EPI 2110 – Principles of Epidemiology  
Summer 2014 (CRN 17617)  
Graduate School of Public Health, University of Pittsburgh

**Primary Instructor:**

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**Purpose:**

Epidemiology is a scientific discipline which seeks to identify and describe patterns of disease occurrence, identify determinants of disease, and evaluate disease prevention and health care treatment efforts. With its focus of study in human populations, epidemiology is directly linked with public health research, policy, and practice. This course provides an introduction to the fundamental definitions, terminology, concepts, methods, and critical thinking used in epidemiology. The material presented in this course is designed to lay the foundation for future study and practice in public health activities.

**Course Objectives:**

Upon completion of this course, the student will be able to:

1. Apply and interpret the basic terminology and definitions of epidemiology.
2. Calculate and interpret basic epidemiology measures.
3. Identify key sources of data for evaluating a health issue in an epidemiologic context.
4. Describe a health issue in terms of its importance and the patterns that characterize its occurrence in the community.
5. Identify the principles and limitations of basic public health programs.
6. Describe the process of identifying determinants of disease, disability, injury, or health care interventions.
7. Draw appropriate inferences from epidemiologic studies investigating the determinants of disease, disability, injury, or health care interventions.
8. Recognize the influence of age, gender, racial, ethnic, and cultural variability on epidemiologic practice and research.
9. Evaluate epidemiologic evidence to formulate strategies and decisions on health issues in the community.
**Course Structure:**

To learn the concepts of epidemiology and their proper application, a student should work with the course material in different ways. Therefore, the structure of the course is built around multiple modes of instruction.

- On Tuesday and Thursday evenings, the instruction will be on an in-person format with the presentation of lecture and discussion material. **Students are expected to review the lecture slides prior to class to be aware of the fundamental objectives and material.** Note: Only selected slides will be reviewed in the lecture. This will leave time for presentation of discussion points and questions that focus on key material. Audio-recordings of the full lecture slides will be available for those who may wish to review the material in further detail. Also, students are encouraged to read appropriate sections of the book for review of complex topics.
- Questions and/or homework assignments will also be posted in Courseweb for every lecture to provide further practice with the lecture material. Students are expected to review this material and the posted answers to identify their strengths and weaknesses on the related concepts. If a weakness is identified, the student is encouraged to address it through discussions in the recitation, or through discussions with the teaching assistant or professor during office hours.
- In addition, we will be using the time from 6:30 to 7:00 pm on Tuesdays and Thursdays as a recitation period for the review of basic lecture concepts, practice questions and discussion related to the class. Attendance in this learning period is not required, but your attendance is encouraged, particularly if you identify weaknesses in your understanding of the material.

**Course Requirements:**

The following requirements pertain to this course.

Completion of **homework assignments** will be required in the course to facilitate learning of the more rigorous concepts presented in the course. The assignments will pertain to lecture-specific topics and will generally cover issues that require quantitative and critical thinking skills. Please consult the schedule at the end of this syllabus to identify the assignments and their due dates for receipt. You should return the homework assignments through Courseweb by using the link provided with the assignment.

**Note:** Homework exercises will be graded. Selected questions in each assignments will be checked in this grading process. Answer keys for the homework assignments will be posted after the assignment is due. It is your responsibility to review your assignment and the answer key to identify areas of strength and weakness in the assignments. Help to address an identified weakness can then be obtained by utilizing the recitation period for discussion, and/or through questions directed to the instructor or teaching assistant. **No credit will be given if an assignment is turned in late** or not turned in at all (unless prior arrangements have been made).

**Seven quizzes** will be given during the course as one means to assess your level of mastery of the material. The short quizzes will be seven questions in length and given through online assessments. Each quiz will be structured to include 4 questions of average rigor to answer, 2 questions of moderate rigor to answer, and 1 question of higher order thinking to answer. The instructor will identify the content areas for each quiz in the lectures prior to its administration. Specific dates of these quizzes are listed in the schedule included at the end of this syllabus.
Three exams will be given during the course to evaluate the level of mastery of the material presented. The first exam on June 10 will be given in A115 Crabtree Hall from 5pm to 7pm. The second exam will be given on July 10 in the same room and at the same time. The third exam will take place in A115 Crabtree Hall on July 31. The final exam on July 31 will cover material from the entire semester. Students will be allowed to use notes and the textbook during the exams. Remember, also, to bring a working calculator to these exams. Laptops will not be permitted for any exam. There are no make-up exams except under EXTREME circumstances (i.e. death in the family).

The exams will be comprised of a variety of question formats. Essay questions will query your ability to problem solve and apply the lecture material to relevant health scenarios. Short answer and multiple choice questions will assess your recognition of key lecture topics and their application to given scenarios. In addition, some questions will also contain epidemiological problems requiring calculations. The purpose of each of the exams will be to evaluate how well the student understands the concepts of epidemiology, why certain actions are done in epidemiology, and specific details of epidemiologic approaches and methods. This means that, in many circumstances, you will be required to think and state how epidemiology applies to a given situation, or to identify which given example is the best representation of epidemiology principles. These exams are based on critical thinking and not on memorization. Students who are successful on the exams prepare as if these exams are closed book.

**Grading Policy:**

Course requirements will be weighted in the following fashion to determine the final course grade.

- **Homework Exercises:** 15% (1.5% each)
- **Quizzes:** 24.5% (3.5% each)
- **Quiz Correction:** 0.5%
- **Exams:** 60% (20% each)

Grades will be assigned using a letter grade as follows:

- A: 90% or higher
- B: 80% to < 90%
- C: 70% to < 80%
- F: < 70%

Students who withdraw from the course must verify that they have been removed from the class roster maintained by the University Registrar. Otherwise, students who remain on the roster and do not complete the designated work will be assigned a failing grade.

**Course Expectations**

As a student in this course, you can expect the following:

Epidemiology is a unique discipline that utilizes a blend of quantitative and qualitative skills and abilities to address important health issues in the community. In epidemiology, heavy emphasis is placed upon describing the importance of health issues through quantitative measures where there are correct and incorrect methods to identifying answers. However, in epidemiology, a professional must also be able to interpret this quantitative information in the context of the community and accepted practices. This interpretation involves the use of critical thinking skills. It is often the case that there
is not necessarily one correct answer or only one approach to the proper interpretation of a health related question. Sometimes, a professional must choose among various options by identifying a solution that is the most appropriate for the problem posed given the information available to that person. Acquiring the knowledge and skills to make reasoned judgments is one of the goals of this course. For many students, this will be their first experience in making judgments where there is not one right or wrong answer. As a result, some students may become frustrated, especially if their interpretations are marked off on exams and lose points. Be patient and keep on trying. Making reasoned judgments takes time and practice.

This course is a required course for most students in the Graduate School of Public Health. As a result, it contains students from many different cultures and backgrounds and with many different levels of understanding and expertise. You may hear responses during the class that are not readily apparent to you, as someone may be presenting a response from their area of expertise. Be prepared to add to this discussion from your own area of background or to ask for clarification in these situations. Let’s take advantage of the diversity in our class to learn epidemiology.

The graduate nature of this class also means that there is the expectation that students will monitor their academic progress and seek help when necessary. Suggested answers to practice exercises and homework assignments will be posted as part of the course material for each lecture. Students are expected to review this material and their own completed work to independently assess their level of understanding of the material. If questions still remain, students should seek input from the teaching assistant or instructors during office hours or the recitation periods.

**Academic Integrity:**

All students are expected to adhere to the school’s standards of academic honesty. Any work submitted by a student for evaluation must represent his/her own intellectual contribution and efforts. You are not permitted to work with other students or other persons on the take-home exams.

The GSPH policy on academic integrity, which is based on the University policy, is available online at [http://www.publichealth.pitt.edu/interior.php?pageID=126](http://www.publichealth.pitt.edu/interior.php?pageID=126). The policy includes obligations for faculty and students, procedures for adjudicating violations, and other critical information. Please take the time to read this policy.

Students committing acts of academic dishonesty, including plagiarism, collaboration on take-home exams, cheating on in-class exams, misrepresentation of data, and facilitating dishonesty by others, will receive sanctions appropriate to the violation(s) committed. Sanctions include, but are not limited to, reduction of a grade for an assignment or exam, failure of an exam, failure of the course, and dismissal from GSPH.

All student violations of academic integrity will also be documented and forwarded to the GSPH Office of Student Affairs. If a sanction for a violation is agreed upon by the student and instructor, then the document of violation will be expunged from the student file upon the student’s graduation. If the sanction proposed by the instructor is not agreed upon by the student, then the violation will be referred to the GSPH Academic Integrity Hearing Board, where a final decision on the violation will be rendered. However, the document of the academic violation and the final decision of the Hearing Board will remain in the student’s permanent record.
Disability Resources and Services:

If you have a disability for which you are or may be requesting an accommodation on testing, you are encouraged to contact both Dr. Songer and Disability Resources and Services (DRS), 216 William Pitt Union, Phone: 412-648-7890, TTY: 412-383-7355, as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course. A comprehensive description of the services of that office can be obtained at www.drs.pitt.edu.

Students with special needs or a disability that require accommodations in the event of a building evacuation should e-mail the Office of Environmental Health and Safety (EHS) at safety@ehs.pitt.edu to request the development of an individualized evacuation plan. A representative of this office will contact you for specific information. You should also inform Dr. Songer that you are requesting accommodations for an evacuation.

Recommended Text:


This text is available at The Pitt Book Center, 3601 Forbes Avenue, or online.

Other Suggested Reference Text (also not required):


Office Hours:

Instructor:
Dr. Songer: Fridays, 2:30 - 4:00 pm, Peet’s Coffee & Tea, Forbes Ave.

Teaching Assistants:
Ms. Eaglehouse: Mondays, 3-4 pm, Panera Bread, Forbes Ave
Thursdays by appointment, 4-4:30 pm, Panera Bread, Forbes Ave
Course Website:

All course materials can be accessed through the Courseweb software application used at the University of Pittsburgh (http://courseweb.pitt.edu). All enrolled students who have an active University Computer Account have online access to this content. Class materials on this system can be accessed through the links on the left side of the screen after you enter into the course. Click on the Course Documents link to gain access the lectures, class handouts, assigned readings, practice exercises, and homework assignments. This material is embedded in the link pertaining to each lecture of the course. The basic structure of the Course Documents link is built around lecture modules. Many different types of materials will be provided in each module, including lecture slides, an audio recording to describe the slides, assigned reading in the required textbook, a practice exercise to assess your understanding, personal journal questions, required homework assignments, and occasionally assorted exercises.

Also, all quizzes will be posted under the Quiz link in Courseweb. Finally, all announcements related to the course will be posted using the Courseweb announcement system. You will be expected to monitor Courseweb regularly for these announcements. If changes occur in the course, they will be broadcast through this mechanism.

Audio recordings:

Audio recordings of past lectures will also be posted on Courseweb under the respective lecture folders. The audio files are stored in the cloud from Kaltura Media, and can only be streamed from the Courseweb site. To access the audio recordings, go to the related lecture link, under Course Documents. Note: These recordings represent discussion and slides as presented in this course in a prior term. Much of the information on the recordings is similar to that presented in this course. The recordings should be used as a supplement to the current lecture slides and discussion. The recordings should not be used as an arbiter of the final course content.
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<th>Date</th>
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<th>Class Session/Topic</th>
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<td>Songer</td>
<td><strong>Introduction &amp; Historical Overview of Epidemiology</strong></td>
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<td>May 15</td>
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<td><strong>Epidemiologic Approach to Disease I: Person, place, time/Host, agent, environ</strong></td>
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<td>May 20</td>
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<td><strong>Epidemiologic Approach to Disease II: Assessing disease in populations</strong></td>
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<td>May 22</td>
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<td><strong>Heterogeneity in Populations and the Dynamics of Infectious Disease</strong></td>
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<td>May 27</td>
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<td><strong>Infectious Disease Prevention and Outbreak Investigation</strong></td>
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<td>May 29</td>
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<td><strong>Epidemiologic Transition/Epidemiology in Global Contexts</strong></td>
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<td>June 3</td>
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<td><strong>Chronic Disease Epidemiology; The web of causation</strong></td>
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<td>June 12</td>
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<td><strong>Measures of Disease Frequency; Incidence, Prevalence, Clinical Measures</strong></td>
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<td>June 17</td>
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<td><strong>Measures of Disease Association; Relative risk, Odds ratio</strong></td>
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<td>June 26</td>
<td>Songer</td>
<td>Analytical Epidemiology; Hypotheses, research designs and sequence</td>
<td>- descriptive designs, ecologic designs&lt;br&gt;Reading: Textbook (Gordis): (pgs 165-66), Chapter 14 (pgs 227-30)</td>
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<td>July 1</td>
<td>Songer</td>
<td>Analytical Epidemiology; Cross-sectional/Case-control designs</td>
<td>Reading: Textbook (Gordis): Chapter 10 (pgs 195-98, 177-95)&lt;br&gt;Quiz 5 posted (due July 3)&lt;br&gt;Homework Assignment given out (due July 3)</td>
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<td>Analytical Epidemiology; Case-crossover/Cohort designs</td>
<td>Reading: Textbook (Gordis): Chapter 9&lt;br&gt;Homework assignment given out (due back July 8)</td>
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<td>July 8</td>
<td>Songer</td>
<td>Analytical Epidemiology; Randomized clinical trials</td>
<td>Reading: Textbook (Gordis): Chapter 7&lt;br&gt;Homework assignment given out (due back July 8)</td>
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<td>Error in Epidemiologic Studies I; Chance, Bias</td>
<td>Reading: Textbook (Gordis): Chapters 8, 10, 15 (pgs 147-52, 187-88, 247-251)</td>
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<td>July 17</td>
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<td>Error in Epidemiologic Studies II; Confounding, effect modification</td>
<td>Reading: Textbook (Gordis): Chapters 14, 15 (pgs 230-34, 251-261)&lt;br&gt;Homework Assignment given out (due back July 23)</td>
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<td>Inference from Epidemiologic Studies&lt;br&gt;Measures of Effect; Assessing Public Health Impact</td>
<td>Reading: Textbook (Gordis): Chapter 14 (pgs 236-45)&lt;br&gt;Reading: Textbook (Gordis): Chapter 12&lt;br&gt;Online Quiz 6 posted (due back July 24)</td>
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<td>Epidemiology in Practice; Screening; validity, application and bias</td>
<td>Reading: Textbook (Gordis): Chapters 5, 18&lt;br&gt;Homework Assignment given out (due back July 29)</td>
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