

**University of Florida College of Public Health and Health Professions
PHC 6000: Epidemiology Methods I
Spring 2008**

Primary Instructor: Xiaohui Xu, Ph.D.
Assistant Professor, Department of Epidemiology and Biostatistics
College of Public Health & Health Professions
University of Florida Health Sciences Center. P.O. Box 100231
Gainesville, FL 32610-0182
352-273-5362 (office); 352-273-5365 (fax);
Email: xhxu@php.ufl.edu
Office: HPNP 3119
Office hours: Friday 9:00AM to 11:00AM and by appointment.

Teaching Assistant: Jasmine Khedkar
Office: HPNP, G-228
Email: jasmink@php.ufl.edu
Office hours: Thursday 11:30AM -12:30PM and by appointment

Class Schedule: Thursday 8:30AM-11:30AM, Room 1101, HPNP

Course Description and Goals

This course extends the concepts and methods of epidemiology from PHC 6001 (Principles of Epidemiology). Research design and analytic reasoning are emphasized throughout the class. Because epidemiology methods and causal inference are the most complex in observational studies, the course uses examples and methods primarily from this kind of research. Randomized trials and community experiments are included as aspects of methods issues, however. The course provides an understanding of the methods of epidemiological study designs and their analyses including issues of bias, confounding, and effect-modification. The goal of this class is to provide a strong background in analytic reasoning and research design, study execution, analysis, and research interpretation. Upon successful completion of the course, students should be able to...

1. Demonstrate and apply the principles of descriptive and analytic epidemiology.
2. Identify and select among research designs for specific scientific questions.
3. Identify and integrate the principles of causal inference to planning and reviewing research studies.
4. Critically appraise published research studies for their strengths and weaknesses.
5. Interpret, apply, and analyze methods regarding measures and measurements, error, confounding and effect modification, sampling, and research generalizability.
6. Communicate epidemiology methods in writing and orally.

Prerequisites

PHC 6001 and STA 6166 or the equivalent. This class assumes a basic competency with epidemiology principles and vocabulary. Material from PHC 6001 is not repeated, except there is some summary and review in sessions to make sure you have the opportunity to know how I use epidemiology language. You are expected to

be able to use the material from an introductory epidemiology course (PHC 6001 or equivalent). Jasmine and I are available to review and elaborate these concepts in office hours or by appointment. We want to help you integrate the material from PHC 6001 to the new material; if this is not happening in class, we'll talk about it in-class, as time allows, and during one-on-one sessions.

Course Materials

Recommended Textbook:

Szklo, Moyses and Nieto, F. Javier. *Epidemiology: Beyond the Basics, Second Edition*, Jones and Bartlett, Boston, MA, 2007.

Supplemental Textbooks (Optional):

1. Koepsell TD, Weiss NS. Epidemiologic methods. Studying the occurrence of illness. New York: Oxford University Press, 2003.
2. Kelsey JL, Whittemore AS, Evans AS, Thompson WD. Methods in observational epidemiology (2nd edition). New York: Oxford University Press, 1996.
3. Rothman KJ, Greenland S. Modern Epidemiology (2nd Ed). Lipincott-Raven, Philadelphia, 1998.
4. Gordis, Leon. Epidemiology, Third Edition. Elsevier Saunders, Philadelphia, PA, 2004.

I *recommend* using “*Epidemiology: Beyond the Basics*” to augment the material in this class. I asked the bookstore to order this textbook. Sections from the text are noted as sources for the appropriate lecture on the schedule. Although there is no required textbook reading for this class, the Szklo and Nieto text most closely resembles our course. The quiz and exam mainly bases on what we will do in class (with your lecture handouts, problem sets and answers). Finally, epidemiologists occasionally use somewhat different terms to describe the same thing; when I can, I will note alternative terminology in class from one or more of these texts. But I will ask each of you to be consistent and use our PHC 6000 class terminology.

Software

Students will need to acquire the analysis software program Epi Info™, Version 3.4.3., a free program supported by the CDC. You should plan to bring your laptop (or share one) for the sessions in which we use this program (see the schedule). The University of Florida and our College requirements for computers for students are located at the websites <http://www.phhp.ufl.edu/education/computer.htm> and <http://www.registrar.ufl.edu/catalog/admissions/minreqs.html>. Please contact Jasmine for a copy of *EpiInfo* before the first session in which it is required (February 21th) or download it from the website of <http://www.cdc.gov/epiinfo/epiinfo.htm> by yourself.

Web CT

WebCT is accessible at lss.at.ufl.edu or through my.ufl.edu. You must have a valid Gatorlink ID and password. For assistance, call the UF Help Desk at 392-HELP.

Required: Students will need to log onto Web CT and print all electronic files before each class except the first class. If materials are not posted in Web CT, we will provide the hardcopies in class. Students are responsible for all course material, including reading all

required materials prior to each class. Readings will be assigned from historical or current scientific research literature. Readings will be posted when assigned, e.g., the week before they are due (or earlier).

Course Requirements

1. Read assigned textbook sections and additional reading before lectures;
2. Completed 11 problem sets throughout the semester;
3. Take In-Class Exam 1 (Mar. 6) and final exam (TBA); and
4. Completed the literature critique.

Course Format

We will combine different learning techniques in this class. We usually first discuss the problem set you were assigned the week before. Each problem set will have a formal written (paper) answer sheet for your additional review and learning. You are required to have completed and TYPED the problem set, including formal written answers for our review, prior to class. Each week we will also have a new topic, with a lecture. These are accompanied with a comprehensive set of lecture notes and tables, examples, and figures that are used in the lectures. These will provide the foundation for what you are expected to know for the graded exams. Finally, each student will write a literature critique to practice applying class lessons to a peer-reviewed study (see below). Both knowledge of content and excellence in oral and written work are graded components of this course.

Grading

Grading scale:

90% - 100% = A

85% -89.9%= B+

80% -84.9%= B

75% -79.9%= C+

70% -74.9%= C

65% -69.9%= D+

60% - 64.9%= D

Below 60.9%=E

Grading Methods:

Class participation = 5%

Homework assignments = 40% (n=11)

Literature critique = 10%

In class exam 1= 20%

Final exam = 25%

Class participation assessment will include attendance and participation in discussions. I use a random call list to ask questions about material you are required to prepare for in-class discussions, or for weekly homework assignments. Having the correct answer is not graded (you will be presented with challenges that are not fair to grade, since they extend material from class). But lack of preparation and non-attendance will result in a one-point reduction in your 5% class participation grade for each occasion it occurs. This practice is not intended to intimidate, or to penalize students who are prepared for class. If you are concerned about being required to answer questions orally in class, please discuss this with me privately and I will make reasonable accommodations.

The In class exam and final exam will require written answers with some calculations needed. The style of these questions will be very similar to the weekly problem sets.

These homework problem sets are graded as ten points each. You are allowed to drop one homework with the lowest score at the end of semester. The rest of 10 problem sets will be a part of the final grade. Jasmine will provide feedback on problem sets. They are due at the beginning of each class, although we will discuss them first before you hand them in. Written answer sheets also will be distributed on the due date. Late problem sets will receive an automatic score of 0 unless I have given prior approval. The problem sets are intended to be an extension of material presented by the text and in-class as well as an introduction of new ideas. If a student turns in each problem set and makes a good-faith effort at each, they will receive automatic credit for 25% of their course grade. Failing to try each problem and/or failing to contact the TA or me if you are having trouble with the problem set can result in a grade of “0”. Both Jasmine and I are available, by telephone, e-mail, and in-person (and we’ll alert you in advance to travel schedules). We ask that students make use of our time, office hours, and/or study with others in class.

Communicating epidemiology well is one of the goals of this class. In problem sets and other written work, the clarity of language to explain your thoughts will be included in the comments and, for graded work (e.g., exam, critique), writing will be part of the final grade. Exams are not graded for perfect grammar or spelling (I’d fail this test: you will find I spell very poorly), but making your answer clear is important. Inexact, unclear language or multiple answers (among which one might be right) will receive reduced credit on the exam. Students must use a word processor for all submitted written work. You are welcome to print any calculations and notations, but make sure they are legible. Jasmine and I will not grade a problem set or quiz or exam that we cannot read. My own handwriting, on the board, is not very good, and you should let me know when it fails your own test of legibility. Exams need to be legible to assure you are awarded full credit for your answers. Please bring a #2 pencil with you to use in answering questions for the exams. When we are in doubt, Jasmine and I will each take a turn at deciphering your answers, but if neither of us can read an answer, we cannot award full credit. The practice of epidemiology is enhanced by clear communication and because this is a graduate school course, competent writing *is part of the grade*.

Literature Critique: Each student will be assigned an epidemiological article by no later than Wednesday March 20th. A formal written critique of the article is due on or before April 17rd at 4:00 PM. The primary goal of this assignment is to give students practice in critically reviewing epidemiology evidence. For literature reviews, grant background sections, etc., we use the summary of skills of this class to interpret the value (and problems) of published work.

All articles will be taken from epidemiology/public health journals, e.g., the *American Journal of Epidemiology*, *Epidemiology*, *Annals of Epidemiology*, etc., so that they are more likely to use and describe research in similar terms to the ones we use in this class. I will distribute additional information and some examples of literature critiques in advance of this assignment.

Course Policies

Feedback on Assignments: Timely feedback on assignments is needed in order to assure that students are aware of their progress. For routine problem sets, the quiz, and the final

exam, feedback will be provided within two weeks after the due date. Generally we will return to you the corrected problem set the week after it is turned in. You will receive a written answer sheet the same day you turn in the assignment. The quiz will be discussed in class the following week. The exam will be kept as part of your class record, and will be distributed for you to review in class, but not to take with you; they will provide part of the record for my files on your performance in this class (class files are maintained for five years after the class). The paper critique will be returned to you within two weeks of the end of class. You can make an appointment with me to discuss the final exam or any other graded aspect of class. Be prepared to describe your concerns with grading for the entire assignment, not just a component of your interest. For the quiz, exam, and literature critique, both Jasmine and I will have read it and graded it without seeing your identity, and we will have discussed a uniform grading scheme. Therefore, unless there is an anomaly (we might have added your points incorrectly, for example), your answer will be reviewed in the context of the whole class and your performance on the entire assignment.

Classroom etiquette: Please come to class on time and be prepared to stay until the time scheduled as the end of class. I think your investment in the degree is worth my maximizing your in-class experience, and I usually provide materials that extend the full, scheduled class times.

Pagers and cell phones should not be used in class. The use of cell phones, text messaging, and pagers is one of the most common complaints I have from students in recent years. Please turn them off. Or, if you expect urgent calls, set them to “vibrate.” **Cell phones and pagers are not allowed during the in-class exam.** Any student observed using a cell phone, pager, including text messaging during these times will receive a failing grade for that quiz or exam. You may leave your pager or cell phone with Jasmine or with me during the quiz/exam in case of emergency or if you have an urgent personal or professional reason for expecting to be called/paged.

The second most common complaint I have received during teaching is “side” conversations among students. Unless your conversation is a quick one, please consider that your conversation may interrupt the attention of someone seated near you. I welcome in-class questions. If you have trouble getting my attention during a vigorous in-class discussion, raise your hand and/or use a loud voice. Your question will nearly always be one that other students also have. Your questions will help me in that session, or to assess what kinds of issues and examples I should research and bring to class in the next session (or in future iterations of the class).

Academic Integrity: Each student is bound by the academic honesty guidelines of the University and the student conduct code printed in the Student Guide and on the University website. The Honor Code states: “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.” Cheating or plagiarism in any form is unacceptable and inexcusable behavior.

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. In this class, you will be preparing a critique on one epidemiology study article, and it does not require referencing. In fact, direct quotation will not be a positive method of writing the literature critique. However, the issue of citation and plagiarism may be relevant now, and certainly in the future, so I include a discussion here. It is your responsibility to read the policy and ask questions if you do not understand the policy or have specific concerns or question.

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. This includes, but is not confined to, personal communications from other students, faculty members, experts in the field, summarized ideas from published or unpublished resource, and primary methods derived from published or unpublished sources. Use the general concept of “when in doubt – cite.”

Plagiarism is a serious violation of the academic honesty policy of the College. If a student plagiarizes others’ material or ideas, he or she may receive an “E” in the course. The faculty member may also recommend further sanctions to the Dean, per College 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*.

We urge you to review the University site on plagiarism

<http://web.uflib.ufl.edu/msl/subjects/Physics/StudentPlagiarism.html> and the site also links to a number of “best” policies at other universities.

Class Attendance: Class attendance is mandatory. Excused absences follow the criteria of the UFL Graduate Catalogue (e.g., illness, serious family emergency, military obligations, religious holidays), and should be communicated to the instructor prior to the missed class day when possible. UFL rules require attendance during the first two course sessions (Katie and I are required to take roll for the College), and students also must attend all course sessions of student presentations for this class. Missing more than two scheduled sessions will result in a failure. Two weekly sessions are the equivalent of about 15% of the course contact hours. Regardless of attendance, students are responsible for all material presented in class and meeting the scheduled due dates for class assignments. Finally, students should read the assigned readings prior to the class meetings, and be prepared to discuss the material except for the first class session.

Policy on Make-Up Work: Students are allowed to make up work ONLY as the result of illness or other unanticipated circumstances warranting a medical excuse and resulting in the student missing a homework or project deadline, consistent with College policy. Documentation from a health care provider is required. Work missed for any other reason will receive a grade of zero.

Accommodations for Students with Disabilities: Students requiring accommodations must first register with the Dean of Students' Office. The Dean of Students' Office will provide documentation to the student who must then provide this documentation to the faculty member when requesting accommodation. The College is committed to providing reasonable accommodations to assist students in their coursework. We all learn differently: however, if you have experienced problems in university classes with writing, in-class exams, understanding or concentrating in class; please talk to me or access a learning or education testing resource at the University or in another professional setting. For your assistance, should you need them, please consider either of the following:

University Counseling Services

<http://www.counsel.ufl.edu/base.asp?include=counselingServices.inc>

P301 Peabody Hall – 392-1575

Student Mental Health Services in the Student Health Care Center

<http://www.health.ufl.edu/shcc>

Room 245, Infirmary Bldg.- 392-1171

Course Outline: Paper copies of required readings (or electronic versions) will be distributed or posted prior to each session.

Week 1: Course overview, review & extension to measures of disease occurrence.

Thursday January 10th

Problem set #1 handed out

Reading:

Textbook: Szklo and Nieto chap 2;

Supplemental sources (not required): Rothman chps. 3&4; W&K chaps 3&4.&9.

Week 2: Review & extension to basic study designs

Thursday January 17th

Problem set #1 due

Reading:

Textbook: Szklo and Nieto chap 1;

Supplemental sources: Kelsey chp. 2; Rothman 2nd ed chp. 2; K&W chp 8.

Week 3: Cohort studies.

Thursday January 24th

Problem Set #2 due

Guest lecturer: Dr. Elena M. Andresen

Reading:

Required: 1. Shore RE, Hildreth N, Dvoretzky P, Pasternak B, Andresen E. Benign thyroid adenomas among persons X-irradiated in infancy for enlarged thymus glands. *Rad Res* 1993a;134:217-223.

2. Molnar BE, Buka SL, Kessler RC. Child sexual abuse and subsequent psychopathology: results from the National Comorbidity Survey. *Am J Public Health* 2001;91:753-760.

3. Andresen EM, Hildreth NG. On epidemiology & the obligation to notify study subjects. *Letter: Epidemiol Monitor* 1992;13(4):4,6.

Supplemental sources (not required): Kelsey chps. 4-5; Rothman chp. 6; Szklo chp. 1.4, 3.2; Koepsell & Weiss chp.14

Week 4: Case-control studies: methods and issues

Thursday January 31st

Problem Set #3 due

Reading:

Textbook: Szklo and Nieto chp. 1;

Supplemental sources (not required): Kelsey chp. 8; Rothman chp. 7,10; Szklo chp. 3.4; K&W chp. 15

Week 5: Age, period and cohort effects; other study designs

Thursday February 7th.

Problem set #4 due

Age, period and cohort effects; Screening;

Reading:

Textbook: Szklo and Nieto chp. 1;

Supplemental sources (not required): Rothman chp. 23; Szklo chp. 13; K&W chp. 12, pg. 109.

Week 6: Measures of associations

Thursday February 14th

Problem set #5 due

Relative Risk, Odds Ratios, Attributable Risk, and PAR

Reading:

Textbook: Szklo and Nieto chp. 3;

Supplemental sources (not required): K&W chps. 8-9,.

Week 7: Power and Sample Size, intro to *EpiInfo*

Thursday February 21st

Problem set #6 due

No required reading.

Required: bring a laptop loaded with the software to class, or arrange to share with another student in class.

Week 8: Bias

Thursday February 28th

Problem set #7 due

Introduction, definition & issues in bias

Reading:

Textbook: Szklo and Nieto chp. 4;

Supplemental sources (not required): Kelsey, chp. 13; Rothman chp. 8,11; K&W chp. 10

Week 9: In class exam 1; Interaction: definition and strategies of evaluation

Wednesday March 6th

Midterm two hours, in-class. Open book, open notes; bring a calculator.

Reading:

Textbook: Szklo and Nieto chp. 6;

Supplemental sources (not required): Rothman chp. 18



Spring Break Mar 10th to March 14th



Week 10: Interaction and Confounding

Wednesday March 20st

Reading:

Textbook: Szklo and Nieto chp. 5&6;

PAPERS ASSIGNED FOR LITERATURE CRITIQUE

Week 11: Confounding: Adjustment and Stratification, *EpiInfo*

Wednesday March 27th

Problem set #8 due

Reading:

Textbook: Szklo and Nieto chp. 7;

Supplemental sources (not required): Kelsey, chp. 6,7,9; Rothman chp. 10 15, 18; Szklo chp. 5,7; K&W chp. 11, pgs. 247-255, 269-275

Week 12: Confounding: Quantitative modeling

Wednesday April 3th

Problem set #9 due

Reading:

Textbook: Szklo and Nieto chp. 7;

Supplemental source (not required): Rothman chapters 20, 21

Week 13: Introduction of multi-level analysis. Causal inference;

Wednesday April 10th

Problem set #10 due.

Guest lecturer: Dr. Amy Daily

Reading:

Required: Von Korff MT, Koepsell TK et al.. Multi-level analysis in epidemiologic research on health behaviors and outcomes. Am J Epidemiol 1992; 135(10): 1077-82.

Supplemental source (not required): Rothman, Chapter two.

Week 14: . Reading & writing the scientific literature; Meta-analysis; Review for final exam

Wednesday April 17th

Problem set #11 due

Reading & writing the scientific literature & introduction to meta-analysis

Reading:

Textbook: Szklo and Nieto chp. 9.

Required:

1. Goldberg RJ. Enhancing peer review of scientific manuscripts. Arch Intern Med 1997;157:380-382.
2. Samet JM. Dear author – advice from a retiring editor. Am J Epidemiol 1999;150:433-436.
3. Dixon N. Writing for publication – a guide for new authors. Intl J Qual Health Care 2001;13(5):417-421.

Brief Review of common problems for exams and review recommendations

Week 15: Final exam.

TBA

Final exam two and half hours, in-class. Open book, open notes; bring a calculator

Written Critique due Thursday, April 17th 2008 by 4:00PM by electronic submission to xhxu@php.ufl.edu and to jasmink@php.ufl.edu

**You must receive a confirmation of receipt to assume this has been registered by me as accepted for the final grade. You are responsible for this submission and if the file is not received in a readable format, a paper copy is due at the same time in office HPNP 3119.
So attempt the file submission early**