PUBHEPI 7410 – EPIDEMIOLOGY II
4 credits – Spring 2026
Lecture – Tu/Th, 9:35AM-10:55AM, Cunz Hall 140
Lab – M, 11:30AM-12:25PM, Cunz Hall 180 or M, 4:05PM-5:00PM, Jennings Hall 136

Course Instructor
Robert B. Hood, PhD MPH, Epidemiology, Ohio State University, May 2020
Cunz Hall 344; (614) 292-7541
hood.214@osu.edu

Instructor's Office Hours
W, 11:00AM-12:00PM, Cunz Hall 344

Faculty Feedback & Response Time:
The following gives you an idea of my intended availability during the course:
- **Grading:** You can generally expect feedback within 14 days.
- **E-mail:** I will reply to e-mails (sent via Carmen) within 24 hours on school days.
- **Discussion board:** Either the TA or the instructor will check and reply to messages in the discussion boards at least every 24 hours on school days, and every 48 hours on weekends, unless a different turnaround time (due to travel, etc.) is announced.

Graduate Teaching Assistant (GTA)
Laxmi Sureshkumar, sureshkumar.19@buckeyemail.osu.edu, F, 11:00AM-12:00PM, Cunz Hall 326

GTA Responsibilities
The GTA assigned to the course will hold regular office hours and lead review sessions for any students who need help with class material. The TA may assist with scoring assignments; however, final grades will be assigned by the professor. **Any questions regarding grading should be directed to the professor and not the TA.**

Course Description
This course provides an overview of the principles of epidemiology, and focuses on more advanced applications of epidemiologic concepts. Special emphasis will be placed on epidemiologic study design, and methods employed in epidemiologic studies.

The lab component of the course is designed for students to work with publicly available epidemiology datasets. The lab data exercises will allow the students to apply the knowledge gained during class lectures in practice. In preparation for the lab component, the students will read descriptions of datasets, download datasets and practice basic SAS or R programming. During the lab session, they will work in groups to develop descriptive epidemiologic skills using publicly available datasets.

Prerequisites
PUBHLTH 6001, PUBHEPI 6430, or permission of instructor.

Course Learning Objectives
- Explain basic and advanced concepts in epidemiology.
- Describe different types of study design, and the strengths and limitations of each.
- Identify data needed to calculate rates, risks, and odds, and discuss how measures of association are interpreted at the population level.
- Discuss types of biases, and describe ways to prevent or correct for biases in study design and analysis phases, respectively.
- Assess for, describe, and interpret the presence of effect measure modification in your data.
- Discuss statistical considerations in the study design and analysis phases of a study.
- Critically review and interpret scientific articles.

Competencies:
- MPH: Foundational Competencies
    - 1) Apply epidemiological methods to settings and situations in public health practice
    - 19) Communicate audience-appropriate (i.e. non-academic, non-peer audience) public health content, both in writing and through oral presentation
- MPH: Specialization in Epidemiology
    - 2) Choose the correct analysis for data obtained from an epidemiologic investigation, including data from surveys, matched and unmatched case-control studies, cohort studies, and clinical trials.
    - 3) Analyze and interpret data obtained from an epidemiologic investigation, including data from surveys, matched and unmatched case-control studies, cohort studies, and clinical trials.
    - 4) Assess confounding and effect modification in data from an epidemiologic investigation.
    - 6) Use appropriate computer software for the management and analysis of epidemiologic data.
- MS: Core Competencies
    - 1) Explain how the core public health concepts of biostatistics, epidemiology, environmental health, health behavior/health promotion, and health administration relate to the student's area of specialization.
- MS: Specialization in Epidemiology
    - 6) Identify and understand the impact of potential sources of bias, including selection bias, measurement error, and confounding, in epidemiological studies.
- PhD: Core Competencies
    - 3) Apply relevant theories and conceptual models to inform and ground research design and interpretation.
- PhD: Specialization in Epidemiology
    - 6) Communicate in writing and orally a research study's purpose, methods, results, limitations, conclusions and public health relevance to both informed and lay audiences.
    - 7) Identify and address potential sources of bias, including selection bias, measurement error, and confounding, in both the design and analysis phases of epidemiological studies.

A complete list of College of Public Health Competencies is located on the College of Public Health website: https://cph.osu.edu/students/competencies.

Text/Readings:
The required textbook for this course is: Rothman KJ, Greenland S, Lash TL. Modern Epidemiology. Lippincott Williams & Wilkins; 2008 (3rd Ed.).
    - Students can also refer to other epidemiology textbooks for their own learning and clarification of concepts.
The readings from the textbook and articles indicated (per lecture- on the syllabus and Carmen) are required.

o Additional readings will come from the literature and will be required for the completion of assignments.

Carmen

There is a Carmen site for this course: https://carmen.osu.edu. All course materials are available via Carmen.

You will need to use BuckeyePass (buckeyepass.osu.edu) multi-factor authentication to access your courses 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 (https://admin.resources.osu.edu/buckeyepass/adding-a-device)
- 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 (https://admin.resources.osu.edu/buckeyepass/installing-the-duo-mobile-application) 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.

Class Format: How this course works

- **Mode of delivery:** Synchronous in person sessions, three times a week (one lab and two lectures).
- **Credit hours and work expectations:** This is a **4-credit-hour course**. According to Ohio State policy (go.osu.edu/credithours), students should expect around 4 hours per week of time spent on direct instruction (e.g., lab and lecture) in addition to 8 hours of homework/active learning activities (e.g., homework, reflections, practice problems etc.) to receive a grade of (C) average.
- **Attendance and participation requirements:** Attendance is required for lab and lecture sessions. Attendance is optional for office hours.

Course Technology

Technology skills needed for this course
- Basic computer and web-browsing skills
- Navigating Carmen (go.osu.edu/canvasstudent)
- CarmenZoom virtual meetings (go.osu.edu/zoom-meetings)
- SAS or R/RStudio

Required equipment
- **Computer:** current Mac (Mac OSX) or PC (Windows 10+) with high-speed internet connection
- **Calculator:** Students should have access to a scientific calculator that can perform basic arithmetic, square roots, logarithms, and exponentiation.
- **Other:** a mobile device (smartphone or tablet) to use for BuckeyePass authentication

Optional equipment (for participation in optional live office hours and/or review sessions)
- **Webcam:** built-in or external webcam, fully installed and tested
- **Microphone:** built-in laptop or tablet mic or external microphone

Required software
- **Microsoft 365 Copilot (formerly Office 365)**
  All Ohio State students are now eligible for free Microsoft 365 Copilot (formerly Office 365). Full instructions can be found at go.osu.edu/office365help.

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 and support for urgent issues is available 24/7.

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

Assignments/Assessments

Homework: 20%
There will be a total of four assignments throughout the course that will each be worth 5% of the students' final grade. The course assignment descriptions and grading rubrics will be provided on the Carmen course site one week prior to the due date. Students are allowed to work with other students on all assignments, but each student's work must be unique. Assignments may be typed with a font size of 11 or 12, or hand-written if legible. Each student will be required to submit the assignment on Carmen by the day it is due.

Exams: 45%
There will be a total of three exams throughout the course that will each be worth 15% of the students' final grade. The exams will be closed-book and in-person. Please see the course schedule for exam dates. It is recommended that students have access to a calculator for class, and calculators will be used during the exams. Computer software or mobile phones will NOT be allowed for calculations on the exams. The exam format will require multiple choice and short essay responses, and students will be asked to interpret literature and solve equations. The exams will assess students' understanding of all course material covered prior to the exam date.

Final Presentation Check-In's: 5%
Throughout the semester, students will have small check-in assignments to receive feedback from the instructor for their Final Presentation. The check-ins will include submitting code and short written reports (<1 page). Each group will be required to submit the assignment on Carmen by the day it is due.

Final Presentation: 10%
Students will work in groups to prepare the final presentation, scheduled for the last lab session of the semester (Week 16). The goal of the final presentations will be to demonstrate each group's expertise in one of the three datasets covered in the Lab sessions. Within each group, students will choose one or two health outcomes and use their chosen dataset to describe these outcomes, their learnings from their work on these datasets and descriptive data visualizations. Half of the final presentation grade will be assigned to the group based on content, and the other half will be individually-assigned based on reflections and peer evaluations of group participation. Rubrics will be available on Canvas. Each group will be required to submit the assignment on Carmen by the day it is due.

Lab Sessions: 15%
Students are expected to attend all lab sessions and bring their laptops with access to SAS and/or R/RStudio. Attending the lab session will account for half of the lab grade. All students will be assigned a lab group for this course. Students are expected to work with their lab group in the lab sessions over the course of the semester.

Each lab session will include a prompt and data preparation, analysis and interpretation. Students will submit the group's completed prompt and the student's own interpretation of the outputted

tables/figures. The prompt and interpretations will count towards half the lab grade. Each student will be required to submit the assignment on Carmen by the day it is due.

Students who need to miss lab due to a scheduled conflict or illness need to reach out to the instructor or the TA as soon as possible. Students can still receive points for a particular lab by submitting the completed prompt and interpretation of the assigned lab work for the missed week.

Final Presentation Check-In's: 5%
Attendance and participation will be collected via an ungraded in-class reflections, practice problems, or discussions. Students are expected to engage with the lecture materials and actively contribute to class discussions.

Extra Credit: -%
Two extra credit assignments will be available for the course, and each one is worth 2.5 points.

Extra Credit Assignment #1 - Syllabus Quiz: Until the final add/drop day of the semester a 5 question Syllabus Quiz will be available on Canvas. The quiz will consist of questions regarding important aspects of the course found in the Syllabus. The quiz is open note, but should be done independently. Points will be added to Exam #1.

Extra Credit Assignment #2 - Mid-course Evaluation: At the start of Week 8, a 5-question quiz will be open on Canvas and will be available until the end of Week 10. The quiz is designed to give the instructor feedback about the course. Adjustments to the course may be made based off of student feedback so please take this assessment seriously. The quiz will be anonymous, students will receive points for completing the evaluation. Points will be added to Exam #2.

Grading
Students will be graded based on the following categories. Details regarding each category can be found above. Rubrics for each category/assignment are available on Canvas.

Homework Assignments	20%
Exam #1	15%
Exam #2	15%
Exam #3	15%
Final presentation check-ins	5%
Final presentation	10%
Lab grade	15%
Participation	5%

Grading Scale
A	93 to 100
A-	90 to <93
B+	87 to <90
B	83 to <87
B-	80 to <83
C+	77 to <80
C	73 to <77
C-	70 to <73
D+	67 to <70
D	60 to <67

E   Below 60

Class Policies

Class Attendance Policy
Students are expected to attend both lab and lecture sessions. Part of students' grades are assigned based on attendance and participation in lab and lecture sessions. Attendance for office hours is optional.

Class Etiquette Policy
All students should maintain a professional attitude and manner of discussion. While spirited debate is encouraged, unprofessional behavior is not tolerated. Often times, words often come across "more directly and harshly" in this written form of communication, since there are no facial gestures, expression or tone of voice to help convey your message fully. Your contributions should not be overly negative or personal in nature.

Assignment Grace Period Policy
For each assignment, with the exception of exams and final presentations/reflections, there will be a three-day grace period following the due date. Students may submit assignments during this grace period no questions asked without any penalty. Once the grace period is over late assignments will NOT be accepted.

Missing Exam & Exam Grading Policy
It will be a rare exception that a student cannot take the exam. In the event a student cannot take the exam owing to an emergency, they will need to email the instructor indicating the reason for the missed exam. In such cases, only upon the Instructor's approval, the student will be take a make-up exam within one week of the original exam date.

Students may request regrades for exams. Requests must be submitted via email with a full explanation of why you think the work was graded incorrectly to the instructor within 1 week of the exam being returned. Regrades will apply to the entire exam, therefore, the final grade may change based on the regraded result of the entire exam.

Technology Use Policy
Laptops are allowed in class for note taking purposes. Cellphones must either be turned off or silenced and placed in "do not disturb" setting.

Uploading Course Content Policy
Course materials may NOT be uploaded to Quizlet, Chegg, or similar sites. Students may NOT use generative AI or similar tools to summarize course material.

Copyright Statement
This syllabus and all course materials (e.g., homework assignments, solution keys, course materials) are under copyright by the instructor and cannot be posted elsewhere without written permission.

Generative AI Policy
Given that the learning goals of this class are designed around understanding epidemiological methods, calculations, and critiques, the use of generative artificial intelligence (GenAI) tools such as Copilot or ChatGPT or translation platforms such as Google Translate is not permitted in this course. Any use of GenAI tools for work in this class may therefore be considered a violation of Ohio State's Academic Integrity policy and Code of Student Conduct because the work is not your own. The use of unauthorized GenAI tools will

result in referral to the Committee on Academic Misconduct. If we suspect that you have used GenAI on an assignment for this course, we will ask you to communicate with us to explain your process for completing the assignment in question. If you feel you need to use GenAI for translation, please contact the instructors first. If you have any other questions regarding this course policy, please contact us. Do not feed lectures, laboratory, or other course material into GenAI programs.

Office of Student Life: Disability Services
The university strives to maintain a healthy and accessible environment to support student learning in and out of the classroom. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion.

If you are ill and need to miss class, including if you are staying home and away from others while experiencing symptoms of a viral infection or fever, please let me know immediately. In cases where illness interacts with an underlying medical condition, please consult with Student Life Disability Services to request reasonable accommodations. You can connect with them at slds@osu.edu; 614-292-3307; or 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 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 24/7 by dialing 988 to reach the Suicide and Crisis Lifeline.

Religious Beliefs or Practices Accommodations
Ohio State has had a longstanding practice of making reasonable academic accommodations for students' religious beliefs and practices in accordance with applicable law. In 2023, Ohio State updated its practice to align with new state legislation. Under this new provision, students must be in early communication with their instructors regarding any known accommodation requests for religious beliefs and practices, providing notice of specific dates for which they request alternative accommodations within 14 days after the first instructional day of the course. Instructors in turn shall not question the sincerity of a student's religious or spiritual belief system in reviewing such requests and shall keep requests for accommodations confidential.

With sufficient notice, instructors will provide students with reasonable alternative accommodations with regard to examinations and other academic requirements with respect to students' sincerely held religious beliefs and practices by allowing up to three absences each semester for the student to attend or participate in religious activities. Examples of religious accommodations can include, but are not limited to, rescheduling an exam, altering the time of a student's presentation, allowing make-up assignments to substitute for missed class work, or flexibility in due dates or research responsibilities. If concerns arise about a requested accommodation, instructors are to consult their tenure initiating unit head for assistance.

A student's request for time off shall be provided if the student's sincerely held religious belief or practice severely affects the student's ability to take an exam or meet an academic requirement and the student has notified their instructor, in writing during the first 14 days after the course begins, of the date of each absence. Although students are required to provide notice within the first 14 days after a course begins, instructors are strongly encouraged to work with the student to provide a reasonable accommodation if a request is made outside the notice period. A student may not be penalized for an absence approved under this policy.

If students have questions or disputes related to academic accommodations, they should contact their course instructor, and then their department or college office. For questions or to report discrimination or harassment based on religion, individuals should contact the [Civil Rights Compliance Office](). (Policy: [Religious Holidays, Holy Days and Observances]())

Academic Misconduct
It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee ([Faculty Rule 3335-5-48.7 (B)]()). For additional information, see the [Code of Student Conduct]().

Intellectual Diversity
Ohio State is committed to fostering a culture of open inquiry and intellectual diversity within the classroom. This course will cover a range of information and may include discussions or debates about controversial issues, beliefs, or policies. Any such discussions and debates are intended to support understanding of the approved curriculum and relevant course objectives rather than promote any specific point of view. Students will be assessed on principles applicable to the field of study and the content covered in the course. Preparing students for citizenship includes helping them develop critical thinking skills that will allow them to reach their own conclusions regarding complex or controversial matters.

Grievances and Solving Problems
A student who encounters a problem related to his/her educational program has a variety of avenues available to seek resolution. According to University Policies, if you have a problem with this class, you should seek to resolve the grievance concerning a grade or academic practice by speaking first with the instructor or professor. Then, if necessary, you may take your case to the department chairperson. Specific procedures are outlined in [Faculty Rule 3335-8-23](), the [CPH Graduate Student Handbook](), and the [CPH Undergraduate Student Handbook](). Grievances against graduate, research, and teaching assistants should be submitted first to the supervising instructor, then to the chairperson of the assistant's department.

Creating an Environment Free from Harassment, Discrimination, and Sexual Misconduct
The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also

have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Civil Rights Compliance Office:

Online reporting form at http://civilrights.osu.edu/,
Call 614-247-5838 or TTY 614-688-8605,
Or Email civilrights@osu.edu

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Civil Rights Compliance Office to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

Course Outline

Module	Week	Class	Date	Readings & Topics
1	1	Lab	1/12	**Topic: Course Introduction & Coding Best Practices** Data: • None Assignment: • None
		Lecture	1/13	**Topic: Randomized Trials I** Reading: • Textbook pg. 87-92 & 641-651 • Schreiber CA, et al. Mifepristone Pretreatment for the Medical Management of Early Pregnancy Loss. N Engl J Med. 2018 Jun 7;378(23):2161-2170. Assignment: • None
		Lecture	1/15	**Topic: Randomized Trials II** Reading: • Textbook pg. 87-92 & 641-651 • Tschismarov R, et al. Immunogenicity, safety, and tolerability of a recombinant measles-vectored Lassa fever vaccine: a randomised, placebo-controlled, first-in-human trial. Lancet. 2023 Apr 15;401(10384):1267-1276. Assignment: • None
	2	Lab	1/19	**No Class**
		Lecture	1/20	**Topic: Screening** Reading: • Textbook pg. 641-651 • Thompson IM, et al. Operating characteristics of prostate-specific antigen in men with an initial PSA level of 3.0 ng/ml or lower. JAMA. 2005 Jul 6;294(1):66-70. Assignment: • None
		Lecture	1/22	**Topic: Non-Experimental Studies** Reading: • Textbook pg. 87-99 & 511-531 • Singh P. Psychiatric Emergencies Following the 2008 Economic Recession: An Ecological Examination of Population-Level Responses in Four US States. J Ment Health Policy Econ. 2021 Mar 1;24(1):13-30. Assignment: • Check-in #1

Module	Week	Class	Date	Readings & Topics
1	3	Lab	1/26	**Topic: Data Cleaning** • Demonstration and discussion on best practices for data cleaning. Data: • Surveillance, Epidemiology, and End Results Program (SEER) Assignment: • Lab #1
		Lecture	1/27	**Topic: Cohort Studies I** Reading: • Textbook pg. 100-110 • Hargreave M, et al. Maternal use of hormonal contraception and risk of childhood leukaemia: a nationwide, population-based cohort study. Lancet Oncol. 2018 Oct;19(10):1307-1314. Assignment: • None
		Lecture	1/29	**Topic: Cohort Studies II** Reading: • Textbook pg. 100-110 • Lee JK, et al. Long-term Risk of Colorectal Cancer and Related Deaths After a Colonoscopy With Normal Findings. JAMA Intern Med. 2019 Feb 1;179(2):153-160. Assignment: • Check-in #2
	4	Lab	2/2	**Topic: Person** • Demonstration and practice of descriptive statistics and figures. Data: • SEER Assignment: • Lab #2
		Lecture	2/3	**Topic: Case-Control Studies I** Reading: • Textbook pg. 111-127 • O'Donnell MJ, et al. Global and regional effects of potentially modifiable risk factors associated with acute stroke in 32 countries (INTERSTROKE): a case-control study. Lancet. 2016 Aug 20;388(10046):761-75. Assignment: • None
		Lecture	2/5	**Topic: Case-Control Studies II** Reading: • Textbook pg. 111-127 • MacMahon B, et al. Coffee and cancer of the pancreas. N Engl J Med. 1981 Mar 12;304(11):630-3. Assignment: • Homework #1

Module	Week	Class	Date	Readings & Topics
Exam	**5**	Lab	2/9	**Topic: Place** • Demonstration and practice of geographic figures. Data: • SEER Assignment: • Lab #3
		Lecture	2/10	**Topic: Review Session** Reading: • None Assignment: • None
		Exam	2/12	**Topic: Exam #1** Reading: • None Assignment: • Check-in #3
2	6	Lab	2/16	**Topic: Time** • Demonstration and practice of time figures. Data: • SEER Assignment: • Lab #4
		Lecture	2/17	**Topic: Causal Inference** Reading: • Textbook pg. 5-31 • Shimonovich M, et al. Assessing causality in epidemiology: revisiting Bradford Hill to incorporate developments in causal thinking. Eur J Epidemiol. 2021 Sep;36(9):873-887. Assignment: • None
		Lecture	2/19	**Topic: Directed Acyclic Graphs I** Reading: • Textbook pg. 183-209 • Glymour MM. Using causal diagrams to understand common problems in social epidemiology. Methods Soc Epidemiol. 2006:387-422. Assignment: • None

Module	Week	Class	Date	Readings & Topics
2	7	Lab	2/23	**Topic: Data Cleaning & Presentation** • Demonstration and practice with data cleaning and discussion about data presentation. Data: • National Survey of Family Growth (NSFG) Assignment: • Lab #5
		Lecture	2/24	**Topic: Directed Acyclic Graphs II** Reading: • Textbook pg. 183-209 • Cole SR, et al. Illustrating bias due to conditioning on a collider. Int J Epidemiol. 2010 Apr;39(2):417-20. Assignment: • None
		Lecture	2/26	**Topic: Practice** Reading: • None Assignment: • Homework #2
3	8	Lab	3/2	**Topic: Person, Place, Time** • Practice with descriptive statistics and geographic and time figures. Data: • NSFG Assignment: • Lab #6
		Lecture	3/3	**Topic: Confounding Part I** Reading: • Textbook pg. 128-147 • Matthay EC, Glymour MM. A Graphical Catalog of Threats to Validity: Linking Social Science with Epidemiology. Epidemiology. 2020 May;31(3):376-384. Assignment: • None
		Lecture	3/5	**Topic: Selection Bias** Reading: • Textbook pg. 128-147 • Hernán MA, Hernández-Díaz S, Robins JM. A structural approach to selection bias. Epidemiology. 2004 Sep;15(5):615-25. Assignment: • Check-in #4

Module	Week	Class	Date	Readings & Topics
3	9	Lab	3/9	**Topic: Simple Linear Regression** • Demonstration, discussion, and practice of simple linear regression. Data: • NSFG Assignment: • Lab #7
		Lecture	3/10	**Topic: Information Bias** Reading: • Textbook pf. 128-147 • Brakenhoff TB, et al. Measurement error is often neglected in medical literature: a systematic review. J Clin Epidemiol. 2018 Jun;98:89-97. Assignment: • None
		Lecture	3/12	**Topic: Design Strategies** Reading: • Textbook pg. 168-182 • Rothman KJ. Six persistent research misconceptions. J Gen Intern Med. 2014 Jul;29(7):1060-4. Assignment: • None
Break	10	Lab	3/16	No Class
		Lecture	3/17	No Class
		Lecture	3/19	No Class
Exam	11	Lab	3/23	**Topic: Adjusted Linear Regression** • Demonstration, discussion, and practice of adjusted linear regression and directed acyclic graphs (DAGs). Data: • NSFG Assignment: • Lab #8
		Lecture	3/24	**Topic: Review Session** Reading: • None Assignment: • None
		Exam	3/26	**Topic: Exam #2** Reading: • None Assignment: • None

Module	Week	Class	Date	Readings & Topics
4	12	Lab	3/30	**Topic: Advanced Data Cleaning** • Demonstration and practice with arrays/functions for data cleaning and discussion of PROC SQL/Tidyverse. Data: • Behavioral Risk Factor Surveillance System (BRFSS) Assignment: • Lab #9
		Lecture	3/31	**Topic: Analysis Overview & Secondary Data** Reading: • Textbook pg. 213-237 & 481-491 • Pierannunzi C, et al. A systematic review of publications assessing reliability and validity of the Behavioral Risk Factor Surveillance System (BRFSS), 2004-2011. BMC Med Res Methodol. 2013 Mar 24;13:49. Assignment: • None
		Lecture	4/2	**Topic: Surveillance** Reading: • Textbook pg. 459-480 • Mattson CL, et al. Increased Sexually Transmitted Disease Testing Among Sexually Active Persons Receiving Medical Care for Human Immunodeficiency Virus Infection in the United States, 2009-2013. Clin Infect Dis. 2017 Mar 1;64(5):629-634. Assignment: • Homework #3
	13	Lab	4/6	**Topic: Person, Place, Time** • Practice with descriptive statistics and geographic and time figures. Data: • BRFSS Assignment: • Lab #10
		Lecture	4/7	**Topic: Precision & Statistics** Reading: • Textbook pg. 148-167 • Goodman SN. Toward evidence-based medical statistics. 1: The P value fallacy. Ann Intern Med. 1999 Jun 15;130(12):995-1004. Assignment: • None
		Lecture	4/9	**Topic: Confounding Part II** Reading: • Textbook pg. 128-147 • Westreich D, Greenland S. The table 2 fallacy: presenting and interpreting confounder and modifier coefficients. Am J Epidemiol. 2013 Feb 15;177(4):292-8. Assignment: • Check-in #5

Module	Week	Class	Date	Readings & Topics
4	14	Lab	4/13	**Topic: Simple Logistic Regression** • Demonstration, discussion, and practice of simple logistic regression. Data: • BRFSS Assignment: • Lab #11
		Lecture	4/14	**Topic: Effect Measure Modification Part I** Reading: • Textbook pg. 71-83 • VanderWeele TJ, Robins JM. Four types of effect modification: a classification based on directed acyclic graphs. Epidemiology. 2007 Sep;18(5):561-8. Assignment: • None
		Lecture	4/16	**Topic: Effect Measure Modification Part II** Reading: • Textbook pg. 258-282 • VanderWeele TJ. On the distinction between interaction and effect modification. Epidemiology. 2009 Nov;20(6):863-71. Assignment: • Homework #4
	15	Lab	4/20	**Topic: Adjusted Logistic Regression** • Demonstration, discussion, and practice of adjusted logistic regression and DAGs. Data: • BRFSS Assignment: • Lab #12
		Lecture	4/21	**Topic: Bias Analysis** Reading: • Textbook pg. 345-380 • Lash TL, et al. Bias Analysis Gone Bad. Am J Epidemiol. 2021 Aug 1;190(8):1604-1612. Assignment: • None
		Lecture	4/23	**Topic: Review Session** Reading: • None Assignment: • None

Module	Week	Class	Date	Readings & Topics
Exam	16	Final Lab	4/27	**Topic: Final Presentations** Data: • None Assignment: • Final Presentation (4/27)
Exam	17	Final Exam	5/4 8:00-9:45 AM	**Topic: Exam #3** Reading: • None Assignment: • None

Alignment of Competencies with Assessments

Competencies	Homework	Exams	Final Presentation Check-in's	Final Presentation	Lab Sessions
MPH: Foundational Competneices					
1) Apply epidemiological methods to settings and situations in public health practice	X		X	X	X
19) Communicate audience-appropriate (i.e. non-academic, non-peer audience) public health content, both in writing and through oral presentation				X	X
MPH: Specialization in Epidemiology					
2) Choose the correct analysis for data obtained from an epidemiologic investigation, including data from surveys, matched and unmatched case-control studies, cohort studies, and clinical trials.	X				X
3) Analyze and interpret data obtained from an epidemiologic investigation, including data from surveys, matched and unmatched case-control studies, cohort studies, and clinical trials.	X	X			X
4) Assess confounding and effect modification in data from an epidemiologic investigation.	X	X			X
6) Use appropriate computer software for the management and analysis of epidemiologic data.	X		X		X
MS: Core Competencies					
1) Explain how the core public health concepts of biostatistics, epidemiology, environmental health, health behavior/health promotion, and health administration relate to the student's area of specialization.	X		X	X	
MS: Specialization in Epidemiology					
6) Identify and understand the impact of potential sources of bias, including selection bias, measurement error, and confounding, in epidemiological studies.	X	X	X	X	X
PhD: Core Competencies					
3) Apply relevant theories and conceptual models to inform and ground research design and interpretation.	X	X			X
PhD: Specialization in Epidemiology					
6) Communicate in writing and orally a research study's purpose, methods, results, limitations, conclusions and public health relevance to both informed and lay audiences.				X	X
7) Identify and address potential sources of bias, including selection bias, measurement error, and confounding, in both the design and analysis phases of epidemiological studies.	X	X	X	X	X