Syllabus

GPH 712 Principles of Epidemiology
(3 credits)
March 6 – April 28 (Sunday)

Course Description:
This course is designed to introduce you to the basic principles of epidemiology as they apply to public health practice. Content will include: a historical perspective on epidemiology, descriptive epidemiology, effect measures, study designs, bias, surveillance, and screening for disease. Emphasis will be placed on investigative techniques, epidemiological methodology, critical thinking about epidemiological studies and data. By the end of the course, students should have a strong background in the fundamentals of this field, particularly the basics of the various study designs. They should be able to critique and understand current literature in epidemiology and public health and be able to use the tools in their practice.

Course Format:
This 8-week course will include on-line weekly modules for the first 7 weeks and an open-book final exam during the eighth week. Within each module there will be online lectures, reading assignments, short written homework assignments, and discussion questions. Weekly modules will be posted to the site by 12:01 AM on Wednesdays.

The fast pace of this course requires that assignments be completed on time. Additional information on topics to be covered, additional readings, and assignments for each week will be posted throughout the course. Late work will not be accepted. If extenuating circumstances will make it difficult for you to complete the work during the week it is assigned, please contact me in advance.

Key Dates:
The first exam will occur during Week 3 of the class. It will commence at midnight EST on Wednesday, March 20 and will end at 11:59 PM EST on Wednesday, March 27.

The second exam will occur during Week 6 of the class. It will commence at midnight EST on Wednesday, April 10 and will end at 11:59 PM EST on Wednesday, April 17.

The final exam will occur during Week 8 of the class. Because the last week is a short week and because grading needs to be completed promptly, the final exam will

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be released prior to the start of this week and should be completed early. The exam will commence at 12:01 AM EST on Saturday April 20 and will end at 11:59 PM EST on Saturday, April 27.

Course: Course Learning Outcomes/Objectives:

1. Discuss the history and role of epidemiology as the fundamental science of public health.
2. Discuss what a population-based perspective of disease entails.
3. Calculate and interpret epidemiological measures of disease occurrence and the measures of effect used to compare the risk of disease between populations.
4. Distinguish between association and causation and understand the criteria to evaluate causal associations.
5. Describe the primary features of each type of study design, including its strengths and limitations.
6. Describe the roles of chance, bias, confounding, and effect modification in epidemiological research.
7. Describe the roles of screening and surveillance in epidemiology.

Course Competencies:
The following are the Association of Schools of Public Health competencies that this course addresses:

1. Identify key sources of data for epidemiologic purposes.
2. Identify the principles and limitations of public health screening programs.
3. Describe a public health problem in terms of magnitude, person, time and place.
4. Explain the importance of epidemiology for informing scientific, ethical, economic and political discussion of health issues.
5. Apply the basic terminology and definitions of epidemiology.
6. Calculate basic epidemiology measures.
7. Communicate epidemiologic information to lay and professional audiences.
8. Draw appropriate inferences from epidemiologic data.
9. Evaluate the strengths and limitations of epidemiologic reports.

Student Evaluation Criteria
Students are expected to complete the following:
- Seven online modules or lessons
- Weekly reading assignments: textbook and articles
- Seven weeks of online discussion participation
- Five quizzes
- Three exams

Grades are based on 100 points. The number of points for each assignment is indicated.

- 5 quizzes — 2 points each                       10 points
- On-line discussions (weeks 1-7) — 4 points each                   28 points
- Extra discussion threads (Epi Student Lounge) — 2 pts each       8 points
- Exam 1 (Week 3)                                              12 points
- Exam 2 (Week 6)                                              17 points
- Final exam                                                  25 points

Total of 100 points
***An online anonymous evaluation of this course must be completed prior to posting final grade.

UNE’s Quality Points/Scale assigned to grades are as follows:
- A 4.00  94-100 points  Outstanding
- A- 3.75  90-93 points  Excellent
- B+ 3.50  87-89 points  Competency achieved to high standard
- B  3.00  84-86 points  Competency achieved
- B- 2.75  80-83 points  Satisfactory competency
- F  0.00  0-79 points  Failure

Note: All grades below 80 points are considered failing grades.

Student Academic Success Center (SASC): The UNE Student Academic Success Center offers online support services. Henri Mosher, Online Support Specialist, will work directly with you to increase your writing skills or to assign a tutor to help you with a specific course. This is an excellent resource for any student. You can find his contact information at this link: http://www.une.edu/studentlife/portland/las/onlinespecialist.cfm

Henri has also developed a special portal for students in the Graduate Program in Public Health. Using this portal you can access tutorials on a variety of topics, such as writing research papers and using the AMA style. The link for the portal is: https://sites.google.com/a/une.edu/learning-assistance-une-portland/public-health-assistance-page

Safe Assign: The UNE Academic Integrity Policy will be strictly followed (See policy statement below in “Additional Course Information”). Safe Assign is utilized now by all courses in the Graduate Programs in Public Health. Safe Assign is a plagiarism prevention service offered by Blackboard. Please be aware that this service helps educators prevent plagiarism by detecting unoriginal content in student papers. If you are unclear what constitutes plagiarism, you can learn about it by clicking on this link: http://www.youtube.com/watch?v=TdMg7Yu4mPs&feature=related

Course Outline and Requirements
Course weeks: Each week runs from Wednesday to Wednesday. Weeks overlap so you will get an extra day for assignments.

Here are the 8 course weeks:
- **Week 1  March 6 – March 13**
  Week 1 will provide an overview of epidemiology. Historical perspectives, applications, and causal criteria will be discussed. A basic statistics review also will be included. The discussion will be an opportunity to introduce ourselves and begin thinking about forming epidemiological hypotheses. (Chapter 1, 2)

- **Week 2  March 13 – March 20**
  The focus of Week 2 will be measures of disease occurrence. What is risk? Rate? Prevalence? When should each measure be used? We will learn about adjusted rates and practice calculating them. We will also discuss life expectancy and survival. In the discussion, we will debate global health priorities using various measures of morbidity and mortality. (Chapter 3)
Week 3  March 20 – March 27
This week will provide an overview of descriptive epidemiology and data sources for epidemiology. What role do person, place and time play in disease occurrence? What data are available for epi studies and what limitations and privacy concerns need to be taken into consideration? In the discussion, we will begin to describe health problems in terms of person, place and time and will develop hypotheses for further study.  (Chapter 4, 5)

Week 4  March 27 – April 3
This week will provide background on ecologic, cross sectional, and case control studies. The design of each type of study, as well as appropriateness for use and limitations will be explored. We will introduce 2x2 tables and calculate odds ratios. In the discussion, we will critique several epi studies.  (Chapter 6)

Week 5  April 3 – April 10
This week will provide background on cohort and experimental studies. The design of each type of study, as well as appropriateness for use and limitations will be explored. Ethical issues around experimental studies will be explored, and we will calculate relative risks. In the discussion, we will begin to develop several epidemiologic studies using the hypotheses we constructed in Week 3.  (Chapter 7, 8)

Week 6  April 10 – April 17
This week will provide information on validity and data interpretation issues. What biases do we need to be aware of when planning or interpreting an epi study? What is effect modification? How can bias be limited? In the discussion, we will continue working with the studies we developed in Week 5 and will evaluate sources of bias and make suggestions for improvement.  (Chapter 10)

Week 7  April 17 – April 24
This week will provide background on screening and surveillance. What makes a screening test appropriate? How do we calculate sensitivity and specificity? What are false positives? False negatives? We will also examine surveillance systems, both long-standing methods of surveillance and innovative technology-based methods.  (Chapter 11)

Week 8  April 24 – April 28 (Sunday)
Final Exam

Posting to the Forum Discussion: Each student is expected to post at least twice each week in response to forum questions on that week’s topic. Because this is an on-line course, the on-line discussion portion is an important way to exchange ideas with your classmates. Students will be graded on their participation and effort of their posts. These posts will take time to complete but they are an essential part of this on-line course and a great way to get to know your colleagues.

You will receive 2 points for your initial response and 2 points for one or more thoughtful replies. Incomplete responses will receive only partial credit.
## Rubric for Forum Questions

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
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<tbody>
<tr>
<td>2</td>
<td>Respond to Group’s analysis or to a Forum Question. These postings will generally be a response to a question and will require that you have viewed the lecture and done the reading. You may also have to do some additional research for these postings. Full credit will be given only to those who have developed thoughtful responses that demonstrate they have viewed the lecture and understand the topic. Please use appropriate grammar/spelling.</td>
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<tr>
<td>2</td>
<td>Respond to a Peer’s comments. Because our class takes place on-line and there is limited opportunity for face-to-face discussion with your classmates, these postings are intended to be a response to one of your classmates and are essential to exchanging ideas and learning from each other. For full credit, students must develop a thoughtful response, bringing something new to the discussion. Posts that ask questions, extend the breadth of the discussion, or use additional information from the literature or readings to argue a point are encouraged. Short responses that do not add to the discussion will not receive full credit. Students are welcome to respond to more than one classmate, but emphasis should be placed on quality – not quantity - of posts.</td>
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**Total 4**

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**Initial discussion postings** to the class website must be submitted by **Sunday at 11:59 PM EST**.

**Second postings** must be completed by **Wednesday at 11:59 PM EST** of the week the question is assigned.

**Epidemiological Student Lounge:** Special topics on public health will be presented throughout the course, such as videos with lectures from public health heroes, articles on interesting and relevant topics, etc. Thoughtful discussion responses to these topics during the course will each yield another 2 points (for a maximum of 8 points). To get full credit for these postings, please post responses to at least four of these topics. For full credit, demonstrate that you have done the reading (or watched the video). You may also have to do some additional research for these postings. Full credit will be given only to those who have developed thoughtful responses that demonstrate they have viewed the lecture and understand the topic. Please use appropriate grammar/spelling.

**Extra Problems:** I will post additional problems for practice (self-test), similar to the quiz problems. These are optional and ungraded and are only presented to help you learn the material.
Quizzes: Quizzes are due by **Wednesday at 11:59 PM EST** of the week they are assigned. Late written assignments will earn a zero. These will draw upon material presented in the lecture, readings from the text book, and readings from assigned articles. These written quizzes are intended to be a way for you to keep up with the material in the course, to provide insight on the types of problems you might find on an exam, and to prepare for the exams. They are graded, but they intentionally are not heavily weighted in the totals of the course. These are intended primarily to help you follow along with the course and keep up with the weekly work load. Depending on the material being covered that week, these may include quantitative problem-solving exercises, short answers, critiques of articles, or brief essays.

Exams:
The exams will be open-book and will cover all the material from the lectures and the readings.
- Exam 1 will take place during Week 3 and will cover Weeks 1-2.
- Exam 2 will take place during Week 6 and will cover Weeks 3-5.
- A comprehensive Final Exam will take place during Week 8.

Each exam will test knowledge and understanding of many of the topics covered in the course and ability to apply that knowledge to public health problems. Students will have a full week to complete the exam. More details will be made available during the course, but please allocate a good amount of time during the last week of class to spend on the exams. *(Note that the final exam is due 11:59 PM, Sunday April 28, while the other assignments and exams are due on Wednesday).*

**Plan Ahead** — In this public health program, we are encouraged to give – and keep - firm dates for assignments. Note that this is a short and intense course and dates may overlap with other courses you are taking! The time to resolve such time conflicts is now!

**Required Text**

## Course Map

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Learning Objectives</th>
<th>Competencies</th>
<th>Readings</th>
<th>Associated Lectures</th>
<th>Associated Activities and Assignments</th>
<th>Assessment</th>
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</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Provide an overview of Epidemiology</td>
<td>Explain the importance of epidemiology for informing scientific, ethical, economic and political discussion of health issues</td>
<td>Chapter 1 and 2</td>
<td>Lecture 1</td>
<td>Self Test Background</td>
<td>Quiz</td>
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<tr>
<td></td>
<td>Present some of the history of Epidemiology</td>
<td>Apply the basic terminology and definitions of epidemiology</td>
<td>Rothman article</td>
<td>Lecture on Background to Course</td>
<td>Self Test Week 1</td>
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<tr>
<td></td>
<td>Cover some of the applications of Epidemiology</td>
<td>Draw appropriate inferences from epidemiologic data</td>
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<td>Discussion post: Introduction and “Where You Are”</td>
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<td></td>
<td>Provide background on the epidemiological transitions</td>
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<td>Provide background on causal criteria</td>
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<td></td>
<td>Provide basic statistics review</td>
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<td>Week 2</td>
<td>Distinguish between key epidemiological measures</td>
<td>Calculate basic epidemiology measures</td>
<td>Chapter 3</td>
<td>Lecture 2</td>
<td>Self Test</td>
<td>Quiz</td>
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<td></td>
<td>Learn when each measure is appropriate</td>
<td>Draw appropriate inferences from epidemiologic data</td>
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<td>Discussion - Global Health Priorities</td>
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<td></td>
<td>Practice using these measures to calculate rates, proportions, etc.</td>
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<td>Practice calculating adjusted rates and develop an understanding of the advantages of adjusted rates</td>
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<td>Understand how life expectancy is calculated</td>
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<td>Week 3</td>
<td>Distinguish between descriptive and analytic studies</td>
<td>Identify key sources of data for epidemiologic purposes. Describe a public health problem in terms of magnitude, person, time and place. Draw appropriate inferences from epidemiologic data</td>
<td>Chapters 4, 5</td>
<td>Lecture 3</td>
<td>Discussion - Descriptive Epidemiology</td>
<td>Exam 1</td>
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<td></td>
<td>Learn how aspects of person, place, and time contribute to disease occurrence</td>
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<td>(covers week 1 and 2)</td>
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<td></td>
<td>Highlight the key sources of data available for epidemiologic research</td>
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| Week 4 | Provide an overview of Study Designs  
Learn about 2x2 tables and their uses  
Provide an introduction to: Ecological Studies, Cross Sectional Studies & Case Control Studies  
Learn the differences between the studies and how to determine the appropriateness of using each  
Begin calculating odds ratios | Evaluate the strengths and limitations of epidemiologic reports  
Evaluate basic epidemiology measures | Chapter 6 | Lecture 4 | Self Test  
2 Discussion–Critiquing articles | Quiz |
|---|---|---|---|---|---|---|
| Week 5 | Learn about cohort studies  
Explore the advantages/disadvantages of prospective and retrospective cohort studies and when each is appropriate  
Discuss exposure-based and population-based sampling  
Learn how to calculate and interpret relative risk  
Learn the basics of randomized controlled trials (RCTs), including the purposes of blinding and ethical issues  
Discuss community trials and program evaluation | Evaluate the strengths and limitations of epidemiologic reports  
Evaluate basic epidemiology measures | Chapters 7 & 8 | Lecture 5 | Self Test  
Vaccine Wars (PBS video) | Discussion - Study Designs | Quiz |
| Week 6 | Learn criteria for evaluating epidemiological associations  
Learn about sources of error, including bias and effect modification  
Distinguish between confounding and effect modification  
Learn methods to control or limit confounding  
Discuss differences between random and systematic error  
Learn about the different types of bias that may impact epi studies  
Discuss the controversies around vaccines and the vaccine wars. | Draw appropriate inferences from epidemiologic data | Chapter 10 | Lecture 6 | Self Test  
Discussion – the Vaccine Wars,  
Exam 2 (covers weeks 3-5) |
Ongoing competencies (through Epi student lounge discussions):

- Explain the importance of epidemiology for informing scientific, ethical, economic and political discussion of health issues.
- Communicate epidemiologic information to lay and professional audiences.
- Draw appropriate inferences from epidemiologic data.

**Additional Course Information**

**Assessment of Learning:**
Feedback from students will be requested formally and informally throughout the course to assess the level of individual learning. The course is modeled on the principles of adult learning and provides an environment for learning in which the student is self-directed and takes responsibility for independent learning.

**Academic Integrity Statement:**
The University of New England values academic integrity in all aspects of the educational experience. Academic dishonesty in any form undermines this standard and devalues the original contributions of others. It is the responsibility of all members of the university community to actively uphold the integrity of the academy; failure to act, for any reason, is not acceptable.

Charges of academic dishonesty will be reviewed by the dean of the appropriate College and, if upheld, will result at minimum in a failing grade on the assignment and a maximum of dismissal from the University of New England. Academic dishonesty includes, but is not limited to the following:

1. Cheating, copying, or the offering or receiving of unauthorized assistance or information.
2. Fabrication or falsification of data, results or sources for papers or reports.
3. Action, which destroys or alters the work of another student.
4. Multiple submission of the same paper or report for assignments in more

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<td>Learn how to calculate and use a likelihood ratio</td>
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<td>Learn about innovations in global surveillance</td>
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<td>Final exam</td>
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Quiz

Week 8

Final exam
than one course without permission of each instructor.

5. Plagiarism, the appropriation of records, research, materials, ideas or the language of other persons or writers and the submission of them as one's own.

Course Evaluation Policy:
Course and Instructor evaluations are one of the most important tools that we have for evaluating the quality of your education, and for providing meaningful feedback to course instructors on their teaching. In order to assure that the feedback is both comprehensive and precise, we need to receive it from everyone, so course and instructor evaluations are a required element of every course.

PLEASE NOTE: Evaluations will be made available at the end of Week 7. You will not receive your final grade until you have completed your course evaluation.

AMA Writing Style Statement:
In keeping with the requirements of the “American Journal of Public Health,” the American Medical Association Manual (AMA) of Style, 9th edition is the required writing format for this course and is available at both UNE libraries under the title “AMA Manual.” Online resources: http://www.une.edu/library/gethelp/writing/index.cfm

Conversion from .docx to .doc:

Student Handbook Online - Policies and Procedures:
http://www.une.edu/studentlife/handbook/
The policies contained within this document apply to all students in all colleges of the University on the Biddeford Campus and the Portland Campus as well as off-campus students and distance learners. It is each student’s responsibility to know the contents of this handbook.

UNE Student Support Services:
http://www.une.edu/studentlife/portland/lass/index.cfm
The Student Academic Success Center, a department within UNE Student Support Services, provides a comprehensive array of academic support including professional writing tutors available to you.

Students with Disabilities Statement:
Any student with a documented disability needing academic adjustments or accommodations is requested to speak with the professor prior to or during the first week of class. All discussions will remain confidential. All students should register with the ADA services prior to the start of coursework for special accommodations.

UNE Catalog Online -- Graduate Programs in Public Health:
http://www.une.edu/registrar/catalog/1011/graduate/majorgph.cfm

UNE Course Withdrawal:
http://www.une.edu/registrar/catalog/1011/graduate/financial.cfm
Please contact the Student Support Specialist, Elizabeth Benz (ebenz@une.edu), at the Office of Online Worldwide Learning to either drop or withdraw from a course.

**UNE Libraries:**
- Graduate Programs in Public Health Databases: [http://www.une.edu/library/mguide/pubheal.cfm](http://www.une.edu/library/mguide/pubheal.cfm)
- Library Access for all students: If this is your first course, a UNE ID card will be mailed to you prior to the course start date.
- Library Questions: [http://www.une.edu/library/refrequest.cfm](http://www.une.edu/library/refrequest.cfm) or phone library staff at (207) 602-2361 or (207) 221-4330.

**Information Technology Services (ITS)**
- ITS Contact: Toll Free Help Desk 24 hours/7 days per week at 1-877-518-4673
- Blackboard Browser Requirements and Adjustments: [http://www.une.edu/its/webct/student.cfm](http://www.une.edu/its/webct/student.cfm)
- Further Assistance: If problems are not resolved in a timely manner or if you feel you need us to step-in, please contact the Office of the Graduate Programs in Public Health as soon as possible so we can assist you. Contact the program office via email: dbisaillon@une.edu, jredman1@une.edu, and/or cbaeder@une.edu.