Mel and Enid Zuckerman College of Public Health
University of Arizona

SYLLABUS

Advanced Epidemiology
EPID/CPH 573C
Fall Semester 2008

Time: Monday 2:00 – 4:50 p.m.

Location: Drachman Hall A-123-125

Instructors:
Zhao Chen, PhD, MPH
Associate Professor of Public Health
1295 N. Martin
Drachman Hall, A230
Tucson, AZ 85724
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Office Hours: By Appointment

Teaching Assistant: None

TA Office Hours: N/A

Course Description:
An advanced course in quantitative issues that arise in the planning, analysis, and interpretation of epidemiologic research studies. Students must also know how to use a statistical software package (eg. STATA).

Course Prerequisites:

Statistics:	Epidemiology 576A (Biostatistics for Public Health) Epidemiology 576B (Biostatistics for Research)
Epidemiology:	Epidemiology 573A (Basic Principles in Epidemiology) Epidemiology 573B (Epidemiologic Methods)
Computing:	Ability to use statistical computing packages (e.g. Stata, SAS, S-plus, or SPSS)

Course Learning Objectives: At the end of the course students should be able to better:

1. Understand the graphical representation of causality in epidemiology;

2. Interpret disease frequency, association, and effect as commonly considered in epidemiologic studies;

3. Critically evaluate the validity of proposed and completed studies, addressing potential sources of bias:
   (a) selection (response) bias,
   (b) information bias,
   (c) confounding;

4. Understand the advantages of stratification, matching, and statistical adjustment for control of confounding;

5. Understand the value of the randomized clinical trial as an epidemiologic resource;

6. Identify research questions and form research hypotheses;

7. Plan and perform statistical analyses in epidemiologic research; and

8. Communicate epidemiologic research findings in both oral and written formats.

Required Textbook:
Moyses Szklo & F. Javier Nieto. Epidemiology---Beyond the Basics (2nd addition). An Aspen Publication 2006.

Recommended Textbook:
Kenneth J. Rothman, Sander Greenland & Timothy L. Lash. Modern Epidemiology (3nd edition). Lippincott-Raven 2008 (AHSL reserve).

Course Requirements: Students are required to actively participate in class discussion and to collaboratively work in assigned group during the semester. Class assignments, including reading assignments, must be completed before arriving to class.

Assignments

a. Reading: Book chapters and papers are listed corresponding to each lecture in the course schedule. Students are expected to read each of the assigned book chapters before the lecture and be ready to discuss them in class. The papers are recommended readings.

b. Homework: There are three computer-based homework assignments throughout the semester. You are expected to work in a group and discuss in class your solution of

one (or more) of the homework assignments. In addition, you will be given papers to read and prepare for class discussions.

c. Midterm: midterm will be a take-home examine. You will be asked to read an epidemiologic research paper and answer questions related to the paper.

d. Abstract and presentation: Throughout of the semester, you will be working with a group of students on an epidemiologic dataset to test a hypothesis that you have formed. You will write and submit an abstract to report your findings at a scientific conference (hypothetical). Per the conference assignment, you will give either an oral or a poster presentation.

e. Final critique presentation: You are responsible for presenting a critique review of a significant epidemiology paper (30-40 minutes). You are encouraged to select one paper from the list provided. You must let Dr. Chen know as soon as possible so she will reserve the paper for you. One student one paper and first come first serve. However, you may pick up your own paper if you are not interested in any of these papers in the list. In that case, you must show the paper to Dr. Chen for approval before you start your critique review.

f. Final paper: A completed manuscript based on your findings in the research project will be due by the end of the semester.

Student Evaluation:

5% Class participation (individual work)
15% Homework (group work)
25% Midterm (individual work)
15% Research abstract and presentation (individual work)
20% Final critique presentation (individual work)
20% Final research paper (manuscript)

Class Attendance/Participation: Required. Prior permission from the course director should be received for any absence unless in emergence situations. Students who miss class without an instructor's permission or who have 2 or more absences during the semester may receive a deducted score for class participation.

Course Schedule

#	Date	Topic	Reading	Assignment	Due
1	August 25	• Introduction • Literature review and hypotheses forming • Class project	R_1, C_1	Class project	
	September 1	• Labor day, no class			
2	September 8	• Disease incidence and risk • Measuring associations with consideration of validity and bias	R_2, C_{2-4}	H_1	
3	September 15	• Noncausal associations: confounding • Discuss H_1 • Project hypotheses and literature review results	R_3, C_5	(*ACE meeting*)	H_1, Literature review and hypotheses
4	September 22	• Discuss the analysis plan for the manuscript among group members (Dr. Chen is out of town)		H_2	Analysis plan
5	September 29	• Effect modifications and interactions • Discuss H_2	R_4, C_6	dataset for the class project	H_2
6	October 6	• Data simulation with STATA (Dr. Miller) • Computer lab on the third floor (Dr. Chen is out of town)			
7	October 13	• Causal diagrams • Statistical modeling in epidemiology	R_5, C_7	H_3	
8	October 20	• Measurement errors • Discuss H_3	R_6, C_8	**Midterm Exam**	H_3
9	October 27	• Reporting epidemiologic research • Review abstracts	R_7, C_9	poster or slides *(APHA meeting)*	**Midterm Exam** abstract
10	November 3	• Student poster and presentation • Discuss midterm			poster or slides

#	Date	Topic	Reading	Assignment	Due
11	November 10	• Epidemiologic inferences and public health policies	R_8, C_{10}	Peer Review	1st draft of the manuscript
12	November 17	• Selected EPI topics • Discuss the draft and reviewers' comments	R_9		Reviewer's comments
13	November 24	• Use of biomarkers and genetic approaches in epidemiologic studies (Guest Lecture) (Dr. Chen is out of Town)			
14	December 1	• Get your next project funded • Student final presentations	R_{10}		
15	December 8	• Student final presentations			
16	December 15	• Student final presentations			Final Manuscript

Ri = Reading
Ci = Chapter
H_i = Homework

Academic Integrity: Students are expected to abide by the University of Arizona Code of Academic Integrity found at http://w3.arizona.edu/~studpubs/policies/cacaint.htm.

Classroom Behavior: (Statement of expected behavior and respectful exchange of ideas)
Students are expected to be familiar with the UA Policy on Disruptive Behavior in an Instructional Setting found at http://hr2.hr.arizona.edu/dos/pol_disrupt.htm and the Policy on Threatening Behavior by Students found at http://hr2.hr.arizona.edu/dos/pol_threat.htm.

Grievance Policy: http://grad.arizona.edu/Current_Students/Policies/Grievance_Policy.php

Disability Accommodation: Students who are registered with the Disability Resource Center must submit appropriate documentation to the instructor if they are requesting reasonable accommodations: http://drc.arizona.edu/instructor/syllabus-statement.shtml

Syllabus Changes: Information contained in the course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate.