students interpret real-work examples of epidemiologic information. The problem sets allow students to practice the concepts illustrated in the course and are key to the learning necessary to complete the case study assignment. Students use critical thinking to complete the case study assignment, which is presented as an investigation into the risk factors for a real-world disease condition.

***Goal 2: Successful students will integrate approaches to the theme by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in future.***

2.1 Identify, describe, and synthesize approaches or experiences as they apply to health and wellbeing.
2.2 Demonstrate a developing sense of self as a learner through reflection, self-assessment, and creative work, building on prior experiences to respond to new and challenging contexts.

Activities to achieve goal: Much of the work in the field of public health is collaborative. The explicit objective of the case study is to introduce students to real-world problems in the field of public health and apply epidemiology to the case study problem. Students' self-evaluation and peer-evaluation, an important part of the case study assignment, is meaningful in this course, and will be valuable in their development of themselves as learners. Students will connect to out-of-classroom thinking about health and wellness through the Epidemiology in the News assignments and the Rx for Survival reflection writing. These two activities require students to identify, describe and synthesize epidemiologic approaches to a public health issue. The reflection assignments stimulate students to reflect on new and challenging information.

***Goal 3: Students will explore and analyze health and wellbeing through attention to at least two dimensions of wellbeing. (Ex: physical, mental, emotional, career, environmental, spiritual, intellectual, creative, financial, etc.).***

3.1 Explore and analyze health and wellbeing from theoretical, socio-economic, scientific, historical, cultural, technological, policy, and/or personal perspectives.
3.2 Identify, reflect on, and apply the skills needed for resiliency and wellbeing.

Activities to achieve goal: This course emphases several historical aspects of epidemiology and cultural aspects of public health epidemiology, with every module using examples from the world around us. The course has a focus on the physical, mental, and environmental aspects of wellbeing. Much of what we do in public health is at the societal level and students learn about policy approaches to addressing public health issues in nearly every module. Through readings, recorded lectures, documentaries, assignments, reflections, Epidemiology in the News posts, and the case study, students will explore a variety of epidemiologic public health topics from many perspectives. These various assignments require them to apply epidemiologic thinking to the issues and reflect on their learning. Working through applied problems and reflections will deepen students' ability to engage with complexity, enhancing personal resilience to think about and manage the complexities of the world around them. They will deepen engagement with complexity particularly through writing reflection papers and completing the case study assignment with a group of fellow students.

**Text/Readings/Slides:**

Required: Slides corresponding to topics covered in the lectures are posted on Carmen by Noon on Monday of each week and should be reviewed prior to the in person lectures given during class time.

Required Weekly Reading: University of North Carolina Department of Epidemiology. *ERIC Notebook.* Readings corresponding to the lecture materials are available in the Carmen course website within the specific week. For example, the **Issues in Epidemiology and Health Services Research** notebook is available in Week 1.

Supplemental text: Friis R. & Sellers T. *Epidemiology for Public Health Practice. Sixth Edition.* Burlington: Jones and Bartlett Learning, 2021. The Friis textbook will be on closed reserve at the Thompson Library and is available to purchase at the Barnes & Noble Bookstore.

**Grading:** Evaluation will be based on the following:

| | |
|---|---|
| Midterm Exam 1 | 20% |
| Midterm Exam 2 | 20% |
| Quizzes | 10% |
| Reflection papers | 5% |
| Epidemiology in the News Discussion Posts | 5% |
| Problem Sets | 5% |
| Case Study | 10% |
| Final exam | 25% |

The following is an approximate guide showing the correspondence of final percentages to final letter grades.

| Percentage | Letter Grade |
|---|---|
| 93-100 | A |
| 90-92.9 | A- |
| 87-89.9 | B+ |
| 83-86.9 | B |
| 80-82.9 | B- |
| 77-79.9 | C+ |
| 73-76.9 | C |
| 70-72.9 | C- |
| 66-69.9 | D+ |
| 60-65.9 | D |
| <60 | E |

**Individual assessments**

**Exams:** Preparing for the exams, which are designed to test material from the in person lecturs, the ERIC Notebook readings, and from homework assignments, is intended to help students synthesize the core concepts of the principles of epidemiology, the tools of measurement in public health, and real-world applications of epidemiologic practices. There will be two midterm exams and a final exam in this course. Exams will consist of multiple choice, true/false, matching, and write-in calculations. Students will have a window of time to complete the exams. Once you start an exam, it must be completed in one sitting. Students who miss an exam will not be allowed to take a make-up exam unless there is a valid excuse. The first exam is worth 20% of your final grade and it covers material from **Weeks 1-5**. The second midterm exam is worth 20% of your final grade and it covers material from **Weeks 7-11**. The final exam is worth 25% of your final grade. The final exam is cumulative and will cover material from the entire semester. **All exams must be completed independently without the help of other individuals.**

**Reflection papers:** Students will view segments from the PBS program "Rx for Survival: A Global Health Challenge." Videos are available for streaming through the OSU library with links to each video posted in Carmen. After each assigned viewing, students will submit a **one-page** reflection (double-spaced, 12-point font) on the segment. In this paper, students should reflect on one or two topics/vignettes from the video that were new or interesting to them in some way. A sample reflection is available on Carmen. Writing reflection papers will provide students with an opportunity to apply epidemiologic knowledge to examples in the world, to consider socio-economic, historic, and cultural aspects of epidemiology, to reflect on their experiences with epidemiology in their lives, and to reflect on their learning. There are six reflections due; each is worth 1% of your final grade.

**Quizzes:** Upon completion of content for each week, students will need to take a short quiz on Carmen (~6 questions). Preparing for the quizzes, which test material from the ERIC Notebook readings, from the recorded lectures, and from homework assignments, is intended to help students synthesize the core concepts of the principles of epidemiology, the tools of measurement in public health, and real-world applications of epidemiologic practices. Quizzes will consist of multiple choice, true/false questions, and occasionally performing calculations. You can take the quiz at any time during the week. The quiz will be active up until 11:59 P.M. on the last day of the week. There are 10 quizzes; each is worth 1% of your final grade. **Quizzes must be completed independently without the help of other individuals.**

**Problem sets:** Problem sets will be assigned to further illustrate concepts introduced in this course. Through completing problem sets, students will demonstrate critical thinking in health and wellness, examining how epidemiology is practiced in the dynamic and challenging real-world context. These problem sets will help you prepare to complete the case study assignment, as the types of questions will be similar. The assignment due dates are posted in the course schedule below. There are **three** problem sets due; worth a total of 5% of your final grade. **You may work with your fellow classmates on the problem sets; however, each student should turn in their own assignment.** You can complete the problem set anytime during the assigned Week; however, please note, once you start the problem set you must finish in one sitting and you have 2 hours to enter your responses. I will include a copy of the questions and encourage you to work through the problems on paper **before** entering your answers in Carmen.

**Case study peer and self-evaluation:** Each student will complete a peer and self-evaluation of the case study project. This evaluation will count for 5% of your final grade. If two or more of your peers indicate your participation was a 3 or lower (see rubric guidance on Carmen) then your grade for the case study assignment will be reduced. Peer- and self-evaluation provides students an opportunity to reflect on learning and working in a collaborative project.

**Group assessments**

We will be using Carmen Groups in this class. You will be assigned to a group of 6-7 students. This is the group of students with whom you will complete the Epidemiology in the News Discussion Posts **AND** the Case Study assignment. In addition, there will be graded problem sets. I encourage you to work on your problem sets with your group members so that you can talk through the questions and get feedback from your classmates. **However, each student should turn in their own problem set.**

**Epidemiology in the News Discussion Posts:** Each group will have a discussion board for this group assessment. The Epidemiology in the News assignment challenges students to apply epidemiological thinking to current events and phenomena, with opportunities to connect what they learning in the recorded lectures, documentaries, and public health literature to examples from the news. Students will be better able to interpret real-world examples of epidemiologic information, and be better consumers of public health current news. There will be four graded discussions over the course of this semester (see course schedule for due dates). The TA will post a link to a short health-related article in the news to each group's respective discussion board. Each student will reply with a post to the discussion board answering the following questions: 1) What did you **know** about the topic before you read the article? 2) What do you **wonder,** now that you have read the article? 3) What did you **learn?** Students will make connections to the topics discussed in class and what is happening in the world around them.

After posting, students will respond to a know-wonder-learn post from **at least one** other student in your group that includes one of the following elements: 1.) Complement – I like that….; 2.) Comment – I agree/disagree because…; 3.) Connection – I also thought…; 4.) Question – I wonder why…

Full credit will be given for assignments that are complete and thoughtful (that is, one short sentence answers will not receive full credit). An example is provided on the course website so that students can have some guidance as to what is "complete and thoughtful". There are four discussions; each is worth 2.5% of your final grade.

**Case Study:** Much of the work in the field of public health is collaborative. The objective of the case study is to introduce students to real-world problems in the field of public health and apply epidemiology to the case study problem. Students will use critical thinking to complete the case study assignment, an investigation into the risk factors for a real-world disease condition by considering which epidemiological measures are being proposed, and what are the strengths and weaknesses of those methods. The case study provides students with an opportunity to use skills and critical thinking developed through the course. The case study will be due at the end of the semester, as indicated in the course schedule. Questions will be given about the case for students to answer. Assignments must be submitted through Carmen by 11:59 PM of the due date. Emailed assignments will not be accepted. Late assignments will result in a **2% reduction of the final course grade** for each day past the deadline. The case study is worth 15% of your final grade.

We will consider the following rubric when grading the case study:

- Excellent – Responses to questions are thorough, complete and correct; beyond expectation. All parts of the response are logical and very well-organized; no unneeded information is included.
- Very good – Responses are thorough complete and correct with only very minor errors, omissions, or extraneous information.
- Good – Responses adequately cover all the major facets of the questions but lack rigor and completeness with respect to details. Or responses are thorough, complete and correct but are not well organized or contain a lot of extraneous information.
- Fair – Responses adequately cover many facets of the questions but lack rigor and completeness with respect to details. Or responses adequately cover all the major facets of the questions but are not organized well and/or they include excessive irrelevant detail.
- Poor – Responses are incomplete, incorrect, and generally inadequate; responses are carelessly prepared or demonstrate misunderstanding of important concepts.

**Carmen:** There will be a Carmen site for the course. It will contain the syllabus, lecture slides, the readings, links to the lectures, videos, exams, quizzes and problem sets. All assignments must be submitted through Carmen; I will not grade emailed assignments.

**Questions to Instructor***:* In most cases, you should use the **Communicate and Connect** module to ask me questions about the course. In particular, you should access the page named **Questions, Clarifications, Confusions, & Epidemiology.** Likely, if you have a question about the content, others do as well. However, if you want to schedule an appointment or if you have a question about a grade, you may email me.

**Office of Student Life: Disability Services**
Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Office of Student Life: Disability Services at 614-292-3307 in Room 098 Baker Hall 113 W. 12th Ave. to coordinate reasonable accommodations for students with documented disabilities (http://slds.osu.edu/).

**Mental Health Services**

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting https://ccs.osu.edu/ or calling 614-292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273-TALK or at suicidepreventionlifeline.org.

**Academic Integrity:**
Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University, the College of Public Health, and the Committee on Academic Misconduct (COAM) expect that all students have read and understood the University's *Code of Student Conduct* and the School's *Student Handbook,* and that all students will complete all academic and scholarly assignments with fairness and honesty. The *Code of Student Conduct* and other information on academic integrity and academic misconduct can be found at the COAM web pages (http://oaa.osu.edu/coam.html). Students must recognize that failure to follow the rules and guidelines established in the University's *Code of Student Conduct,* the *Student Handbook,* and in the syllabi for their courses may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Please note that use of material from the Internet without appropriate acknowledgement and complete citation is plagiarism just as it would be if the source were printed material. Further examples are found in the *Student Handbook*. Ignorance of the *Code of Student Conduct* and the *Student Handbook* is never considered an "excuse" for academic misconduct.

If I suspect a student of academic misconduct in a course, I am obligated by University Rules to report these suspicions to the University's Committee on Academic Misconduct. If COAM determines that the student has violated the University's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in the course and suspension or dismissal from the University. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

| Week | Content/Assignments | |
|---|---|---|
| **Week 1** | **Topic: Introduction, Discussion of Class Format**<br>**History & Scope of Epidemiology**<br>**Past & Current Epidemics, Global Health & Epidemiologic Transition** | |
| | •In Person Lectures, 75 Minutes, T Th, Lecture Slides Posted on Carmen<br>•Weekly readings: ERIC Notebook (Issues in Epidemiology and Health Services Research)<br>•Supplemental readings: Friis & Sellers (Chapter 1)<br>•Video Rx for Survival: Disease Warriors | |
| | | Reflection Paper |
| | | Carmen Quiz #1 |
| **Week 2** | **Topics: Discussion of Film, practical applications of epidemiology, trends in health and illness, population dynamics, disease etiology, risk factors, types of prevention** | |
| | •In Person Lectures, 75 Minutes, T Th, Lecture Slides Posted on Carmen<br>•Supplemental readings: Friis & Sellers (Chapter 2) | |
| | | Carmen Quiz #2 |
| **Week 3** | **Topics: Measures of Morbidity and Mortality**<br>**Risk and Rates, Incidence, Prevalence, Mortality, Crude Rates, Adjusted Rates**<br>**Characteristics of Person, Place & Time** | |
| | •In Person Lectures, 75 Minutes, T Th, Lecture Slides Posted on Carmen<br>•Weekly readings: ERIC Notebook (Incidence and Prevalence)<br>•Supplemental readings: Friis &Sellers (Chapter 3)<br>•Video Rx for Survival: Deadly Messengers | |
| | | Reflection Paper |
| | | Carmen Quiz #3 |
| **Week 4** | **Topics: Discussion of Film, Descriptive Epidemiology, Characteristics of Person, Place & Time** | |
| | •In Person Lectures, 75 Minutes, T Th, Lecture Slides Posted on Carmen<br>•Weekly readings: ERIC Notebooks (Calculating Person Time; Common Measures & Statistics in Epidemiological Literature)<br>•Supplemental readings: Friis &Sellers (Chapter 4) | |
| | | Carmen Quiz #4 |
| | | Epidemiology in the News Discussion #1 |
| **Week 5** | **Topics: Sources of Data, Vital Statistics, Surveys, Disease Registries, International Classification of Disease, Human Subjects Research, Risk Versus Beneficence** | |
| | •In Person Lectures, 75 Minutes, T Th, Lecture Slides Posted on Carmen<br>•Supplemental readings: Friis &Sellers (Chapter 5, 243-244, 248-250)<br>•Video Rx for Survival: Delivering the Goods | |
| | | Reflection paper |
| | | Carmen Quiz #5 |
| **Week 6** | **Topic: Review for Midterm Examination 1** | |
| | •In Person Lecture, 75 Minutes, T, Review Lecture Slides Posted on Carmen | |
| | **Topic: Midterm Examination 1, Th** | |
| | •Must complete the exam during class time. | |
| **Week 7** | **Topics: Introduction to epidemiological study designs**<br>**Hierarchy of Study Designs, Case reports, Ecologic Studies, Cross-Sectional studies, Cohort Studies and Relative Risks, Case-Control Studies and Odds Ratios, Experimental Study Designs**<br>**Experimental Studies, Clinical Trials & Community Trials** | |
| | •In Person Lectures, 75 Minutes, T Th, Lecture Slides Posted on Carmen<br>•Weekly readings: ERIC Notebooks (Cohort studies; Case-control studies, Relative Risk and Rate Measures in Cohort Studies, Odds Ratios in Case Control Studies)<br>•Supplemental Readings: Friis & Sellers (Chapters 6, 7, 8) | |

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| | | Carmen Quiz #6 |
| | | Epidemiology in the News Discussion # 2 |
| **Week 8** | **Topics: Causal Concepts, Review of Cohort and Case Control studies<br>Hypothesis Testing, P value, Z test, 95% Confidence Interval** | |
| | •In Person Lectures, 75 Minutes, T Th, Lecture Slides Posted on Carmen<br>•Weekly readings: ERIC Notebooks (Hypothesis Testing)<br>• Supplemental Readings: Friis & Sellers (Chapter 9) | |
| | | Carmen Quiz #7 |
| **Week 9** | **Topics: Clinical Trials, Meta-analysis and Systematic Reviews, Criteria of Judgment<br>Data Interpretation, Confounding & Effect Modification, Simpson's Paradox, Sources of Bias** | |
| | •In Person Lectures, 75 Minutes, T Th, Lecture Slides Posted on Carmen<br>•Supplemental Readings: Friis & Sellers (Chapter 10)<br>•Weekly readings: ERIC Notebooks (Meta-analysis, Bias, Confounding, Effect Modification)<br>•Video Rx for Survival: How Safe Are We? | |
| | | Reflection paper |
| | | Carmen Quiz #8 |
| **Week 10** | **Topics: Clinical Trials, Meta-analysis, Confounding, Effect Modification<br>Screening for Disease, Sensitivity, Specificity, Predictive Values of Screening Tests** | |
| | •In Person Lectures, 75 Minutes, T Th, Lecture Slides Posted on Carmen<br>•Weekly readings: ERIC Notebooks (Diagnostic and Screening Tests)<br>•Supplemental readings: Friis & Sellers, Chapter 11 | |
| | | Carmen Quiz #9 |
| | | Epidemiology in the News Discussion #3 |
| **Week 11** | **Review for Midterm Exam 2, T** | |
| | •In Person Lecture, 75 Minutes, T, Review Lecture Slides Posted on Carmen | |
| | | Reflection paper |
| | | Carmen Quiz #10 |
| | **Topic: Midterm Exam 2, Th** | |
| | •Must complete the exam during class time**.** | |
| **Week 12** | **Topics: Epidemiology of Infectious Diseases, HIV, Tuberculosis, Viral Hepatitis, Malaria<br>Epidemiologic Study of Foodborne Epidemic<br>Environmental Epidemiology<br>Examples of Environmental Studies** | |
| | •In Person Lectures, 75 Minutes, T Th, Lecture Slides Posted on Carmen<br>•Weekly readings: ERIC Notebook (Epidemiology of Infectious Diseases & Environmental Diseases)<br>•Supplemental readings: Friis &Sellers (Chapters 12 & 13)<br>• Video Rx for Survival: Rise of the Superbugs | |
| | | Problem Set #1 |
| **Week 13** | **Topics: Molecular & Genetic Epidemiology<br>Examples of Studies, Nested Case Control Study** | |
| | •In Person Lectures, 75 Minutes, T Th, Lecture Slides Posted on Carmen<br>•Weekly readings: ERIC Notebook (Molecular & Genetic Epidemiology)<br>•Supplemental readings: Friis &Sellers (Chapter 14)<br>•Video Rx for Survival: Back to Basics | |
| | | Problem Set #2 |
| | | |
| **Week 14** | **Topics: Behavioral & Psychosocial Epidemiology<br>Abuse of Tobacco & Alcohol, Obesity, Illicit Drugs** | |

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| | **Poverty, Stress, Depression, Suicide, PTSD** | |
| | •In Person Lectures, 75 Minutes, T Th, Lecture Slides Posted on Carmen<br>•Supplemental readings: Friis &Sellers (Chapter 15) | |
| | | Problem Set #3 |
| | | Epidemiology in the News Discussion #4 |
| **Week 15** | **Topics: Epidemiology as Profession & Epidemiology in Health Policy<br>Complete Case Study, Review for Final Examination** | |
| | •In Person Lecture, 75 Minutes, T, Lecture Slides Posted on Carmen<br>•Supplemental readings: Friis &Sellers (Chapters 15 & 16) | |
| | | Case Study Assignment |
| | | Peer and self-evaluation |
| **During finals week** | **Topic: Final Exam** | |
| | | Complete the final exam during assigned time. |

The matrix below shows the alignment of course learning objectives, foundational core competencies, specialization competencies, Council of Public Health domains, and cross-cutting concepts, plus the informational material and student evaluation criteria for the in class section of PUBHEPI2410.

| Week No. | Topics | Aligned Course Learning Objective(s) | Aligned Foundational (Core) Competencies | Aligned Specialization Competencies | Aligned CEPH Domains | Aligned CEPH Cross-Cutting Concepts | Readings/Lectures Other Assignments | Student Evaluation Activity for Assessment |
|---|---|---|---|---|---|---|---|---|
| 1 T | Introduction to Epidemiology | Explain concepts of the natural history of infectious and chronic diseases.<br><br>Summarize historical events in the field of epidemiology | 1-7 | EPH: 1, 2<br>PHS: 1,2 | 1 | 1, 2, 3, 4, 10 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 1<br>Lecture Slides | Quizzes<br>Reflection Papers |
| 1 Th | Epidemiologic Transition | Discuss global features of the epidemiologic transition. | 1-7 | EPH: 1, 2<br>PHS: 1, 2 | 1 | 1, 2, 3, 4, 10 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch 1<br>Lecture Slides | Quizzes<br>Reflection Papers |
| 2 T | History and scope of Epidemiology<br><br>Discussion of Film "Disease Warriors" | Discussion of eradication of small pox and vaccination programs.<br><br>Discuss practical applications of epidemiology, trends in health and illness, population dynamics, disease etiology, risk factors, types of prevention. | 1, 5 | EPH: 1, 2<br>PHS: 1,2 | 1 | 1, 3 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 1<br>Lecture Slides<br>Rx for survival | Quizzes<br>Reflection Papers |
| 2 Th | Practical Applications of Epidemiology | Compare and contrast examples of major domestic and international public health issues, including sources/causes of infectious/chronic diseases, transmission, risk factors, morbidity and mortality.<br><br>Summarize basic concepts of primary, secondary and tertiary prevention. | 2 | EPH: 1<br>PHS: 1,2 | 2, 5 | 1, 2, 3, 10,12 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 2<br>Posted Lecture Slides | Quizzes<br>Reflection Papers |
| 3 T | Measures of morbidity and mortality | Summarize major causes of mortality and morbidity for developed and developing nations.<br><br>Differentiate between incidence and prevalence epidemiologic measures. | 2, 3, 4 | EPH: 1<br>PHS: 1, 2 | 3, 4, 5, 7 | 1, 3, 10 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 3<br>Lecture Slides | Quizzes<br>Reflection Papers |
| 3 Th | Descriptive epidemiology | Summarize major causes of mortality and morbidity for developed and developing nations. | 2, 3, 4 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5 | 2, 3, 4, 10 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 3<br>Lecture Slides | Quizzes<br>Reflection Papers |

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| | | Differentiate between incidence and prevalence epidemiologic measures.<br><br>Use and apply basic methods of rate calculations for diseases and state the importance of rate adjustments for age and other potential confounders. | | | | | | |
| 4 T | Discussion of Film "Deadly Messengers"<br><br>Calculation of disease rates in cross sectional studies and examination of time trends. | Discuss the global impact of malaria and other infectious diseases.<br><br>Discuss the importance of adjusting for person-time, age, and other factors in estimating disease rates.<br><br>Discuss Mill's Canons and Criteria of Judgment for evaluation of causation of disease. | 3, 6, 7 | EPH: 1<br>PHS: 1, 2 | 2, 3, 7 | 2, 3, 7, 10, 12 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 4<br>Lecture Slides | Quizzes<br>Reflection Papers<br>Epidemiology in News Posts |
| 4 Th | Descriptive Epidemiology, Characteristics of Person, Place & Time, Economy and Health | Describe general measures of population health and wellness.<br><br>Discuss the importance of considering time, place, and person in epidemiologic studies with examples.<br><br>Describe economic measures of health and wellness. | 3, 6, 7 | EPH: 1<br>PHS: 1, 2 | 2, 3, 7 | 2, 3, 7, 10, 12 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 4<br>Lecture Slides | Quizzes<br>Reflection Papers<br>Epidemiology in News Posts |
| 5 T | Sources of Data and Conduct of Human Research | Describe basic sources of data for epidemiologic studies.<br>Discuss access to Vital Statistics, Disease Registries; and the International Classification of Disease. | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9, 10, 12 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch 5<br>Lecture Slides | Quizzes<br>Reflection Papers<br>Epidemiology in News Posts |
| 5 Th | Discussion of Film | Discuss the importance of clean water, unpolluted air, health nutrition. | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9, 10, 12 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch 5<br>Lecture Slides | Quizzes<br>Reflection Papers |

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| | "Delivering the Goods"<br><br>Sources of Data and Conduct of Human Research | Discuss ethics of conducting human clinical trials and the Tuskagee Syphilis Study. | | | | | | Epidemiology in News Posts |
| 6 T | Review for Midterm Exam | Topics: Material covered in Weeks 1-5 | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9, 10, 12 | Weekly readings: ERIC Notebook<br>Friis and Sellers,<br>Ch. 1-5<br>Lecture Slides | Quizzes<br>Reflection Papers<br>Epidemiology in News Posts |
| 6 Th | First Midterm Exam | Questions derived from material covered during Weeks 1-5. | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9, 10, 12 | Weekly readings: ERIC Notebook<br>Friis and Sellers,<br>Ch. 1-5<br>Lecture Slides | Midterm Exam 1 |
| 7 T | Observational Study designs: Case-control, Cohort, Cross-sectional, Ecological studies and Case Reports.<br><br>Experimental Studies: Community Trials; Randomized Clinical Trials. | Introduction to epidemiological study designs: Hierarchy of Study Designs, Case reports, Ecologic Studies, Cross-Sectional studies, Cohort Studies and Relative Risks, Case-Control Studies and Odds Ratios, Experimental Study Designs, Clinical Trials & Community Trials | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9, 10, 12 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch 6<br>Lecture Slides | Quizzes<br>Epidemiology in News Posts<br>Reflection Papers |
| 7 Th | Basic Concepts of Disease Prevention and Control; Field Trials and Clinical Trials, Case Control and Cohort Studies | Describe features of field trials and clinical trials.<br><br>Compare and contrast the basic features of epidemiologic case control and cohort studies.<br><br>Define and interpret estimates of relative risk and the odds ratio. | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9, 10, 12 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch 7<br>Lecture Slides<br>Rx for survival | Quizzes<br>Epidemiology in News Posts<br>Reflection Papers |
| 8 T | | Describe the basic features of hypothesis testing, | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9, 10, 12 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch 8 | Quizzes |

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| | Discussion of Film "How Safe Are We?"<br><br>Causal Concepts and Criteria of Judgement | confidence intervals, P values.<br><br>Describe testing statistical significance of estimates of relative risk and odds ratio. Describe criteria of judgment for disease causation, evidence from meta-analyses and systematic reviews | | | | | Lecture Slides | Epidemiology in News Posts<br>Reflection Papers |
| 8 Th | Hypothesis Testing, Statistical Significance, P values | Summarize the basic concepts of Z tests, 95% confidence intervals and the P value with examples. | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9, 10, 12 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 9<br>Lecture Slides | Quizzes<br>Epidemiology in News Posts<br>Reflection Papers |
| 9 T | Confounding, Effect Modification and Bias | Describe confounding and effect modification, Simpson's paradox, sources of bias. | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9, 10, 12 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch 10<br>Lecture Slides | Quizzes<br>Epidemiology in News Posts<br>Reflection Papers |
| 9 Th | Screening and Diagnostic Tests. | Describe screening and diagnostic tests for disease, calculation of sensitivity, specificity, predictive values. | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9, 10, 12 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 11<br>Lecture Slides | Quizzes<br>Epidemiology in News Posts<br>Reflection Papers |
| 10 T | Analysis and Interpretation of Data<br><br>Review for Second Midterm | Summarize basic concepts of data analysis and interpretation, Review Material for Second Midterm | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9, 10, 12 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 6-11<br>Lecture Slides | Quizzes<br>Epidemiology in News Posts<br>Reflection Papers |
| 10 Th | Second Midterm Exam | Questions derived from material covered during Weeks 6-10. | 3, 5 | EPH: 1<br>PHS: 1, 2 | 2, 3, 4, 5, 6, 9 | 3, 5, 6, 7, 9, 10, 12 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 1-5<br>Lecture Slides | Midterm Exam 1 |
| 11 T | Discussion of Film "Rise of the Superbugs"<br><br>Antibiotic and Antimicrobial Resistance | Describe impact of resistance to antibiotics and antimicrobial drugs.<br><br>Discuss resistance of tuberculosis, malaria, bacterial and viral infection to anti-microbial drugs. | 1-7 | EPH: 1, 2<br>PHS: 1, 2 | 1, 2, 3, 4, 5, 6, 8, 9 | 1, 2, 3, 4, 5, 10 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 12<br>Lecture Slides<br>Rx for survival | Problem Sets<br>Epidemiology in News Posts<br>Reflection Papers |

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| 11 Th | Epidemiology of Infectious Diseases /Out break investigations | Explain the concept of the natural history of infectious and chronic diseases.<br><br>Summarize basic concepts in infectious disease epidemiology: incubation period, attack rate, vectors of transmission acquired and innate herd immunity and portals of entry and exit into the human system. | 1-7 | EPH: 1, 2<br>PHS: 1, 2 | 1, 2, 3, 4, 5, 6, 8, 9 | 1, 2, 3, 4, 5, 10 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 12<br>Lecture Slides | Problem Sets<br>Epidemiology in News Posts<br>Reflection Papers |
| 12 T | Environmental Epidemiology | Describe primary features of environmental epidemiology and give examples of studies.<br><br>Summarize distinct differences between environmental epidemiology and other fields of epidemiology. | 1-7 | EPH: 1, 2<br>PHS: 1, 2 | 1, 2, 3, 4, 5, 6, 8, 9 | 1, 2, 3, 4, 5, 10 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 13<br>Lecture Slides<br>Rx For Survival | Problem Sets<br>Epidemiology in News Posts<br>Reflection Papers |
| 12 Th | Environmental Epidemiology | Discuss the importance of clean air and water, healthy diet, exercise and the built environment | 1-7 | EPH: 1, 2<br>PHS: 1, 2 | 1, 2, 3, 4, 5, 6, 8, 9 | 1, 2, 3, 4, 5, 10 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 13<br>Lecture Slides<br>Rx For Survival | Problem Sets<br>Epidemiology in News Posts<br>Reflection Papers |
| 13 T | Molecular & Genetic Epidemiology | Describe primary features of molecular and genetic epidemiology and give examples of studies.<br><br>Discuss the importance of molecular biology in epidemiologic studies.<br><br>Discuss the role of genetics in epidemiologic studies. | 1-7 | EPH: 1, 2<br>PHS: 1, 2 | 1, 2, 3, 4, 5, 6, 8, 9 | 1, 2, 3, 4, 5, 10 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 14<br>Lecture Slides | Problem Sets<br>Epidemiology in News Posts<br>Reflection Papers |

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| 13 Th | Molecular and Genetic Epidemiology | Discuss molecular and genetic epidemiologic studies. | 1-7 | EPH: 1, 2<br>PHS: 1, 2 | 1, 2, 3, 4, 5, 5, 6, 9 | 1, 2, 3, 4, 5, 10 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 14<br>Lecture Slides<br>Film on HPV | Problem Sets<br>Epidemiology in News Posts<br>Reflection Papers |
| 14 T | Discussion of Film "Back to the Basics"<br><br>Behavioral Epidemiology | Describe primary features of behavioral epidemiology and give examples of studies<br><br>Discuss the importance of human behavior and decision making in disease prevention. | 1-7 | EPH: 1, 2<br>PHS: 1, 2 | 1, 2, 3, 4, 5, 6, 8, 9 | 1, 2, 3, 4, 5, 10 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 15<br>Lecture Slides | Problem Sets<br>Epidemiology in News Posts<br>Reflection Papers |
| 14 Th | Psychosocial Epidemiology | Describe primary features of psychosocial epidemiology and give examples of studies.<br><br>Discuss the importance of psychosocial factors in disease prevention. | 1-7 | EPH: 1, 2<br>PHS: 1, 2 | 1, 2, 3, 4, 5, 6, 8, 9 | 1, 2, 3, 4, 5, 10 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 15<br>Lecture Slides | Problem Sets<br>Epidemiology in News Posts<br>Reflection Papers |
| 15 T | Careers in Epidemiology<br><br>Epidemiology in Health Policy<br><br>Case Report | Discuss epidemiology as a profession with illustrations of specialization.<br>Discuss Epidemiologic Contributions in Health Policy<br><br>Discussion of Case Report<br><br>Review for Final Exam | 1-7<br><br>1-7 | EPH: 1, 2<br>PHS: 1, 2<br><br>EPH: 1, 2<br>PHS: 1, 2 | 1, 2, 3, 4, 5, 6, 8, 9<br><br>1, 2, 3, 4, 5, 6, 8, 9 | 1, 2, 3, 4, 5, 10<br><br>1, 2, 3, 4, 5, 10 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 16 & 17<br>Lecture Slides<br><br>Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 1-17<br>Lecture Slides | Case Report |
| 16 | Final Examination | Questions derived from material covered during Weeks 1-15 | 1-7 | EPH: 1, 2<br>PHS: 1, 2 | 1, 2, 3, 4, 5, 6, 8, 9 | 1, 2, 3, 4, 5, 10 | Weekly readings: ERIC Notebook<br>Friis and Sellers, Ch. 1-17<br>Lecture Slides | Final Examination |

# GE THEME COURSES

## Overview

Courses that are accepted into the General Education (GE) Themes must meet two sets of Expected Learning Outcomes (ELOs): those common for all GE Themes and one set specific to the content of the Theme. This form begins with the criteria common to all themes and has expandable sections relating to each specific theme.

A course may be accepted into more than one Theme if the ELOs for each theme are met. Courses seeing approval for multiple Themes will complete a submission document for each theme. Courses seeking approval as a 4-credit, Integrative Practices course need to complete a similar submission form for the chosen practice. It may be helpful to consult your Director of Undergraduate Studies or appropriate support staff person as you develop and submit your course.

Please enter text in the boxes to describe how your class will meet the ELOs of the Theme to which it applies. Please use language that is clear and concise and that colleagues outside of your discipline will be able to follow. You are encouraged to refer specifically to the syllabus submitted for the course, since the reviewers will also have that document Because this document will be used in the course review and approval process, you should be *as specific as possible*, listing concrete activities, specific theories, names of scholars, titles of textbooks etc.

## Accessibility

If you have a disability and have trouble accessing this document or need to receive it in another format, please reach out to Meg Daly at daly.66@osu.edu or call 614-247-8412.

Course subject & number PUBHEPI 2410

## General Expectations of All Themes

**GOAL 1: Successful students will analyze an important topic or idea at a more advanced and in-depth level than the foundations.**

**Please briefly identify the ways in which this course represents an advanced study of the focal theme.** In this context, "advanced" refers to courses that are e.g., synthetic, rely on research or cutting-edge findings, or deeply engage with the subject matter, among other possibilities. *(50-500 words)*

Epidemiology in Public Health permits students to make an in-depth engagement with the discipline of epidemiology. The COVID-19 pandemic has exposed Americans to many of the core concepts of epidemiology, including disease transmission, measurement, and prevention. This course provides a comprehensive exploration of the principles of epidemiology, the tools of measurement in public health, and real-world applications of epidemiologic practices.

Students have deep engagement with content through several sets of materials. First, they use an on-line textbook ("Epidemiologic Research and Information (ERIC) Notebook") that was created to provide education in epidemiological methods for clinicians, researchers, and administrators – in other words, it was created for practitioners who would apply epidemiology in their work. Secondly, students view segments from the PBS program "Rx for Survival: A Global Health Challenge;" after each assigned viewing students write a one-page reflection on topics that were new or interesting to them. Finally, students participate in recorded lectures each week. By learning from a practitioner-focused text book, viewing a documentary-style educational program, and having the new content synthesized in a lecture, students engage deeply with the material. Students practice their new skills and knowledge through homework assignments and demonstrate their mastery of the content through weekly quizzes and two exams. As a final comprehensive assignment, students draw from and synthesize their learning by working with a group to complete a multipart case study at the conclusion of the term.

The course's learning objectives go far beyond the basics. By the end of the semester, students will be able to summarize the core principles of epidemiology (including historical events in the field of epidemiology, the concept of the natural history of infectious and chronic diseases, and the major causes of mortality and morbidity for developed and developing nations); summarize basic concepts of primary, secondary and tertiary prevention; utilize five key concepts of infectious disease epidemiology and four key concepts of chronic disease epidemiology, including selected concepts regarding diagnosis and treatment; assess and use core epidemiologic study designs and measures; and apply and interpret appropriate epidemiologic analysis.

Course subject & number PUBHEPI 2410

**ELO 1.1 Engage in critical and logical thinking about the topic or idea of the theme.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

Epidemiology in Public Health requires students to engage in critical and logical thinking about health and wellness. Appropriate application of epidemiology requires multi-dimensional thinking about health and wellness (for example, interactions between the disease characteristics, susceptibilities of the people who may experience the disease, and the environment in which the people encounter the disease), and this course prepares students with tools and practice to develop these critical thinking skills. Students will have an in-depth examination of how practitioners use epidemiology to measure disease and risk factors, and how experts use epidemiologic information to change structures or introduce programs to improve health.

Students engage in critical thinking throughout the course. For example, in the writing (and responding to others' writing) multiple times through the semester in the Epidemiology in the News assignments, students are challenged to apply epidemiological thinking to current events and phenomena. In completing this activity, students read a current news story, summarize it, and describe what they learned and what questions they still have. Other students respond to their post, answering the questions posed by the discussion leader and reflecting on their own ideas. Students also use critical thinking to complete the case study assignment, which is presented as an investigation into the risk factors for a real-world disease condition (e.g., the Flint lead crisis, or colorectal cancer), whereby students consider which epidemiological measures are being proposed, and what are the strengths and weaknesses of those methods. Finally, students use critical thinking as they view and reflect on multiple segments of the "Rx for Survival" program. Students tend to be challenged by material that is focused on culture, community engagement, and health. Throughout the course, students are provided with opportunities to connect what they are reading and what they are learning about in the recorded lecture with the applied examples from the news, documentary, or public health literature.

**ELO 1.2 Engage in an advanced, in-depth, scholarly exploration of the topic or idea of the theme.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

There are three assessment components in Epidemiology in Public Health that require student to engage in advanced scholarly exploration. The first are the problem sets. The problem sets allow students to practice the concepts illustrated in the course and are key to the learning necessary to complete the case study assignment. The problem sets serve as applied exploration of epidemiologic concepts.

The second way in which students engage in advanced exploration is through the Epidemiology in the News activity, which, as noted above, requires students to read a current news event, summarize it, and connect it to class content. Throughout the semester, each student writes three Epidemiology in the News summaries and responds to their classmates' posts. By the end, they are better able to interpret real-work examples of epidemiologic information, and they are better consumers of public health current news.

Thirdly, students have a case study assignment. As described above, the case study is a multi-part assignment: 1) describing what type of epidemiological investigation was initially conducted; 2) evaluating potential for bias and limitations as more evidence is assembled; 3) conducting analysis and interpretation of numerical evidence; 4) making the case for how policy makers should interpret the findings from several studies.

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## GOAL 2: Successful students will integrate approaches to the theme by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in future.

**ELO 2.1 Identify, describe, and synthesize approaches or experiences as they apply to the theme.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Much of the work in the field of public health is collaborative. The explicit objective of the case study is to introduce students to real-world problems in the field of public health and apply epidemiology to the case study problem.

Given the COVID-19 pandemic, all students in Epidemiology in Public Health will have out-of-classroom experiences with epidemiologic content. This course will provide them with critical thinking in health and wellness, permitting them to understand how epidemiology is practiced in the dynamic and challenging real-world context. Because COVID-19 will be with us for some time, students in all disciplines will have the opportunity to apply epidemiologic thinking to their future courses and future work experiences. Competency in epidemiologic thinking is an asset in the COVID-19 world.

Students will also connect to out-of-classroom thinking about health and wellness through the Epidemiology in the News assignments and the Rx for Survival reflection writing. These two activities require students to identify, describe and synthesize epidemiologic approaches to a public health issue.

**ELO 2.2 Demonstrate a developing sense of self as a learner through reflection, self-assessment, and creative work, building on prior experiences to respond to new and challenging contexts.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Throughout the term, students in Epidemiology in Public Health complete reflection assignments. These assignments require them to reflect on some of the most complex and important issues in epidemiology (e.g., the rise of 'superbugs,' the groundbreaking work of early researchers before antibiotics were discovered, vector-borne diseases). The assignment stimulates students to reflect on new and challenging information.

As noted above, the case study assignment is the major assignment of the course. Because much of the work in the field of public health is collaborative, students work on this project in groups. At the conclusion of the project, each student, using a rubric, completes a graded peer and self-evaluation of the case study project. If two or more of peers indicate a student's participation was only good, fair or poor (rather than excellent or very good), their grade for the case study assignment will be reduced. Students' self evaluation and peer-evaluation is meaningful in this course, and will be a component of their development of themselves as learners.

In addition, the case study assignment comes at the end of the term, once the students have had an opportunity to practice the skills and critical thinking via the problem sets. Within the course they will build on prior experiences to respond to the challenging case study project.

Finally, the Epidemiology in the News activity requires students to reflect on prior knowledge. They state what they knew about the topic prior to reading the article and what they learned from the article. Through this assignment, students make connections to the topics discussed in class and what is happening in the world around them. These conversations become deeper and more reflective as the semester progresses and students learn more about epidemiology.

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## Specific Expectations of Courses in Health & Wellbeing

**GOAL Students will explore and analyze health and wellbeing through attention to at least two dimensions of wellbeing. (Ex: physical, mental, emotional, career, environmental, spiritual, intellectual, creative, financial, etc.).**

**ELO 1.1 Explore and analyze health and wellbeing from theoretical, socio-economic, scientific, historical, cultural, technological, policy, and/or personal perspectives.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

This course emphases several historical aspects of epidemiology, particularly in the first lecture and segment of Rx for Survival. Cultural aspects of public health epidemiology are also a focus, with every module using examples from the world around us.

The theme of health and wellness continues through the course in all of the modules, drawing from every dimension of wellbeing, and with a particular focus on physical, mental, and environmental. Policy is also a major theme in this course. Much of what we do in public health is at the societal level and students learn about policy approaches to addressing public health issues in nearly every module.

Through readings, recorded lectures, documentaries, assignments, reflections, Epidemiology in the News posts, and the case study, students will explore a variety of epidemiologic public health topics from many perspectives. These various assignments require them to write about issues, apply epidemiologic thinking to the issues, and reflect on their learning.

**ELO 1.2 Identify, reflect on, and apply the skills needed for resiliency and wellbeing.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Epidemiology in Public Health supports development of individual students' resilience through three main pathways. 1) The global COVID-19 pandemic has influenced the way that society understands and interacts with public health and with epidemiology. Information about epidemics fill the news and our social engagements. Students of Epidemiology for the Public Health Scientist will develop the personal resiliency via their own increased knowledge of how epidemiology is used to understand complex health phenomena. Students will have the well-being that generates from being able to apply epidemiologic knowledge in their interactions with the world around them. They will gain the ability to apply epidemiologic knowledge through the epidemiology in the news assignments, homework assignments, the reflection papers, and the case study. 2) A second dimension of resiliency will be gained through workplace readiness. The public health system is under duress, and undergraduates with epidemiology knowledge will be more prepared for work in all settings. They will improve in workplace readiness by applying their new knowledge to real-world settings through homework assignments, the reflection papers, and the case study. 3) The study of epidemiology involves an engagement with complexity and an acknowledgment of the interconnectedness of the world. Working through applied problems and reflections will deepen students' ability to engage with complexity, enhancing their personal resilience to think about and manage the complexities of the world around them. They will deepen their engagement with complexity particularly through writing reflection papers and completing the case study assignment with a group of fellow students.