# EPIB 610 – Foundations of Epidemiology

**Semester:** Spring 2012  
**Classroom and Time:** SPH 0307  
1/26/12-5/17/12  
Th 4:00pm-6:45 pm  

**Instructor:** Olivia Carter-Pokras, Ph.D. and other Departmental Faculty  
**Office:** 2234G SPH Bldg.  
**Phone:** 301-405-8037  
**Email:** opokras@umd.edu  

**Teaching Assistant:** Allison O’Neill  
**Email:** ahoneill@gmail.com  

**Office Hours:** By appointment  
**Office Hours:** Tuesday 11:30-12:30  
Room 1232  

**Course Pre- and Co-requisites:** Students must be enrolled in a graduate program at the University of Maryland College Park School of Public Health, or receive prior approval by the instructor in order to enroll in the course. Not open to students who have completed HLTH720. Credit will be granted for only one of the following: EPIB610 or HLTH720. Formerly HLTH720.

**Required Texts and Other Readings:**

**Required:**

Readings as assigned

**Recommended:**


**Additional Materials Required:**
Basic calculator for assignments and classroom exercises
Course Description:
Epidemiology is the study of the distribution and determinants of the varying rates of diseases, injuries, and other health states in human populations. As the fundamental science underlying public health practice, epidemiology provides the conceptual and practical tools necessary for the study of public health problems. This course introduces students to the discipline of epidemiology and its application to public health issues and practices. The course covers basic epidemiologic concepts and methods.

Course Learning Objectives:
Upon completing this course, the student will be able to:
1. Demonstrate the importance of epidemiology for informing scientific, ethical, economic, and political discussion of health issues (Program Competency #1).
2. Assess a public health problem in terms of magnitude, person, time, and place (Program Competency #2).
3. Distinguish among the terms and definitions of epidemiology (Program Competency #3).
4. Discriminate between key sources of data for epidemiological purposes (Program Competency #4).
5. Calculate basic epidemiology measures (Program Competency #5).
6. Give the principles and limitations of public health screening programs (Program Competency #6).
7. Evaluate strengths and limitations of epidemiologic reports (Program Competency #7).
8. Draw appropriate inferences from epidemiologic data (Program Competency #8).
9. Explain criteria for causality (Program Competency #9)
10. Appreciate the contributions of epidemiology to public health (Program Competency #1)
11. Have confidence in their ability to calculate basic epidemiologic measures (Program Competency #5)
12. Derive satisfaction in their ability to interpret basic epidemiologic measures in the literature (Program Competency #7, #8, #9 and #10)
13. Actively participate in interdisciplinary teams on public health-related projects (Program Competency #7, #8, #9 and #10)
14. Develop an interest in communicating epidemiologic information to lay and professional audiences (Program Competency #7, #8, #9, and #10).

Program Competencies Addressed in this Course:
This course address the core competencies in epidemiology for MPH degrees at the University of Maryland College Park School of Public Health:
1. Demonstrate the importance of epidemiology for informing scientific, ethical, economic, and political discussion of health issues.
2. Assess a public health problem in terms of magnitude, person, time and place.
3. Distinguish among the terms and definitions of epidemiology.
4. Discriminate between key sources of data for epidemiological purposes.
5. Calculate basic epidemiology measures.
6. Give the principles and limitations of public health screening programs.
7. Evaluate strengths and limitations of epidemiologic reports.
8. Draw appropriate inferences from epidemiologic data.
9. Explain criteria for causality
10. Communicate epidemiologic information to lay and professional audiences. (MPH-Epidemiology)

Course Requirements
The class sessions will include lectures, discussions, and classroom exercises to review main concepts of epidemiology. Lectures will not necessarily cover all materials included in the reading assignments. Students are expected to complete the assigned readings prior to the class and to be prepared to participate in discussions and exercises during the class. This includes class text reading and assigned journal articles.

Class Participation
This is a graduate level course, and students are expected to attend class regularly, participate in class discussions, complete assigned readings, and put in an average of 9 hours of work outside of class each week to master the material. Students are responsible for determining the most relevant information from each lecture and reading. To help identify the key concepts, students may be asked to compose two questions about the day’s lesson at the end of each class. Students will present their questions at the beginning of the following class to initiate discussion and confirm the previous lecture’s essential information. Alternatively, a posed, content-based question will be provided by the instructor to highlight key points from the readings or lecture. As a courtesy to your instructor and classmates, please notify the instructor in advance if you are unable to attend class. Students who miss class are responsible for obtaining notes and hand-outs from other students.

Homework
There will be several assignments designed to give students a chance to apply and practice the concepts learned in class. Assignments are due at the beginning of the classes specified in the syllabus. Each student must turn in his/her own individual work. It is important to do the homework independently. Otherwise, if you are having trouble with a concept, you will not know that until you get graded in class on a quiz or exam. 10% will be deducted for each day the assignment is late unless arrangement have been made prior to class. Students should provide a hard copy of their homework to the instructor.

Working in Groups
Epidemiologists and public health workers tend to work in interdisciplinary teams, and rarely work alone. Skills that are needed to be successful working in a team include: active and tolerant listening, helping one another in mastering content, giving and receiving constructive criticism, managing disagreements, and handling unproductive group behavior. To gain experience in working in an interdisciplinary team, students will work in formal learning groups of 4-5 to critically review an epidemiologic article. Study teams will be organized no later than the third week of class.

Study teams should meet regularly outside of class to complete the group project. Study teams can work in a number of ways, and are guided by the notions that students can often do as a group what they

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1 Adapted from: http://teaching.berkeley.edu/bgd/collaborative.html
cannot do by themselves and that students can benefit from peer teaching-explanations, comments, and instruction from their classmates.

For your group project, your group will have to divide up the labor, and reach a consensus. Each group member is responsible to and dependent on all the others, and one cannot succeed unless all in the group succeed. Students who participate in study teams agree to do the following:

- Prepare before the study team meeting
- Complete any tasks that the group assigns to its members
- Attend all meetings and arrive on time
- Actively participate during the sessions in ways that further the work of the group
- Help promote one another's learning and success
- Provide assistance, support, and encouragement to group members
- Be involved in periodic self-assessments to determine whether the study team is working successfully (Is too much work being required? Is the time in study team meetings well spent?)

You can improve the effectiveness of your study team by arranging logistics for the semester (e.g., meeting time, length, location), and making sure each session has a clearly articulated agenda and purpose. You should develop a plan of action: who will be doing what and when. As part of your plan of action, you will develop an anonymous assessment tool that can be used to assess the contribution of each group member at the end of each project (e.g., who did extra work, who shirked work, actions taken by each member that was helpful for the group, actions each member could take to make the group even better). The brief evaluation form can include items about the group's overall accomplishments, your own role, and suggestions for changes in future group work. Each group’s assessment tool will be shared with the class, and a final class assessment tool will be selected. A sample assessment tool has been posted on Blackboard.

After each group task is completed, each student will submit to the instructor an anonymous assessment of the participation of the other group members. If several people indicate that an individual did less than a fair share, that person could receive a lower grade than the rest of the group.

**Article presentation and report**

Students will work in groups of 4-5 to critically review an epidemiologic article/manuscript that was published during the past year.

Each group will present their critical review to the class in a 10 minute power point presentation, and lead a class discussion of the article. Presentations should include: 1) a brief overview of article; 2) background and literature review on the subject matter; 3) relevance to epidemiology (e.g., if nutritional epidemiology article, should describe how the article advanced the field of nutritional epidemiology); 4) description of methods, results and key conclusions; 5) strengths and limitations of the study; and 6) discussion questions. Groups should email their Powerpoint slides in advance of the class to the instructor so that they can be posted on Blackboard.
Each student will prepare a typed 2-3 page summary report of the critical review, which is due on the same day of the presentation. The summary report is expected to be individually written (not as a group) and should reflect each student’s opinion, analysis, and interpretation of the article. A hard copy should be submitted to the instructor. The font should be no smaller than Arial 11. Margins should be one inch. Line spacing should be 1.5.

Students should choose epidemiologic journal articles from scientific public health or medical journals. Examples of appropriate journals include: American Journal of Public Health, Annals of Epidemiology, American Journal of Epidemiology, Journal of American Medical Association, etc. A list of journals that publish epidemiologic journal articles that are available online has been posted on our library webpage: http://www.lib.umd.edu/ CHEM/EPIB_610.html Students must have their article approved by the course instructor at least one week prior to the presentation so that the articles can be posted for classmates to read. Group article presentations are scheduled to be given on April 26 and May 3.

Extra Credit Opportunity: Extra Credit (up to 5% of your grade) will be given if you rewrite your review of the article in the form of a letter to the editor of the journal, and incorporate comments from the class discussion. The revision must be submitted one week following your presentation in the required format for letters to the editor for that journal. Submission to the journal is not required, however, if interested, I will provide comments and feedback as needed.

Blackboard:
The syllabus, required journal articles, Powerpoint slides and other course materials will be posted on the Blackboard website for EPIB610: https://elms.umd.edu/webapps/portal/frameset.jsp  Please remember to visit this website prior to each class.

Course Policies:

Email – The Official University Correspondence:
Verify your email address by going to www.my.umd.edu.

All enrolled students are provided access to the University’s email system and an email account. All official University email communication will be sent to this email address (or an alternate address if provided by the student). Email has been adopted as the primary means for sending official communications to students, so email must be checked on a regular basis. Academic advisors, faculty, and campus administrative offices use email to communicate important and time-sensitive notices.

Students are responsible for keeping their email address up to date or for redirecting or forwarding email to another address. Failure to check email, errors in forwarding email, and returned email (from “full mailbox” or “unknown user” errors for example), will not excuse a student from missing University announcement, messages, deadlines, etc. Email addresses can be quickly and easily updated at www.my.umd.edu or in-person at the Student Service Counter on the first floor of the Mitchell Building.
Absence Policy:
In accordance with University policy if you are absent for a single (1) lecture due to illness or some form of personal or family emergency, this absence will be considered “excused” and the instructor will accept a note from you attesting to the date of the illness/incident, along with an acknowledgement that the information is true. Whenever feasible, you should try to contact the instructor in advance.

Multiple or prolonged absences, and absences that prevent attendance at a major scheduled grading event (like an exam or test) will require written documentation from an appropriate health care provider/organization.

A link to pull information on the new policy covering absences from class can be found at http://www.president.umd.edu/policies/v100g.html

Late work and Missed Exams / Assignments
Assignments are due at the beginning of the class unless specified in the syllabus. If you are ill, or otherwise need to reschedule exams or assignment due dates, please notify the instructor in advance by email so arrangements can be made. 10% will be deducted for each day the assignment is late unless arrangements have been made prior to class. All coursework must be completed by the end of the term, or an incomplete grade will be assigned.

Religious Observances
The University System of Maryland policy provides that students should not be penalized because of observances of their religious beliefs; students shall be given an opportunity, whenever feasible, to make up within a reasonable time any academic assignment that is missed due to individual participation in religious observances. It is the student’s responsibility to inform the instructor in advance of any intended absences for religious observance.

Special Accommodations / Disability Support Services
If you have a documented disability and wish to discuss academic accommodations for test taking or other needs, you will need documentation from Disability Support Service (301-314-7682). If you are ill or encountering personal difficulties, please let the instructor know as soon as possible. You can also contact Learning Assistance Services (301-314-7693) and/or the Counseling Center (301-314-7651) for assistance.

Academic Integrity
The University’s code of academic integrity is designed to ensure that the principle of academic honesty is upheld. Any of the following acts, when committed by a student, constitutes academic dishonesty: CHEATING: intentionally using or attempting to use unauthorized materials, information, or study aids in an academic exercise.
FABRICATION: intentional and unauthorized falsification or invention of any information or citation in an academic exercise.
FACILITATING ACADEMIC DISHONESTY: intentionally or knowingly helping or attempting to help another to violate any provision of this code.
PLAGIARISM: intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise.
For more information see: http://www.shc.umd.edu/code.html.

The Honor Pledge is a statement undergraduate and graduate students should be asked to write by hand and sign on examinations, papers, or other academic assignments. The Pledge reads:

I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination.

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit http://www.shc.umd.edu.

Copyright Protection for Class Materials
My lectures and course materials, including power point presentations, tests, outlines, and similar materials, are protected by copyright. In addition, persons who publicly distribute or display or help others publicly distribute or display copies or modified copies of an instructor’s course materials may be considered in violation of the University Code of Student Conduct, Part 9(k). You may take notes and make copies of course materials for your own use. You may not and may not allow others to reproduce or distribute lecture notes and course materials publicly whether or not a fee is charged without my express written consent. Similarly, you own copyright in any papers you write for this course and in your exam essays. If I am interested in posting your answers or papers on the course web site, I will ask for your written permission.

Inclement Weather / University Closings
In the event that the University is closed for an emergency or extended period of time, the instructor will communicate to students regarding schedule adjustments, including rescheduling of examinations and assignments due to inclement weather and campus emergencies. Official closures and delays are announced on the campus website (http://www.umd.edu) and snow phone line (301-405-SNOW), as well as local radio and TV stations.

Course Evaluations
The University, the School of Public Health, and the Department of Epidemiology and Biostatistics are committed to the use of student course evaluations for improving the student experience, course and curriculum delivery, and faculty instruction. Your evaluations help instructors improve their courses;
help deans and department chairs decide on merit pay for faculty, renewal of contracts, and support tenure and promotion decisions; and help current and future students decide on classes. The system (www.CourseEvalUM.umd.edu) will open Tuesday, November 29th and close on Wednesday, December 14th for Fall 2011 courses. The system (www.CourseEvalUM.umd.edu) will open Tuesday, April 24th and close on Friday, May 11th for Spring 2012 courses.

Available Support Services
The University of Maryland Libraries have many resources that will help with the research for your EPIB 610 project. Required and recommended textbooks for EPIB610 have been placed on reserve in the McKeldin Library. A library webpage has been developed for this class which provides guidance on finding information, data and statistics; epidemiologic journals available at the library; epidemiologic associations; how to read a scholarly article and getting help from a librarian: http://www.lib.umd.edu/CHEM/EPIB_610.htm Examples of scientific journals available at the library that publish epidemiologic findings include the: American Journal of Public Health, Annals of Epidemiology, American Journal of Epidemiology, Journal of American Medical Association, etc.

Grading Procedures:
There will be 2 in-class quizzes and 1 in-class exam. Each quiz and exam will consist of multiple choice and short answer questions and will cover material from class lectures and the assigned readings. Quizzes and exams will be cumulative (i.e., cover previous material). Try to answer each and every question. To prepare for quizzes and the exam, review the slides (e.g., basic study design), your textbook (e.g., sources of data), and your homework. During this course, you will need to demonstrate that you know how to calculate relative risk, cumulative incidence and incidence rates, crude death rates, age-adjusted death rates using the direct method, attributable risk, population attributable risk, population attributable risk proportion, etc. Sometimes on quizzes, exams and homeworks you will get more information than you need to do the calculations. This reflects reality—you will have to learn what is important to pull out from the reams of data that you have, and learn how to organize your data before doing your analysis. You will be provided with a formula “cheatsheet” for quizzes and exams, however, when studying for quizzes and exams please review formulas (including age adjustment) so that you know which ones to pick. Bring your calculator to class as well as at least two pencils. You want to be able to correct any errors before turning in your quiz or exam.

Please show all of your work (i.e., calculations) on homework, quizzes and exams. Include row and column totals in your tables. Do not forget to put the units down in your answers. If you provide the correct answer, but, do not show your work your answer will be marked as incorrect. If you provide the incorrect answer, but, show in your calculations that you understood how to answer the question correctly, you may get partial credit.

Please read the extra material that I have provided on rounding. Avoid rounding DURING calculations (instead, please carry out the digits until the very end of your calculations). Also, avoid rounding in a huge way at the end of your calculations (e.g., please don’t round 117 to 120 at end of calculations). When preparing a table that summarizes information on the number of people by exposure and an outcome, remember to round your numbers in your tables to whole persons.
### Assessment Grade Weights:
- Class participation: 5%
- Homework: 20%
- Article presentation: 5%
- Article report: 10%
- Quizzes (2): 30%
- Final exam: 30%

### Grading:
- 90-100: A
- 80-89: B
- 70-79: C
- 60-69: D
- < 60: F

### Course Outline / Course Calendar:

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### Session Outline

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<tr>
<td>1. Demonstrate the importance of epidemiology for informing scientific, ethical, economic, and political discussion of health issues.</td>
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<td><strong>Readings:</strong></td>
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<tr>
<td>• Aschengrau &amp; Seage: Chapter 1</td>
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<td><strong>Recommended:</strong></td>
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<td><a href="http://www.ph.ucla.edu/epi/snow.html">http://www.ph.ucla.edu/epi/snow.html</a></td>
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<td>2. Assess a public health problem in terms of magnitude, person, time, and place.</td>
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</table>
3. Distinguish among the terms and definitions of epidemiology.
- 5. Calculate basic epidemiology measures.

Reading:
- Aschengrau & Seage: Chapter 3

Recommended:

Session 4
February 16

Topic: Sources of Public Health Data & Descriptive Epidemiology

Learning Objectives for Session (Program Competencies 3, 4)
- 3. Distinguish among the terms and definitions of epidemiology.
- 4. Discriminate between key sources of data for epidemiological purposes.

Readings:
- Aschengrau & Seage: Chapters 4 & 5

Assignments – HOMEWORK #1 DUE

Session 5
February 23

Topic: Overview of Epidemiologic Studies & Case-Control Studies

Learning Objectives for Session (Program Competencies 3, 5, 7, 8, 9)
- 3. Distinguish among the terms and definitions of epidemiology.
- 5. Calculate basic epidemiology measures.
- 7. Evaluate strengths and limitations of epidemiologic reports.
- 8. Draw appropriate inferences from epidemiologic data.
- 9. Explain criteria for causality.

Readings:
- Aschengrau & Seage: Chapters 6 (cross-sectional & ecologic studies only) & 9

Recommended:
- Coley N, Andrieu S, Gardette V, Gillette-Guyonnet S, Sanz C, Vellas B, Grand A. Dementia prevention:

Assignments – QUIZ #1

Session 6

Topic: Cohort Studies & Experimental Studies

Learning Objectives for Session (Program Competencies 3, 5, 7, 8, 9)
- 3. Distinguish among the terms and definitions of epidemiology.
- 5. Calculate basic epidemiology measures.
- 7. Evaluate strengths and limitations of epidemiologic reports.
- 8. Draw appropriate inferences from epidemiologic data.
- 9. Explain criteria for causality.

Readings:
- Aschengrau & Seage: Chapters 7 & 8

Assignments – HOMEWORK #2 DUE

Session 7

Topic: Bias

Learning Objectives for Session (Program Competencies 3, 7, 8, 9)
- 3. Distinguish among the terms and definitions of epidemiology.
- 7. Evaluate strengths and limitations of epidemiologic reports.
- 8. Draw appropriate inferences from epidemiologic data.
- 9. Explain criteria for causality.

Readings:
- Aschengrau & Seage: Chapter 10

Recommended:

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• Aschengrau & Seage: Chapters 14 & 15

**Recommended:**

**Session 11**
**April 12**

*Topic: Screening in Public Health Practice*

**Learning Objectives for Session (Program Competencies 6, 7, 8, 9, 10)**
- 6. Give the principles and limitations of public health screening programs.
- 7. Evaluate strengths and limitations of epidemiologic reports.
- 8. Draw appropriate inferences from epidemiologic data.
- 12. Derive satisfaction in their ability to interpret basic epidemiologic measures in the literature.

**Readings:**
• Aschengrau & Seage: Chapter 16

**Recommended:**

**Assignments – HOMEWORK #3 DUE**

**Session 12**
**April 19**

*Topics: Genetic factors, Public policy and ethical issues*

**Learning Objectives for Session (Program Competencies 1, 2, 7, 8, 9, 10)**
- 1. Demonstrate the importance of epidemiology for informing scientific, ethical, economic, and political discussion of health issues.
- 2. Assess a public health problem in terms of magnitude, person, time, and place.
- 10. Appreciate the contributions of epidemiology to public health.
- 14. Develop an interest in communicating epidemiologic information to lay and professional audiences.

**Readings:**
• Aschengrau & Seage: Chapters 6, 17

### Assignments – HOMEWORK #4 DUE

#### Session 13  
**April 26**

**Group Article Presentations**

Learning Objectives for Session (Program Competencies 1, 3, 7, 8, 9, 10)
- 1. Demonstrate the importance of epidemiology for informing scientific, ethical, economic, and political discussion of health issues.
- 2. Assess a public health problem in terms of magnitude, person, time, and place.
- 3. Distinguish among the terms and definitions of epidemiology.
- 8. Draw appropriate inferences from epidemiologic data.
- 10. Appreciate the contributions of epidemiology to public health.
- 12. Derive satisfaction in their ability to interpret basic epidemiologic measures in the literature.
- 13. Actively participate in interdisciplinary teams on public health-related projects.
- 14. Develop an interest in communicating epidemiologic information to lay and professional audiences.

#### Session 14  
**May 3**

**Group Article Presentations**

Learning Objectives for Session (Program Competencies 1, 3, 7, 8, 9, 10)
- 1. Demonstrate the importance of epidemiology for informing scientific, ethical, economic, and political discussion of health issues.
- 2. Assess a public health problem in terms of magnitude, person, time, and place.
- 3. Distinguish among the terms and definitions of epidemiology.
- 8. Draw appropriate inferences from epidemiologic data.
- 10. Appreciate the contributions of epidemiology to public health.
- 12. Derive satisfaction in their ability to interpret basic epidemiologic measures in the literature.
- 13. Actively participate in interdisciplinary teams on public health-related projects.
- 14. Develop an interest in communicating epidemiologic information to lay and professional audiences.

#### Session 15  
**May 10**

**Topic: Overview of course**

Learning Objectives for Session (Program Competencies 2, 3, 4, 5, 6, 7, 8, 9, 10)
- 2. Assess a public health problem in terms of magnitude, person, time, and place.
- 3. Distinguish among the terms and definitions of epidemiology.
- 4. Discriminate between key sources of data for epidemiological purposes.
- 5. Calculate basic epidemiology measures.
- 6. Give the principles and limitations of public health screening programs.
- 7. Evaluate strengths and limitations of epidemiologic reports.
- 8. Draw appropriate inferences from epidemiologic data.
- 9. Explain criteria for causality.
- 10. Appreciate the contributions of epidemiology to public health.
- 11. Have confidence in their ability to calculate basic epidemiologic measures.
- 12. Derive satisfaction in their ability to interpret basic epidemiologic measures in the literature.

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<th>FINAL EXAM</th>
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Additional Literature, Websites and Other Resources:

Announcements and additional resource material will be placed on Blackboard throughout the course.