SCHOOL OF PUBLIC HEALTH
UNIVERSITY OF MINNESOTA

PUBH 6320, SECTION 320

Fundamentals of Epidemiology
Summer 2019

COURSE & CONTACT INFORMATION

Credits: 3 credits
Meeting Day(s), Time, and Place: This course is entirely web-based, delivered via Moodle at http://moodle.umn.edu

Contact Type	Contact Information	Role	When to Contact
Instructor	**Kelly Searle, PhD** ksearle@umn.edu 612-301-2573	Primary instructor for this course	With questions, concerns or suggestions about the course content or grades; to submit a letter from the Disability Resource Center; to request an extension or approval to submit work late (please look at the *Late Work* policy in this syllabus); to request a course incomplete; to schedule office hours.
Teaching Assistant	**Christopher Campbell** campb781@umn.edu **Christine Kunitz** gill0403@umn.edu	Assigns grades and provides individual feedback on each assignment; provides help with content to groups of students and individual students.	Questions or concerns about course content, assignments, deadlines, etc. Your TA will respond promptly and is your first line of contact! The TAs are happy to help you.
Technical Support	Technical support options are available on the SPH website. https://z.umn.edu/sphquickhelp	Troubleshoots technical issues related to the course site or course content.	Technical issues with the course site, media, quizzes or assignments.

Please save this contact information to your computer or print it. That way, you can still contact us in the event that you have difficulty connecting to the Internet or accessing the syllabus.

Communication in Online Courses

Communication is especially important in an online course. The course site announcement forums/discussions and email will be used to communicate with students. You are responsible for reading all course-related emails sent to your University email account and contacting us in a timely manner with any questions you may have. We strongly recommend that you check your U of M email daily. [My/our] goal is to respond to emails within [24 hours] [days of week].

COURSE DESCRIPTION

Welcome to Fundamentals of Epidemiology Online! "Fundamentals" is an introductory course designed to provide graduate students who are not majoring in epidemiology with an understanding of the basic methods and tools used by epidemiologists to study the health of populations. We will cover all the same topics as the course taken by epidemiology majors, but in somewhat less depth. PubH 6320 is a required course for obtaining an MPH in the School of Public Health. Although you may not want to become an epidemiologist, we hope that by the end of this course, you will have developed an excitement for the subject and an appreciation for the relevance of epidemiology to your own discipline and to everyday life.

Epidemiology Is Not a Black-and-White Discipline. In epidemiology, there is not always a right answer or only one approach to a research question. Sometimes, we must choose among various alternatives the one that would seem to be most appropriate for the problem posed. Sometimes we choose the best answer, given the alternatives, although it is not necessarily the only answer. This makes epidemiology a difficult subject to teach and to learn. Because epidemiology is immersed in the gray areas of human health, it is possible that you may pose a question, which we are unable to answer immediately, or if we answer it, we may change our mind upon further reflection. We also expect that some of you will come up with answers that had not occurred to us. We welcome such an exchange of ideas and look forward to learning from you.

COURSE PREREQUISITES

- Academic Health Center (AHC) graduate student, dual or joint degree student or instructor consent.
- Basic algebra skills are needed for this class to perform simple calculations such as disease rates and risks. If you want to refresh your math skills, please visit: http://www.sph.umn.edu/current/resources/math/.

COURSE GOALS & OBJECTIVES

- Define and describe the definition and aims of epidemiology
- Describe criteria for assessing causal and non-causal associations
- Illustrate and explain various causal models
- Calculate, interpret, and apply measures of disease frequency appropriately in a given situation.
- Interpret data, including graphical data, in terms of characteristics of descriptive epidemiology, i.e., person, place, and time, and indicate the uses of descriptive data. Explain the differences between etiologic and non-etiologic associations.
- Calculate and interpret the results of direct and indirect standardization for the control of confounding; describe the appropriate situations for use of each method.
- Calculate and describe measures of excess risk and know when to use the various measures.
- Define and describe systematic and random error, including effect measure modification and the properties and type of confounders
- Describe methods used to control confounding and outline the strengths and drawbacks of each
- Identify the objectives, features, advantages, and disadvantages of experimental and observational study designs; formulate the appropriate study design to address a given hypothesis; describe the basic outcome measure and predict a result.
- Describe criteria for and the process of obtaining approval for studies involving human subjects from an Institutional Review Board
- Define important terms, calculate and interpret common measures used in infectious disease epidemiology
- Describe the agent, host, and environmental factors which contribute to likelihood and emergence of infectious disease and identify exposures likely to have caused an epidemic
- Identify criteria for screening and calculate and interpret the characteristics of screening tests the criteria for screening.
- Describe biases and advantages and disadvantages of the various epidemiologic study designs used to evaluate efficacy of screening

METHODS OF INSTRUCTION AND WORK EXPECTATIONS

Course Workload Expectations
PUBH6320 is a 3-credit course. The University expects that for each credit, you will spend a minimum of three hours per week attending class or comparable online activity, reading, studying, completing assignments, etc. over the course of a 15-week term. Thus, this course requires approximately 135 hours of effort spread over the course of the term in order to earn an average grade [3 hours/week * 15 weeks * 3 credits = 135].

Anyone working full-time is discouraged from taking more than one online course and everyone is discouraged from taking too many online classes at one time.

This course is entirely online. Therefore, time you would otherwise be in class will be incorporated into work for the course in the form of online discussions, lectures, etc.

The course consists of textbook readings, instructor-created lectures (10 hours and 35 mins), other supplementary lectures and learning materials, and TA-graded laboratory assignments. Other activities designed to help students synthesize new material with previously learned material including practice problems, group projects, self-tests, discussion postings and a number of online resources, including readings, resource links, and motion-graphic modules (animations). There are online quizzes and a final exam.

We've done our best to make the online course as complete and accurate as possible, but if you notice inconsistencies or misspellings, if you have trouble accessing anything, or if you'd simply like to propose improvements, please let us know by posting a note in the Course forum or by email.

Course Expectations

- **We expect students to follow the class calendar** and to meet due dates posted on the syllabus**.** Our expectations and requirements for this course are like those for a graduate level course that is taught in-person, so you will need to properly pace yourself as you work through the **scheduled lessons, labs, discussion posts, other assignments, and quizzes.**
- **We expect students to read the required textbook and other assignments**. The online recorded lectures are not sufficient to provide a thorough understanding of the course material. The lesson modules online will be most helpful to you if you have read the assigned materials first. In that way, the lecture material will have an air of familiarity about it.
- **We expect students to work with members of their study group.** Collaborating with a team is an important skill in the workplace, and therefore, the course includes some group projects. (Details are below.)
- **We expect students to take quizzes and exams independently**, without help from any other person, unless otherwise specified. You may be required to take the final exam in the presence of an online or in-person proctor. If so, details will follow.

Technology

Technology or Resource	Technology or Resource Description
Course Technologies	The following technology tools may be useful to you in this course,but are not required. If you wish to make yourself familiar with them, URLs are listed below to help. • Voicethread, information is available in your Moodle course site. • Microsoft Excel, note general functionality necessary to know, training is available at http://lynda.umn.edu. • Google Docs, training is available: https://it.umn.edu/self-help-guide/google-drive-work-files-folders. • *Note: if you need assistance compiling this list or require a resource that does not exist for a specific technology, please visit http://www.sph.umn.edu/academics/academic-technology/guides.*
Moodle	All course-related materials are on our Moodle course site. You are expected to access the course site at least once per week; be sure to check the announcements and discussion forums often for the most up-to-date course information. To access the course site: 1. Log into http://moodle.umn.edu using your UMN Internet ID and password 2. Scroll down the Moodle homepage to the link for this course; click it to access the course site. If it has been more than 24 hours since you have registered and you have problems accessing the Moodle course site, email Moodle Support at moodle@umn.edu for help.
Computer and Internet Expectations and Access	Fundamentals of Epidemiology requires use of the Internet for access to the course site and University email. You are assumed to have reliable access to a computer and high-speed Internet. If you don't have reliable computer and/or Internet access at home, the University has many free, public computer labs on campus. Additionally, computers with reliable Internet for general use are available at most campus and community libraries. It is the responsibility of students to determine if they will have adequate internet access, particularly if they are in remote areas. Poor internet access will not be accepted as an excuse for late assignments.
University of Minnesota Technology Support	The University of Minnesota provides technical support services to students through the Office of Information Technology (OIT). UMN technical support (https://it.umn.edu/help) can help with any questions about your University accounts (Email/Google Apps, Moodle access, MyU Portal, passwords, etc.); you can also search for answers or chat live with a support staff member. You can also call the Help Desk (612-301-4357 or 1-HELP on campus) or stop by Tech Stop (locations and hours: http://www.oit.umn.edu/computer-labs/locations-hours/). Note: UMN Tech and Moodle support are not able to access or make any changes to our Moodle course site. If you have issues within the course site, visit SPH Quick Help at https://z.umn.edu/sphquickhelp.

Web Browser	SPH recommends using newer versions of Mozilla Firefox or Google Chrome as your web browser when accessing content via your Moodle course site. Both of these web browsers can be downloaded for free: • Download the latest version of Firefox (http://www.mozilla.com/en-US/firefox/fx/) • Download the latest version of Google Chrome (https://www.google.com/chrome/browser/) Note: We do not recommend using Internet Explorer as your web browser to view the online interactive lessons.

Learning Community

School of Public Health courses ask students to discuss frameworks, theory, policy, and more, often in the context of past and current events and policy debates. Many of our courses also ask students to work in teams or discussion groups. We do not come to our courses with identical backgrounds and experiences and building on what we already know about collaborating, listening, and engaging is critical to successful professional, academic, and scientific engagement with topics.

In this course, students are expected to engage with each other in respectful and thoughtful ways. In group work, this can mean:

- Setting expectations with your groups about communication and response time during the first week of the semester (or as soon as groups are assigned) and contacting the TA or instructor if scheduling problems cannot be overcome.
- Setting clear deadlines and holding yourself and each other accountable.
- Determining the roles group members need to fulfill to successfully complete the project on time.
- Developing a rapport prior to beginning the project (what prior experience are you bringing to the project, what are your strengths as they apply to the project, what do you like to work on?)

In group discussion, this can mean:

- Respecting the identities and experiences of your classmates.
- Avoid broad statements and generalizations. Group discussions are another form of academic communication and responses to instructor questions in a group discussion are evaluated. Apply the same rigor to crafting discussion posts as you would for a paper.
- Consider your tone and language, especially when communicating in text format, as the lack of other cues can lead to misinterpretation.

In this course, there are required group activities and you are strongly encouraged to communicate with your study partners during the course to exchange ideas and get help with lab assignments, practice problems and homework assignments. There are also several group assignments in the class. Students are also free to share helpful comments with the class as a whole using the Course forums. A portion of your grade is based on your consistent participation in your study group and discussion forums. This means responding to the instructor's, TAs', and fellow students' questions, asking questions yourselves, bringing outside information to the group that may help others grasp the course content, participating in a discussion online, by phone, by email, by Webex, etc. as required.

Like other work in the course, all student to student communication is covered by the Student Conduct Code (https://z.umn.edu/studentconduct).

COURSE TEXT & READINGS

Required Texts

The required text book is: ***Essentials of Epidemiology in Public Health*, 4th Edition**, by Ann Aschengrau and George R. Seage II, published by Jones and Bartlett, Copyright 2018 (ISBN-13: 9781284128352).

The textbook is available at the University of Minnesota Bookstore, located in Coffman Memorial Union on the Minneapolis campus or via online serviceshttps://bookstores.umn.edu/course-materials . It is also available at online services such as Barnes and Noble (http://www.bn.com) and Amazon (http://www.amazon.com). Be sure to check for the best prices, as sometimes these services and others will offer the book used. NOTE: The 4th edition of this text was released in Fall 2018, which we recommend; however it is acceptable to purchase the 3rd edition as well.

Supplemental Texts & Articles

There is no one perfect text for teaching epidemiology so we urge you to read other material as well.

This course also uses journal articles, which are available via the University Libraries' E-Reserves and will be linked from the course site. It is good practice to use a citation manager to keep track of your readings. More information about citation managers is available at https://www.lib.umn.edu/pim/citation.

Don't reread something five times in one book if it is not clear. Find another source to read. It may explain a topic in another way that is just what you need. Additionally, no one text satisfies everyone. If you find other materials that cover the required topics for this course that you like better than the textbook, go ahead and use them. On the website we have listed supplemental texts (available from the library) and articles (available as links on the class website) that you might find useful.

The University of Minnesota Bio-Medical Library provides information on how to evaluate web resources: http://hsl.lib.umn.edu/biomed/help/evaluating-web-resources.

COURSE OUTLINE/WEEKLY SCHEDULE

This course has specific deadlines. All coursework must be submitted via the course site before the date and time specified on the site.
Note: assignments are due by 11:55pm CST unless indicated otherwise.

Week	Topic	Readings **(from Aschengrau textbook unless otherwise indicated)**	Activities/Assignments
Week 1 **6.10 – 6.16**	Lesson 1: Orientation and Scope of Epidemiology Lesson 2: Causality	• Chapter 1 • Chapter 15	Math Review – Optional Syllabus Assessment - Access from Home Page Lab 1 –Finding answers on the web Post: bio on the forum Post: Describe a source of epi data on the forum Lab 2: Select a study group (use this group to ask and answer content related questions and for the group assignments)
Week 2 **6.17 – 6.23**	Lesson 3: Measures of Disease Occurrence: Counts and Proportions Lesson 4: Measures of Disease Occurrence: Rates	• Chapter 2	Lab 3/4; This is one lab, assessing Lessons 3 & 4 Lesson 3: Round Table Discussion: Initial post: 6/22 & Response post: 6/23 Quiz 1: Covers Lessons1-4 (available 6/19 to 6/23)
Week 3 **6.24 – 6.30**	Lesson 5: Descriptive Epidemiology Lesson 6: Rate Standardization	• Chapter 5 • Chapter 4 • Chapter 3, pp. 71-74	Lab 5: Group Activity: Complete the answers with your study group, then submit as an: Individual submission due 6/30 Lab 6: Rate Standardization
Week 4 **7.1 – 7.7**	Lesson 7: Excess Risk	• Chapter 3	Lab 7 Excess Risk Lesson 7 Round Table Discussion: Initial post: 7/4 Response post: 7/7
Week 5 **7.8 – 7.14**	Lesson 8: Confounding, Bias, and Error	• Chapter 10 • Chapter 11 • Chapter 13	Lab 8 Quiz 2: Covers lessons 5-8 (available 7/11 to 7/14)
Week 6 **7.15 – 7.21**	Lesson 9: Study Design Overview, Descriptive & Ecologic Studies Lesson 10: Intervention Studies	• Chapter 6 • Chapter 17 • Chapter 7	Lab 9 Lab 10 Lesson 10 Round Table Discussion: Initial post: 7/18 Response post: 7/21

Week 7 **7.22 – 7.28**	Lesson 11: Cohort Studies Lesson 12: Case Control Studies	• Chapter 8 • Chapter 9	Lab 11 Lab 12 Quiz 3: Covers lessons 9-12: (available 7/25 to 7/28)
Week 8 **7.29 – 8.4**	Lesson 13: Infectious Diseases Lesson 14: Screening	• Fire and Sellers, Chapter 12 • Chapter 16	Lab 13: infectious disease Lab 14: Screening Database Exercise: "How Epi Applies to Your Field"
Week 9 **8.5 – 8.11**	Lesson 15: Conclusion	• Chapter 14	Manuscript Critique (due before final)
Week 10 **8.12 – 8.16**	Final Exam		Final Exam: comprehensive (available 8/12 to 8/16)

SPH AND UNIVERSITY POLICIES & RESOURCES

The School of Public Health maintains up-to-date information about resources available to students, as well as formal course policies, on our website at www.sph.umn.edu/student-policies/. Students are expected to read and understand all policy information available at this link and are encouraged to make use of the resources available.

The University of Minnesota has official policies, including but not limited to the following:

- Grade definitions
- Scholastic dishonesty
- Makeup work for legitimate absences
- Student conduct code
- Sexual harassment, sexual assault, stalking and relationship violence
- Equity, diversity, equal employment opportunity, and affirmative action
- Disability services
- Academic freedom and responsibility

Resources available for students include:

- Confidential mental health services
- Disability accommodations
- Housing and financial instability resources
- Technology help
- Academic support

EVALUATION & GRADING

The teaching team will use a variety of Moodle tools to monitor and assess your progress through the course materials, including reports on the frequency and duration of your access to the lessons; your use of the assignment tool, discussion board, and other course components; and the start times and duration you need to complete online assessments or quizzes. All assignments are due by 11:55 pm (Central Time) on the date noted.

Grades will be based on class participation, completion of lab exercises, a manuscript critique exercise, a study group activity in Lesson 6, and quizzes and final exam scores. We plan to give a series of open-book quizzes and a comprehensive open-book final exam. All quizzes and the final exam must be completed individually without collaboration in groups or assistance from classmates.

NOTE: Self-tests available at the end of the lessons do **NOT** contribute to your grade. They are offered only to help you assess your understanding of the material. They do not provide extra credit.

We expect to grade assignments and post assignment grades within two weeks of the assignment closing date.

Components:

Participation: Your grade for participating in class will be based on the following: instructor evaluation of your participation in your study group on the Lesson 6 - Small Group Activity and on the manuscript critique; participation in Round Table Discussions; and your contribution to the database of student examples. Watch for announcements about information on these required participation activities.

- Study Group. In the first week, you will select or be assigned to a study group, comprised of 5 to 6 students. Think of your group as a resource for help with difficult concepts or completing the Labs. We highly encourage group discussion and problem solving on Lab assignments for this class. **Further, the Small Group Activity on rate standardization and the Manuscript Critique must be completed with your study group (2 graded assignments)**. As a part of your submission for these group assignments, you will need to identify the role of each person played in the group, e.g., group leader, editor, researcher, etc., and whether and how each person contributed to the assignment. We will use this information to evaluate your participation on these two assignments as part of the study group as a part of your grade in the class.
- Round Table Discussions: You are required to post to the Round Table Discussions that occur 3 times during the semester (Lessons, 3, 7, and 10). The Round Table Discussions are online posting assignments, consisting of two parts: an initial post, and a response post. The Round Table Discussion will relate to the epidemiologic topic of the lesson that week. Collectively these posts are worth 5% of your grade collectively (1.67% per Round Table) and demonstrate you are engaging the material. You must complete the Round Table Discussion assignment by reading the background including any included websites and reflecting on the Lesson from that week to, (1) initially post on Thursday of that week, and then (2) reviewing and responding to at least one other classmate's post by Sunday of that week. There is no minimum posting length, but your post should generally be at least a short thoughtful paragraph. The posting can of course be written well ahead of the due date for the initial post, but the response post must obviously be posted in response to another student's initial post. The TAs and instructor will monitor the discussions and will join in where necessary. Posts are due by 11:55pm on the due date.
- Contribute to the database of student examples**.** The database exercise, due towards the end of the course, is an opportunity for you to provide an example of how a principle of epidemiology or a competency relevant to this course applies to your job or area of interest. Alternatively, you may provide a copy of a news story and explain how it illustrates a concept from the course.
- Other opportunities for participation. We expect students to frequently visit the "Course Q&A/Announcements" forum to ask questions of other students and the teaching team, and to answer questions posted by other students. Students' activity in this forum is important for their success in the class.

Lab exercises: Labs exercises are due on Sunday nights. The lab exercises provide students with practice problems and often offer applications **beyond** what's seen in the lessons. They are meant to be a learning experience, so thoughtful but incorrect answers are acceptable. Working together on labs with other students (e.g. in small groups) is acceptable and encouraged, but you need to use your own words when submitting your answers for your lab assignment. It is not acceptable to copy another student's work and submit it as your own. Labs will be graded based on thoughtful answers, completeness and whether the work was submitted by the due date:

- Completeness: Full credit will be given if at least 90% of the answers were thoughtfully completed. If the lab exercise is deemed incomplete or if it is clear that a student has put no thought into their answers, the lab will be penalized by 20 points (out of 100, or 20% of the maximum grade possible).
- Late work/No work: Late work will be penalized 20 points (out of 100, or 20% of the maximum grade possible), unless prior arrangements were made to submit your work at a later date. Labs will not receive credit if submitted after 11:55 p.m. on the last day of the corresponding quiz for that module. Exceptions may apply where permission is sought from the TA's or Instructor ahead of time or in cases of emergency.
- The table below summarizes the grading rubric for the labs. The percentage in the last column, labeled 'Multiplier', when multiplied by 1.67 (the total number of percentage points for each lab) computes the number of percentage points earned on a particular lab. Example: If you submitted your work late without making prior arrangements, and your work was deemed complete, you would receive 80% * 1.67 = 1.34 percentage points for that lab.

Submitted Lab (Y/N)	Met Deadline* (Y/N)	Completed** (Y/N)	Multiplier
Yes	Yes	Yes	100%
Yes	Yes	No	80%
Yes	No	Yes	80%
Yes	No	No	40%
No	NA	NA	0%

* Deadline from weekly calendar or established by special arrangement.
** 90% of the lab answers must be thoughtfully completed.
# Multiply this value by 1.67 to compute the number of percentage points earned for a particular lab.
Note: See the 'Grading Criteria' section below for how the total number of percentage points earned during the semester maps into a final letter grade.

Small group Lesson 6 assignment: This assignment, focused on rate standardization, must be completed as a group effort with your study group; unless prior arrangements are made with the instructor, no credit will be given for work completed individually. Instructions detailing this assignment will be given in the week it is provided. It will only be available to complete during that one-week period. This assignment will be graded for correctness, with a maximum value of 100.

Manuscript critique: This is a group exercise to be completed with your study group. Detailed instructions and grading for the manuscript critique will be available on the class website. Note that late projects and critiques will be penalized by 20 points (e.g., 20 points out of a starting value of 100, or 20% of the maximum grade) unless prior arrangements have been made with the TAs and the instructor. At the top of the submission, identify the role of each person in the group, e.g., group leader, editor, researcher, etc. As with the small group activity above, unless prior arrangements are made with the instructor, no credit will be given for completing this assignment individually. This assignment will be graded for correctness, with a maximum value of 100.

Quizzes and final exam: The quizzes and comprehensive final exam will be available to you in the Moodle site for a limited period of time. **ALL EXAMS AND QUIZZES ARE TO BE TAKEN INDEPENDENTLY.**

- **All exams and quizzes are offered as open-book exams.** Check the times and dates on the course calendar for the time period where the quiz/exam is open for you to take it. Generally, the quizzes and exam are open for several days. We recommend that you have paper, pencil, and a calculator handy before you begin the quiz. Quizzes are timed: you will have about 1.5-2 hours to finish the questions in each quiz, but you can choose the specific time to take the exam within the multi-day period that the quiz remains available to the class. However, the exam/quiz will automatically close at the aforementioned closing time, regardless of how much time you have spent on it; whatever answers have been entered until that point will be submitted. **NOTE: You will NOT be able to re-enter a quiz/exam after you have submitted your answers or otherwise close out of the Assessment Tool.**

Each assignment will contribute to your total grade points, which will determine your letter grade for the class (see Grading Criteria below). To compute grade points for each activity, we multiply the percentage points earned for an activity by the points multiplier for that activity, as seen in the table below. Example: If you earned 86% on quiz 3, you would earn 86*0.10 = 8.6 grade points for quiz 3. The total grade points are computed as the sum of the grade points for all of the class activities. Note: These calculations do not include any extra credit points; if offered, they will add to individual quizzes or the grade point total as indicated by the instructor.

Activity	% Contribution to Total Grade Points	Points Multiplier
Participation in class: -Small group participation, for collaborating on Lesson 6 small group activity and on Manuscript Critique (4%) -Participation in Round Table Discussions (5%) -Contribution to student database of examples (1%)	10%	0.10
Labs (12 Labs)	20%	0.20
Small group Lesson 6 assignment (rate standardization)	5%	0.05
Quiz 1 (Evaluating Lessons 1-4)	10%	0.10
Quiz 2 (Evaluating Lessons 5-8)	10%	0.10
Quiz 3 (Evaluating Lessons 9-12)	10%	0.10
Manuscript critique	10%	0.10
Final exam	25%	0.25

Please refer to the University's Uniform Grading Policy and Grading Rubric Resource at https://z.umn.edu/gradingpolicy]

Grading Scale

The University uses plus and minus grading on a 4.000 cumulative grade point scale in accordance with the following, and you can expect the grade lines to be drawn as follows:

% In Class	Grade	GPA
93 - 100%	A	4.000
90 - 92%	A-	3.667
87 - 89%	B+	3.333
83 - 86%	B	3.000
80 - 82%	B-	2.667
77 - 79%	C+	2.333
73 - 76%	C	2.000
70 - 72%	C-	1.667
67 - 69%	D+	1.333
63 - 66%	D	1.000
< 62%	F	

- A = achievement that is outstanding relative to the level necessary to meet course requirements.
- B = achievement that is significantly above the level necessary to meet course requirements.
- C = achievement that meets the course requirements in every respect.
- D = achievement that is worthy of credit even though it fails to meet fully the course requirements.
- F = failure because work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an I (Incomplete).
- S = achievement that is satisfactory, which is equivalent to a C- or better
- N = achievement that is not satisfactory and signifies that the work was either 1) completed but at a level that is not worthy of credit, or 2) not completed and there was no agreement between the instructor and student that the student would receive an I (Incomplete).

Evaluation/Grading Policy	Evaluation/Grading Policy Description
Scholastic Dishonesty, Plagiarism, Cheating, etc.	You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis (As defined in the Student Conduct Code). For additional information, please see https://z.umn.edu/dishonesty The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty: https://z.umn.edu/integrity. If you have additional questions, please clarify with your instructor. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam. **ALL EXAMS AND QUIZZES ARE TO BE TAKEN INDEPENDENTLY.** No collaboration or sharing with classmates is allowed; you should conduct yourself as you would for a proctored, in-class exam. The teaching team may monitor your performance on quizzes to ensure independent work. We may require online or in person procotoring. Indiana University offers a clear description of plagiarism and an online quiz to check your understanding (http://z.umn.edu/iuplagiarism).
Late Assignments	If you anticipate having difficulty meeting any deadline(s), you must make prior arrangements with your TA or instructor at least 48 hours prior to the due date to be eligible for receiving full credit on your work (i.e., labs, assignments, quizzes, final exam). If prior arrangements were not made for schedule conflicts AND if the student is allowed to make up the assignment, we may apply a late penalty equal to 20% of the total possible points .
Makeup Work for Legitimate Reasons	If you experience an extraordinary event that prevents you from completing coursework on time and you would like to make arrangements to make up your work, contact your instructor within 24 hours of the missed deadline. Per University policy, legitimate reasons for making up work may include: • illness • serious accident or personal injury • hospitalization • death or serious illness within the family • bereavement • religious observances • subpoenas • jury duty • military service • participation in intercollegiate athletic events Because this course is entirely online and all materials are available to students from the first day of the term, we expect students to plan accordingly if travels or access to internet will cause them to miss a deadline. Note that our deadlines are generally set for 11:55 p.m. CST, so traveling to a different time zone will require additional planning. Further, circumstances that qualify for making up missed work will be handled by the instructor on a case-by-case basis; they will always be considered but not always granted. For complete information, view the U of M's policy on Makeup Work for Legitimate Absences (http://policy.umn.edu/Policies/Education/Education/MAKEUPWORK.html). The instructor will provide make-up quizzes and incompletes, at no penalty, for documented family emergencies, illness, and other extraordinary circumstances. or by prior arrangement for work conflicts. For circumstances not listed in above, the instructor has primary responsibility to decide on a case-by-case basis if an absence is due to unavoidable or legitimate circumstances and grant a request for makeup work.

Extra Credit	Extra credit policy: If we offer opportunities for extra credit so that students may improve their grade, those opportunities will be announced and made available to all students. It is against University policy to offer extra credit after grades are submitted.
Saving & Submitting Coursework	**Documents that students submit are considered final;** students may not submit more than one version or draft of each assignment. **While taking your quiz/exam, please save your answers frequently as you go along, to prevent you from losing your work if there is a computer or internet connectivity problem.** To submit Moodle integrated labs, simply complete the Moodle activity. The Moodle lab activity can be attempted multiple times until the due date.
Technical Issues with Course Materials	You are expected to submit all coursework on time and it is your responsibility to ensure that your work is submitted properly before the deadline. **Students are solely responsible for correctly entering their answers into the assessment (exam) tool. Allowances for students' entry errors will be made at the discretion of the teaching team.** ● Open any document/file you are submitting prior to uploading it to the course to ensure that all of your answers are visible. ● Double-check your quiz and assignment submissions right after you submit them by returning to your submission and scrolling down to the bottom of the instructions page: ○ Assignments successfully submitted will be attached on this page. ○ Quizzes will show as successfully submitted. If you experience technical difficulties while navigating through the course site or attempting to submit coursework: ● Go to Quick Help: http://z.umn.edu/sphquickhelp. ● Connect with the appropriate person or office within 30 minutes of the problem's occurrence. ○ Provide as much information as possible, so the tech team can best help you as soon as possible. ○ You can expect a response within 1-2 business days to help resolve the problem. ● If you cannot access this course in Moodle, contact Moodle support (moodle@umn.edu) for help.
Grade Disputes	If you wish to dispute the number of points you receive on a class assignment, you must do so in writing. You must submit a request (500 words maximum) that includes a specific rationale for why the assignment deserves a higher grade and where additional points were earned but not allocated. The instructor reserves the right to either increase or decrease the final point allocation upon review, based upon the merits of the assignment and the request. The only exception to this policy is for a student to note a mathematical error in a grading rubric.

CEPH COMPETENCIES

Competency	Learning Objectives	Assessment Strategies
1. Apply epidemiological methods to the breadth of settings and situations in public health	**Lesson 1** • Define epidemiology • Describe aims of epidemiology: describe, explain, predict, control • Explain different types of public health surveillance and their uses • Locate sources of public health data **Lesson 3/4** • Interpret measures of disease frequency • Identify the appropriate measures of disease frequency to use in a given situation • Calculate measures of disease frequency appropriately in a given situation **Lesson 5** • Interpret data, including graphical data, in terms of characteristics of descriptive epidemiology, i.e., person, place, and time. • Explain the appropriate uses of descriptive data. • Explain the differences between etiologic and non-etiologic associations. **Lesson 6** • Interpret the results of direct and indirect standardization for the control of confounding by age. • Describe the appropriate situations for use of each standardization method. • Calculate direct and indirect standardization for the control of confounding by age. **Lesson 7** • Interpret relative and absolute measures of association/excess risk. • Explain when it is appropriate to use different measures of association/excess risk. • Calculate measures of association/excess risk **Lesson 8** • Explain systematic and random error, including effect measure modification and the types and properties of confounders. • Explain the strengths and limitations of methods used to control confounding. **Lesson 13** • Define important terms used in infectious disease epidemiology, e.g., herd immunity. • Interpret common measures used in infectious disease epidemiology, e.g. infectivity, pathogenicity and virulence. • Calculate common measures used in infectious disease epidemiology, e.g. infectivity, pathogenicity and virulence. • Explain the agent, host, and environmental	**Lesson 1, quizzes, and assignments:** Students are asked to define epidemiology and describe the aims. In the exercise, “Finding Answers on the web”, students browse a series of data sources, e.g., CDC and SEER, and locate data to answer questions related to the aims of epidemiology. Students are asked to identify, describe or propose appropriate primary and secondary prevention programs for a specific disease or condition. **Lesson 3/4, quizzes and assignments:** Students are given real or hypothetical scenarios and are expected to select the appropriate measure of disease frequency to use in response to specific questions. Students are asked to calculate and interpret the selected measures from data tables or short word problems. **Lesson 5, quizzes and assignments:** Students are expected to synthesize information and apply concepts they learned in new situations e.g., they are given data and a graph from the CDC on a disease outbreak and asked to identify person, place and time characteristics from the information provided. In addition, students are asked to identify one source of data that could provide information about the disease and one strength and one limitation of the source identified. **Lesson 6, quizzes and assignments:** Students are asked to calculate direct and indirect standardization for the control of confounding by age, sex or other variables using data tables and to identify when it is appropriate to use the different methods of standardization\ **Lesson 7, quizzes and assignments:** Students are given brief descriptions of epidemiologic studies with data tables, then based on short word problems, they are expected to select, calculate and interpret the appropriate measures of excess risk. **Lesson 8, quizzes and assignments:** Students are expected to explain how to detect confounding using data from a hypothetical study in 2 x 2 tables. Also, given results of a hypothetical study, they are asked

	factors which contribute to likelihood and emergence of infectious disease. • Apply methods to identify exposure(s) likely to have caused an epidemic. **Lesson 14** • Explain criteria for population screening programs. • Interpret the measures used to evaluate the efficacy of a screening test. • Calculate the measures used to evaluate the efficacy of a screening test e.g. sensitivity, specificity, PV+, PV-. • Explain the difference between a screening test and a diagnostic test. • Explain the biases, advantages and disadvantages of the various epidemiologic study designs used to evaluate efficacy of screening.	assess and explain whether or not confounding is present in the measures of excess risk. Given stratified data, students are asked to determine whether or not confounding of the disease exposure association is present. Given scenarios, students identify and or propose methods to use to control for confounding or effect modification. Given scenarios, students characterize the types of potential biases present as differential or non-differential and identify the specific type of bias, e.g. selection bias (loss-to-follow up or participation bias). **Lesson 13, quizzes and assignments:** Students are given a scenario with data and are expected to select, calculate and interpret the appropriate measure for infectious disease epidemiology. Students are asked to describe the components of the infectious disease triangle: host, agent, environment; this includes being able to explain an infectious disease in the context of the triangle. Students must define, calculate and interpret transmission, infectivity, pathogenicity and virulence and give examples. Students are expected to identify different epidemic curves. In a laboratory assignment, students “carry out” a disease outbreak investigation and develop an epidemic curve. **Lesson 14, interactive lesson, quizzes and assignments:** Given specific public health scenarios, students are expected to: list and explain criteria for population screening programs; select, calculate and interpret the appropriate measure to use to evaluate the efficacy of a screening test e.g. sensitivity, specificity, PV+, PV-; explain circumstances when public health officials would want to maximize sensitivity versus specificity; explain the difference between a screening test and a diagnostic test; and describe the biases, advantages and disadvantages of the various methods, i.e., study designs, used to evaluate efficacy of screening programs.

2. Select quantitative and qualitative data collection methods appropriate for a given public health context	**Lesson 5** • Interpret data, including graphical data, in terms of characteristics of descriptive epidemiology, i.e., person, place, and time. • Explain the appropriate uses of descriptive data. • Explain the differences between etiologic and non-etiologic associations. **Lesson 8** • Explain systematic and random error, including effect measure modification and the types and properties of confounders. • Explain the strengths and limitations of methods used to control confounding. **Lesson 9/10/11/12** • Explain the objectives, features, advantages, and disadvantages of experimental and observational study designs. • Interpret results of epidemiologic studies including their implications for public health. • Describe criteria for and the process of obtaining approval from an Institutional Review Board for studies involving human subjects. **Lesson 9** • **Describe qualitative research data collection and analysis: focus groups**	**Lesson 8, quizzes and assignments (as above)** Students are expected to explain how to detect confounding using data from a hypothetical study in 2 x 2 tables. Also, given results of a hypothetical study, they are asked assess and explain whether or not confounding is present in the measures of excess risk. Given stratified data, students are asked to determine whether or not confounding of the disease exposure association is present. Given scenarios, students identify and or propose methods to use to control for confounding or effect modification. Given scenarios, students characterize the types of potential biases present as differential or non-differential and identify the specific type of bias, e.g. selection bias (loss-to-follow up or participation bias). **Lesson 9, quizzes and assignments:** In an assignment, students are expected to answer objective questions on: the nature and potential uses of focus groups, a qualitative data collection method, and the features that make focus group interviews research. In two open-ended question, students are given a public health problem and told that a hospital administrator has asked for their help to better understand the causes of the problem; they are asked to identify people for focus group interviews and write two questions they would ask of the participants. **Lesson 9/10/11/12, quizzes and assignments:** Given specific public health scenarios students are expected to: Identify a study design from a scenario; Determine an appropriate design given a scenario accounting for the nature of the question being addressed, the hierarchy of evidence (state of knowledge of disease), prevalence of outcomes and risk factors, and ethical considerations. choose, calculate and interpret measures of excess risk; identify strengths, limitations and sources of bias for given study designs. In the manuscript critique assignment, which covers study design and analysis, students read a published peer-reviewed article and can be asked to explain whether or not an IRB submission would have been required and

		why? In quizzes, given various scenarios, students are asked to determine whether or not IRB approval is required.
3. Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate	**Lesson 5** • Interpret data, including graphical data, in terms of characteristics of descriptive epidemiology, i.e., person, place, and time. • Explain the appropriate uses of descriptive data. • Explain the differences between etiologic and non-etiologic associations. **Lesson 9** • **Describe qualitative research data collection and analysis: focus groups.**	**Lesson 9, quizzes and assignments**: Students are expected to answer objectives questions on a method of qualitative research: focus Groups How to select the type of analysis needed for focus group interviews, the importance of being systematic and having a verifiable protocol, the Classical Method of qualitative analysis and approaches to determining priorities in analysis.

4. Interpret results of data analysis for public health research, policy or practice (primary)	**Lesson 2** • Explain the criteria for assessing causal and non-causal associations. • Illustrate and explain various causal models. **Lesson 5** • Interpret data, including graphical data, in terms of characteristics of descriptive epidemiology, i.e., person, place, and time. • **Explain the appropriate uses of descriptive data.** • **Explain the differences between etiologic and non-etiologic associations.** **Lesson 9** • Describe qualitative research data collection and analysis: focus groups **Lesson 7** • Interpret relative and absolute measures of association/excess risk. • Explain when it is appropriate to use different measures of association/excess risk. • Calculate measures of association/excess risk. **Lesson 8** • Explain systematic and random error, including effect measure modification and the types and properties of confounders. • Explain the strengths and limitations of methods used to control confounding. **Lesson 13** • Define important terms used in infectious disease epidemiology, e.g., herd immunity.	**Lesson 2, quizzes and assignments:** Students are expected to differentiate between causal and non-causal associations with data that is provided. They are asked to apply Braford Hill criteria and models such as, Rothman's causal pies: Sufficient and component causes, and the counterfactual model of causation. In a lab assignment, students are expected to articulate the difference between the causes of disease in individuals based on anecdote versus causes in populations based on risk (relative frequencies or probabilities). **Lesson 9, quizzes and assignments** Students identify weaknesses in study designs that lack a clear temporal sequence between exposure and disease (e.g., some cross-sectional studies and ecologic studies) **Lesson 8, quizzes and assignments (as above)** Students are expected to explain how to detect confounding using data from a hypothetical study in 2 x 2 tables. Also, given results of a hypothetical study, they are asked assess and explain whether or not confounding is present in the measures of excess risk. Given stratified data, students are asked to determine whether or not confounding of the

	• Interpret common measures used in infectious disease epidemiology, e.g. infectivity, pathogenicity and virulence. • Calculate common measures used in infectious disease epidemiology, e.g. infectivity, pathogenicity and virulence. • Explain the agent, host, and environmental factors which contribute to likelihood and emergence of infectious disease. • Apply methods to identify exposure(s) likely to have caused an epidemic. **Lesson 14** • Explain criteria for population screening programs. • Interpret the measures used to evaluate the efficacy of a screening test. • Calculate the measures used to evaluate the efficacy of a screening test e.g. sensitivity, specificity, PV+, PV-. • Explain the difference between a screening test and a diagnostic test. • Explain the biases, advantages and disadvantages of the various epidemiologic study designs used to evaluate efficacy of screening.	disease exposure association is present. Given scenarios, students identify and or propose methods to use to control for confounding or effect modification. Given scenarios, students characterize the types of potential biases present as differential or non-differential and identify the specific type of bias, e.g. selection bias (loss-to-follow up or participation bias).
6. Discuss the means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and societal levels	• **Not addressed**	**Not addressed**
11. Select methods to evaluate public health programs	**Lesson 14** • Explain criteria for population screening programs. • Interpret the measures used to evaluate the efficacy of a screening test. • Calculate the measures used to evaluate the efficacy of a screening test e.g. sensitivity, specificity, PV+, PV-. • Explain the difference between a screening test and a diagnostic test. • Explain the biases, advantages and disadvantages of the various epidemiologic study designs used to evaluate efficacy of screening.	**Lesson 14, interactive lesson, quizzes and assignments** Given specific public health scenarios, students are expected to: list and explain criteria for population screening programs; select, calculate and interpret the appropriate measure to use to evaluate the efficacy of a screening test e.g. sensitivity, specificity, PV+, PV-; explain circumstances when public health officials would want to maximize sensitivity versus specificity; explain the difference between a screening test and a diagnostic test; and describe the biases, advantages and disadvantages of the various methods, i.e., study designs, used to evaluate efficacy of screening programs.

21. Perform effectively on interprofessional teams	**Lesson 6 Assignment on Rate Standardization & Manuscript Critique – group assignments** Work collaboratively in interprofessional	**Lesson 6 Assignment on Rate Standardization & Manuscript Critique** Students in the class come from a variety of backgrounds and programs including maternal
	groups and identify roles and contributions for each individual **Laboratory 14: Database exercise: "How Epi Applies to Your Field"**	and child health, public health nutrition, community health promotion, environmental health, public health administration, social work, veterinary medicine, nursing, medicine, physical therapy, laboratory science, engineering, journalism, and law. Groups of 5-6 students from diverse backgrounds are established at the beginning of the course; we explicitly describe the need for epidemiologists and public health practitioners to work across professions and stress the important opportunity for interprofessional interaction the course provides. In the online environment, students have rich discussions of the class content, labs, the week 6/lesson 6 assignment and the manuscript critique, a portion of the grades on these assignments is related to participation which is determined, in part, by peer review. **Laboratory 14** Students give an example of how epidemiology applies to research or practice in their profession/field. Students choose from a menu of epidemiologic topics e.g. causality, measures of excess risk, confounding and bias and surveillance.