

**Saint Louis University
School of Public Health
Department of Community Health
Division of Epidemiology**

**EPI-500-01
Principles of Epidemiology**

Fall Semester 2007

Syllabus

Meeting Dates and Times

Tuesdays, 8:30-11:00 a.m.

Location

Salus Center, Classroom 1501

Instructor

Terry Leet, PhD, MPH
Associate Professor
Salus Center, Room 469
Office: 314-977-8126
Fax: 314-977-3234
LEETTL@SLU.EDU

Office Hours

After class or by appointment

Teaching Assistant

Grant Farmer, BS
MPH Graduate Student
Salus Center, Room 488L
Office: 314-977-8221
Fax: 314-977-3234
GFARMER1@SLU.EDU

Office Hours

M: 11-1; W: 10-12

Course Overview

Introduction: This course is an introduction to epidemiology, which is the study of the distribution and determinants of disease in human populations and the application to the control of health problems. Topics will include analytic reasoning in public health and disease surveillance, descriptive and analytic study designs, and causal inference. Basic statistical measures used in the analysis of epidemiologic studies, including measures of disease frequency and measures of association, will be covered.

Purpose: Students who successfully complete this course will understand the principles of epidemiology and its application as a core discipline of public health. Students will achieve this goal by mastering specific core competencies unique to the field of epidemiology and by incorporating specific core cross-disciplinary competencies that are universal to all domains of public health.

Core Competencies: The core disciplinary competencies for the course are listed below.

Domain 14. Epidemiology: The study of the distribution and determinants of disease in human populations and the application to the control of health problems.	
1. Define, calculate, and interpret the primary measures used in descriptive epidemiology	
1.1	Describe the importance of a case definition
1.2	Define, calculate, and interpret primary measures of morbidity and mortality by person, place, and time characteristics
2. Identify leading public health problems and risk factors	
2.1	Identify leading public health problems
2.2	Identify key risk factors
2.3	Provide examples of the relationship between epidemiology and human pathophysiology for leading health problems and risk factors.
3. Describe the purpose, types, and methods of surveillance systems	
3.1	Identify state, national, and international surveillance systems
3.2	Describe passive and active surveillance systems
3.3	Identify population sampling methods
3.4	Identify methods for collecting, analyzing, and reporting surveillance data
4. Explain the main study designs and measures of association used in epidemiology and clinical research	
4.1	Describe experimental, quasi-experimental, and observational study designs
4.3	Identify strengths and limitations of different study designs
4.5	Identify and compute measures of association
4.6	Describe selection, information and confounding bias
5. Explain the concepts of screening	
5.1	Describe the characteristics of a disease that make it a suitable target for screening
5.2	Describe the characteristics of an effective screening test
5.3	Define sensitivity, specificity, and positive predictive value for a screening test

5.4	Explain the benefits and limitations of screening
5.5	Describe the ethical implications of screening
6. Provide appropriate interpretations and conclusions of results	
6.1	Interpret results
6.2	Make appropriate inferences based on results
6.3	Recognize public health and clinical implications of results
6.4	Assess causality
7. Recognize the importance of epidemiology for informing a range of health issues	
7.1	Provide examples of the role of epidemiology in informing scientific, ethical, economic, and policy discussion of health issues
7.2	Describe the key facilitators and barriers to the use of epidemiologic data for public health and policy-related decision-making.

Course Description

Course Format: The format of the course will be primarily lectures and examples. Students will perform weekly exercises that reinforce the epidemiologic principles and methods that are presented in class.

Course Elements and Requirements: The reading assignments for the course will include specific chapters from the following book and other publications.

- Aschengrau and Seage. *Essentials of Epidemiology in Public Health*. Jones and Bartlett Publishers, Boston, 2003 (ISBN: 0-7637-2537-4)
- or -
- Aschengrau and Seage. *Essentials of Epidemiology in Public Health*. 2nd edition, Jones and Bartlett Publishers, Boston, 2008 (ISBN-13: 978-0-7637-4025-2 or ISBN-10: 0-7637-4025-X)

A list of introductory epidemiology books (below) represents additional resources for the course.

Student Expectations and Requirements:

- You should be prepared to discuss the assigned readings at the start of each class and to participate in class discussions.
- You must return your assignments and examinations on time to the course instructor. Late assignments and examinations will not be accepted.
- You are responsible for doing your own work. Credit will not be given for any assignments or examinations that appear to be copies of other student's work.

Instructors' Expectations and Requirements:

- The instructor will come to class prepared, organized, and enthusiastic.

- The instructor will be available to answer any questions that you may have about the course. Please feel free to contact the instructor by telephone or email to discuss any issues concerning the course.
- The instructor retains the right to change the content and order of the lectures and exercises to meet the needs of the students who are enrolled in the course.

Grading Determination and Policy

Problem Sets / Article Critiques: Students will complete 10 or 12 weekly problem sets. Each problem set will focus on the information provided in the prior lecture and readings, and will provide the student with an opportunity to develop the skills to master the competencies associated with each lecture. Students will also critique two studies chosen by the instructor. For each article critique, students will answer questions that address study methodology, causal inference, and implications. Students may work in groups to complete the problems sets and article critiques, but must submit their own answers for each assignment.

Examinations: Students will complete two examinations. The examinations will include short essay questions and mathematical problems to evaluate the skills that each student is expected to master during the course. The instructor will not accept late examinations and will not grade any examination questions that were not completed independently by the student. All students will be required to sign a statement pledging that they completed both examinations without assistance from anyone other than the course instructor.

Grading: Students' final grades will be based on the total number of points earned from the best 10 of 12 problem sets, article critiques, and examinations administered during the course:

- Problem Sets (20 points)
- Article critiques (20 points)
- Exam #1 (30 points)
- Exam #2 (30 points)

Final grades will be assigned in accordance with the following guidelines from the Graduate School.

<u>Grades</u>	<u>Total Points</u>	<u>Grades</u>	<u>Total Points</u>
A	93-100	B-	80- 82
B+	90- 92	C	73- 79
B	83- 89	F	<73

Attendance: Regular class attendance is an important part of one's graduate education in public health. Students are expected to attend all scheduled class meetings. In rare circumstances (e.g., illness, accident, death in one's family), absences will be excused. However, if a student misses more than seven (7) hours of a three-credit course, they may be asked to withdraw from the course and re-take the course at a later time.

Feedback on Assignments: Timely feedback on assignments is needed in order to assure that students are aware of their progress. Feedback on problem sets and article critiques will be provided within one week after the due date. Feedback on examinations will be provided within two weeks after the receipt of the examinations. In the rare event that these deadlines cannot be met, students will be informed of the delay and the extra time needed in providing feedback.

Academic Integrity Policy: All students enrolled in MPH Program courses are also expected to abide by and uphold Saint Louis University's Policy on Academic Integrity and Ethics. This policy is reprinted below.

The University is a community of learning, whose effectiveness requires an environment of mutual trust and integrity, such as would be expected at a Jesuit, Catholic institution. As members of this community, students, faculty, and staff members share the responsibility to maintain this environment. Academic dishonesty violates it. Although not all forms of academic dishonesty can be listed here, it can be said in general that soliciting, receiving, or providing any unauthorized assistance in the completion of any work submitted toward academic credit is dishonest. It not only violates the mutual trust necessary between faculty and students but also undermines the validity of the University's evaluation of students and takes unfair advantage of fellow students. Further, it is the responsibility of any student who observes such dishonest conduct to call it to the attention of a faculty member or administrator.

Examples of academic dishonesty would be copying from another student, copying from a book or class notes during a closed-book exam, submitting materials authored by or editorially revised by another person but presented as the student's own work, copying a passage or text directly from a published source without appropriately citing or recognizing that source, taking a test or doing an assignment or other academic work for another student, tampering with another student's work, securing or supplying in advance a copy of an examination without the knowledge or consent of the instructor, colluding with another student or students to engage in an act of academic dishonesty; and making unauthorized use of technological devices in the completion of assignments or exams.

Where there is clear indication of such dishonesty, a faculty member or administrator has the responsibility to apply appropriate sanctions. Investigations of violations will be conducted in accord with standards and procedures of the school or college through which the course or research is offered. Recommendations of sanctions to be imposed will be made to the dean of the school or college in which the student is enrolled. Possible sanctions for a violation of academic integrity include, but are not limited to, disciplinary probation, suspension, and dismissal from the University.

Policy on Style for Citation and Plagiarism: The two key purposes of citation are to 1) give appropriate credit to the authors of information, research findings, and/or ideas (and avoid plagiarism) and 2) facilitate access by your readers to the sources you use in your research.

Quotations: When directly quoting an outside source, the borrowed text, regardless of the amount, must be surrounded by quotation marks or block quoted. Quoted text over two lines in length should be single-spaced and indented beyond the normal margins. Every quote must include a source—the author, title, volume, page numbers, etc.—whether an internal reference, footnote, or endnote is used in conjunction with a bibliography page.

Paraphrasing or Citing an Idea: When summarizing an outside source in your own words or citing another person's ideas, quotation marks are not necessary, but the source must be included.

Plagiarism is a serious violation of the academic honesty policy of the School of Public Health. If a student plagiarizes others' material or ideas, he or she may receive an "F" in the course. The faculty member may also recommend further sanctions to the Dean, per School disciplinary action policy.

Generally speaking, the three keys of acceptable citation practice are: 1) thoroughness, 2) accuracy, and 3) consistency. In other words, be sure to fully cite all sources used (thoroughness), be accurate in the citation information provided, and be consistent in the citation style you adopt. All references should include the following elements: 1) last names along with first and middle initials; 2) full title of reference; 3) name of journal or book; 4) publication city, publisher, volume, and date; and 5) page numbers referenced. When citing information from the Internet, include the "www" address at the end, with the "access date" (i.e., when you obtained the information), just as you would list the document number and date for all public documents. When citing ideas or words from an individual that are not published, you can write "personal communication" along with the person's name and date of communication. Typical formats for citing references and books can be found in the American Journal of Public Health.

Additional Reading: Lathrop A, Foss K. *Student Cheating and Plagiarism in the Internet Age*. Englewood, CO: Libraries Unlimited, Inc.; 2000.

Access and Accommodation Policy

Students with disabilities who believe that they may need accommodations in this class are encouraged to contact the Office of Disabilities Services at 314-977-2930 as soon as possible to better ensure that such accommodations are implemented in a timely fashion.

Course Calendar

Class Meeting	Date	Topics	Readings	Core Disciplinary Competencies
1	08/28	Course overview Introduction to epidemiology Measures of disease frequency	1 2	2:1-2.2 1:1-1.2
2	09/04	Descriptive epidemiology Direct standardization	5 3 (p.68-71) 3 (p.68-72)*	1:2 1.2
3	09/11	Surveillance	4	3:1-3.2, 3.4
4	09/18	Population sampling methods (<i>Bring laptop computer</i>)	Handout	3:3
5	09/25	Screening	16	5:1-5.5
6	10/02	Study design overview (Exam #1 distributed)	6	4:1
7	10/09	Measures of association Hypothesis testing Confidence intervals (Exam #1 due in class)	3 (p.58-68) 3 (p.59-69)* 12 12	4:5 6.1-6.2 6:1-6.2
8	10/16	Selection bias Information bias	10 10	4:6 4.6
9	10/23	Confounding bias Effect modification	11 13	4:6 4.6
10	10/30	Causal inference Critical reviews	15 14	6:3-6.4, 7.1-7.2
11	11/06 11/09	Experimental studies Exam #2 administered (8:30-11:30 a.m.)	7	2.3, 4:1, 4.3
12	11/13	Quasi-experimental studies	Handout	2.3, 4:1, 4.3
-	11/20	NO CLASS		
13	11/27	Cohort studies	8	2.3, 4:1, 4.3

		(Article critique #1)		
14	12/04	Case-control studies (Article critique #2)	9	2.3, 4:1, 4.3
15	12/11	Cross-sectional studies	6 (p151-158) 6 (p157-164)*	2.3, 4:1, 4.3

Readings: Chapters from Aschengrau and Seage, 2003 or Aschengrau and Seage, 2008*

Supplementary Texts

- Merrill RM and Timmreck TC. *An Introduction to Epidemiology*. Jones and Bartlett Publishers, fourth edition, Boston, 2007
- Szklo M, Nieto EJ. *Epidemiology. Beyond the basics*. Jones and Bartlett Publishers, second edition, Boston, 2006.
- Gorgis L. *Epidemiology*. W.B. Saunders Company, third edition, Philadelphia, 2004.
- RH Friis & TA Sellers. *Epidemiology for Public Health Practice*, third edition. Aspen Publishers, Inc., Gaithersburg, 2004.
- Koepsell T, Weiss N. *Epidemiologic Methods: Studing the Occurrence of Illness*. Oxford University Press, Oxford, 2003
- Oleckno W. *Essential Epidemiology: Principles and Applications*. Waveland Press, Inc., Prospect Heights, Illinois, 2002
- Rothman KJ. *Epidemiology: An Introduction*. Oxford University Press, Oxford, 2002
- Jekel JF *et al*. *Epidemiology, Biostatistics, and Preventive Medicine*. W.B. Saunders Company, second edition, Philadelphia, 2001.
- Morton RF *et al*. *A Study Guide to Epidemiology and Biostatistics*. Aspen Publication, fifth edition, 2001
- Oleske D. *Epidemiology and the Delivery of Health Care Services*. Plenum Press, second edition, New York, 2001
- Rothman KC *et al*. *Modern Epidemiology*. Little, Brown and Company, second edition, Boston, 1998
- Kelsey JL *et al*. *Methods in Observational Epidemiology*. Oxford University Press, second edition, New York, 1996

- Friedman GD. *Primer of Epidemiology*. McGraw-Hill Book, fourth edition, New York, 1994
- Lilienfeld DE *et al.* *Foundations of Epidemiology*. Oxford University Press, third edition, New York, 1994
- Ahlbom A and Norell S. *Introduction to Modern Epidemiology*. Epidemiology Resources Inc., Chestnut Hill, 1990
- Streiner DL and Norman GR. *PDQ Epidemiology*. B.C.Sales, Toronto, 1989
- Hennekens CH and Buring JE. *Epidemiology in Medicine*. Little, Brown and Company, Boston, 1987.